TSG-RAN Meeting #28
Quebec, Canada, 01-03 June 2005

RP-050308
agenda item 7.7.6

Source: TSG-RAN WG2.

Title: CRs (Rel-5 & Rel-6) to WG2 specifications for the removal of DSCH (FDD mode)

The following CRs are in RP-050308:

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem
25.301	0076	-	Rel-5	Feature Clean-up: Removal of DSCH (FDD)	C	5.4.0	5.5.0	R2-051604	TEI5
25.301	0077	-	Rel-6	Feature Clean-up: Removal of DSCH (FDD)	C	6.2.0	6.3.0	R2-051605	TEI5
25.302	0157	-	Rel-5	Feature Clean-up: Removal of DSCH (FDD)	C	5.7.0	5.8.0	R2-051606	TEI5
25.302	0158	-	Rel-6	Feature Clean-up: Removal of DSCH (FDD)	C	6.3.0	6.4.0	R2-051607	TEI5
25.303	0077	-	Rel-5	Feature Clean-up: Removal of DSCH (FDD)	C	5.2.0	5.3.0	R2-051608	TEI5
25.303	0078	-	Rel-6	Feature Clean-up: Removal of DSCH (FDD)	C	6.2.0	6.3.0	R2-051609	TEI5
25.306	0110	-	Rel-5	Feature Clean-up: Removal of DSCH (FDD)	C	5.10.0	5.11.0	R2-051610	TEI5
25.306	0111	-	Rel-6	Feature Clean-up: Removal of DSCH (FDD)	C	6.4.1	6.5.0	R2-051611	TEI5
25.321	0211	-	Rel-5	Feature Clean-up: Removal of DSCH (FDD)	C	5.10.0	5.11.0	R2-051612	TEI5
25.321	0212	-	Rel-6	Feature Clean-up: Removal of DSCH (FDD)	C	6.4.0	6.5.0	R2-051613	TEI5
25.331	2586	-	Rel-5	Feature Clean-up: Removal of DSCH (FDD)	C	5.12.1	5.13.0	R2-051615	TEI5
25.331	2587	-	Rel-6	Feature Clean-up: Removal of DSCH (FDD)	C	6.5.0	6.6.0	R2-051614	TEI5

3GPP TSG-RAN Working Group 2 #47
Athens, Greece, 9 – 13 May 2005

Tdoc ⌘ R2-051604

CR-Form-v7

CHANGE REQUEST

⌘	**25.301**	**CR**	**0076**	⌘ **rev**	**-**	⌘ Current version:	**5.4.0** ⌘

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

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

Title:	⌘	Feature Clean-up: Removal of DSCH (FDD)		
Source:	⌘	RAN WG2		
Work item code:	⌘	TEI5	***Date:*** ⌘	10/05/2005
Category:	⌘	**C**	***Release:*** ⌘	REL-5
		Use one of the following categories: ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *Rel-4 (Release 4)* *Rel-5 (Release 5)* *Rel-6 (Release 6)*

Reason for change:	⌘	Removal of DSCH for FDD
Summary of change:	⌘	Removal of DSCH for FDD
Consequences if not approved:	⌘	DSCH for FDD mode will remain specified

Clauses affected:	⌘	5.2.1.1, 5.3.1.1.2.2, 5.3.5.8, 5.3.5.12, 5.3.5.20, 5.3.6, 5.6.5.1, 5.6.5.2.1, 5.6.5.2.2, 5.6.5.3, 5.6.5.4, 6.1, 7				
		Y	**N**			
Other specs	⌘	**X**		Other core specifications	⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
affected:		**X**		Test specifications		34.108, 34.123
				O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

5.2 Layer 1 Services and Functions

This subclause shall provide an overview on services and functions provided by the physical layer. A detailed description of Layer 1 general requirements can be found in [4].

5.2.1 L1 Services

The physical layer offers information transfer services to MAC and higher layers. The physical layer transport services are described by *how* and with what characteristics data are transferred over the radio interface. An adequate term for this is 'Transport Channel'.

NOTE: This should be clearly separated from the classification of *what* is transported, which relates to the concept of logical channels. Thus DCH is used to denote that the physical layer offers the same type of service for both control and traffic.

5.2.1.1 Transport channels

A general classification of transport channels is into two groups:

- common transport channels (where there is a need for inband identification of the UEs when particular UEs are addressed); and
- dedicated transport channels (where the UEs are identified by the physical channel, i.e. code and frequency for FDD and code, time slot and frequency for TDD).

Common transport channel types are (a more detailed description can be found in [4]):

- **Random Access Channel (RACH)**

  A contention based uplink channel used for transmission of relatively small amounts of data, e.g. for initial access or non-real-time dedicated control or traffic data.

- **Common Packet Channel (CPCH)**

  A contention based channel used for transmission of bursty data traffic. This channel only exists in FDD mode and only in the uplink direction. The common packet channel is shared by the UEs in a cell and therefore, it is a common resource. The CPCH is fast power controlled.

- **Forward Access Channel (FACH)**

  Common downlink channel without closed-loop power control used for transmission of relatively small amount of data.

- **Downlink Shared Channel (DSCH)**

  A downlink channel shared by several UEs carrying dedicated control or traffic data, used in TDD mode only.

- **Uplink Shared Channel (USCH)**

  An uplink channel shared by several UEs carrying dedicated control or traffic data, used in TDD mode only.

- **Broadcast Channel (BCH)**

  A downlink channel used for broadcast of system information into an entire cell.

- **Paging Channel (PCH)**

  A downlink channel used for broadcast of control information into an entire cell allowing efficient UE sleep mode procedures. Currently identified information types are paging and notification. Another use could be UTRAN notification of change of BCCH information.

- **High Speed Downlink Shared Channel (HS-DSCH)**

A downlink channel shared between UEs by allocation of individual codes, from a common pool of codes assigned for the channel.

Dedicated transport channel types are:

- **Dedicated Channel (DCH)**

  A channel dedicated to one UE used in uplink or downlink.

To each transport channel, there is an associated Transport Format (for transport channels with a fixed or slow changing rate) or an associated Transport Format Set (for transport channels with fast changing rate). A Transport Format is defined as a combination of encodings, interleaving, bit rate and mapping onto physical channels (see [4] for details). A Transport Format Set is a set of Transport Formats. E.g., a variable rate DCH has a Transport Format Set (one Transport Format for each rate), whereas a fixed rate DCH has a single Transport Format.

5.2.2 L1 Functions

The physical layer performs the following main functions:

- Macrodiversity distribution/combining and soft handover execution;
- Error detection on transport channels and indication to higher layers;
- FEC encoding/decoding and interleaving/deinterleaving of transport channels;
- Multiplexing of transport channels and demultiplexing of coded composite transport channels;
- Rate matching;
- Mapping of coded composite transport channels on physical channels;
- Power weighting and combining of physical channels;
- Modulation and spreading/demodulation and despreading of physical channels;
- Frequency and time (chip, bit, slot, frame) synchronisation;
- Measurements and indication to higher layers (e.g. FER, SIR, interference power, transmit power, etc.);
- Closed-loop power control;
- RF processing;
- Support of timing advance on uplink channels (TDD only);
- Support of Uplink Synchronisation as defined in [12] (TDD only).

5.3 Layer 2 Services and Functions

5.3.1 MAC Services and Functions

This subclause provides an overview on services and functions provided by the MAC sublayer. A detailed description of the MAC protocol is given in [7].

5.3.1.1 MAC Services to upper layers

- **Data transfer**. This service provides unacknowledged transfer of MAC SDUs between peer MAC entities. This service does not provide any data segmentation. Therefore, segmentation/reassembly function should be achieved by upper layer.
- **Reallocation of radio resources and MAC parameters**. This service performs on request of RRC execution of radio resource reallocation and change of MAC parameters, i.e. reconfiguration of MAC functions such as

change of identity of UE, change of transport format (combination) sets, change of transport channel type. In TDD mode, in addition, the MAC can handle resource allocation autonomously.

- **Reporting of measurements**. Local measurements such as traffic volume and quality indication are reported to RRC.

5.3.1.1.1 Logical channels

The MAC layer provides data transfer services on logical channels. A set of logical channel types is defined for different kinds of data transfer services as offered by MAC. Each logical channel type is defined by what type of information is transferred.

A general classification of logical channels is into two groups:

- Control Channels (for the transfer of control plane information);
- Traffic Channels (for the transfer of user plane information).

The configuration of logical channel types is depicted in Figure 3.

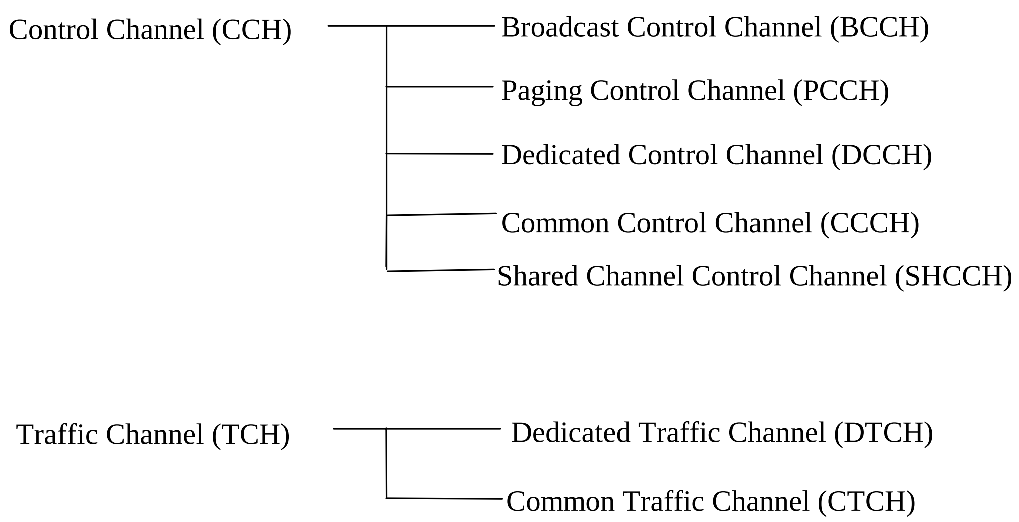


Figure 3: Logical channel structure

Control Channels

Control channels are used for transfer of control plane information only.

Broadcast Control Channel (BCCH)

A downlink channel for broadcasting system control information.

Paging Control Channel (PCCH)

A downlink channel that transfers paging information. This channel is used when the network does not know the location cell of the UE, or, the UE is in the cell connected state (utilising UE sleep mode procedures).

Common Control Channel (CCCH)

Bi-directional channel for transmitting control information between network and UEs. This channel is commonly used by the UEs having no RRC connection with the network and by the UEs using common transport channels when accessing a new cell after cell reselection.

Dedicated Control Channel (DCCH)

A point-to-point bi-directional channel that transmits dedicated control information between a UE and the network. This channel is established through RRC connection setup procedure.

Shared Channel Control Channel (SHCCH)

Bi-directional channel that transmits control information for uplink and downlink shared channels between network and UEs. This channel is for TDD only.

Traffic Channels

Traffic channels are used for the transfer of user plane information only.

Dedicated Traffic Channel (DTCH)

A Dedicated Traffic Channel (DTCH) is a point-to-point channel, dedicated to one UE, for the transfer of user information. A DTCH can exist in both uplink and downlink.

Common Traffic Channel (CTCH)

A point-to-multipoint unidirectional channel for transfer of dedicated user information for all or a group of specified UEs.

5.3.1.1.2 Mapping between logical channels and transport channels

5.3.1.1.2.1 Mapping in Uplink

In Uplink, the following connections between logical channels and transport channels exist:

- CCCH can be mapped to RACH;
- DCCH can be mapped to RACH;
- DCCH can be mapped to CPCH (in FDD mode only);
- DCCH can be mapped to DCH;
- DCCH can be mapped to USCH (in TDD mode only);
- DTCH can be mapped to RACH;
- DTCH can be mapped to CPCH (in FDD mode only);
- DTCH can be mapped to DCH;
- DTCH can be mapped to USCH (in TDD mode only);
- SHCCH can be mapped to RACH (in TDD mode only);
- SHCCH can be mapped to USCH (in TDD mode only).

5.3.1.1.2.2 Mapping in Downlink

In Downlink, the following connections between logical channels and transport channels exist:

- BCCH can be mapped to BCH;
- BCCH can be mapped to FACH;
- PCCH can be mapped to PCH;
- CCCH can be mapped to FACH;
- DCCH can be mapped to FACH;
- DCCH can be mapped to DSCH (in TDD mode only);
- DCCH can be mapped to HS-DSCH;
- DCCH can be mapped to DCH;

- DTCH can be mapped to FACH;
- DTCH can be mapped to DSCH (in TDD mode only);
- DTCH can be mapped to HS-DSCH;
- DTCH can be mapped to DCH;
- CTCH can be mapped to FACH;
- SHCCH can be mapped to FACH (in TDD mode only).
- SHCCH can be mapped to DSCH (in TDD mode only).

The mappings as seen from the UE and UTRAN sides are shown in Figure 4 and Figure 5 respectively.

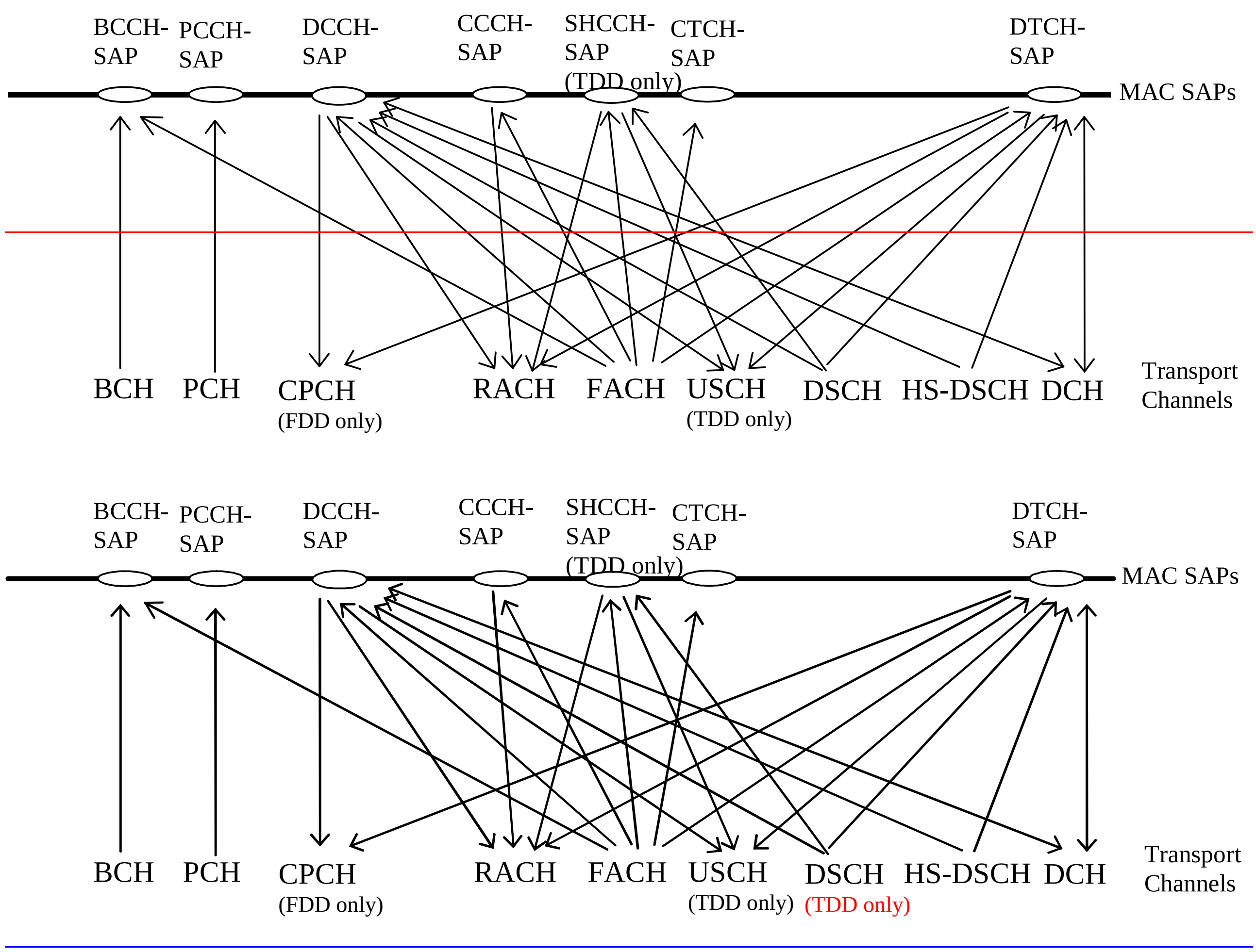
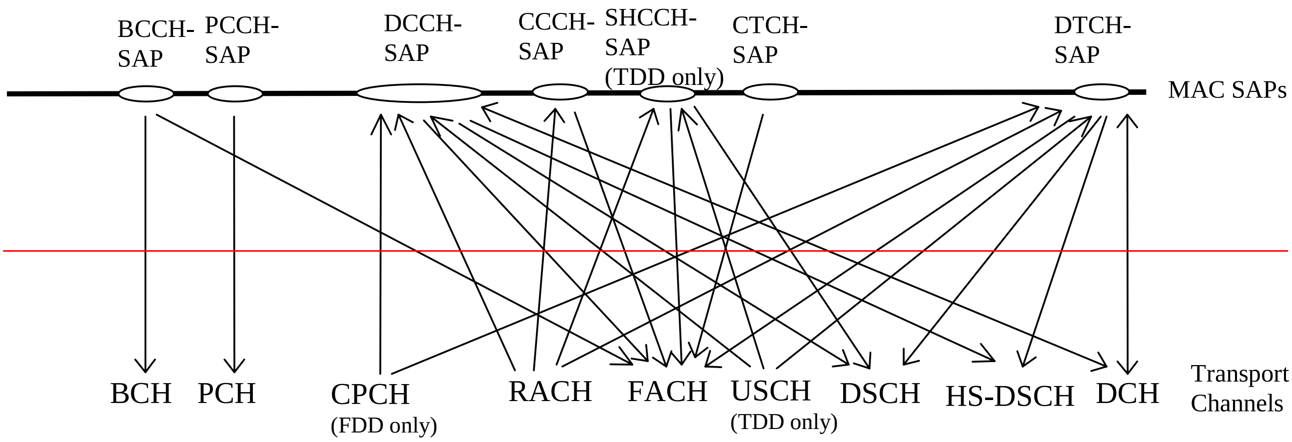


Figure 4: Logical channels mapped onto transport channels, seen from the UE side



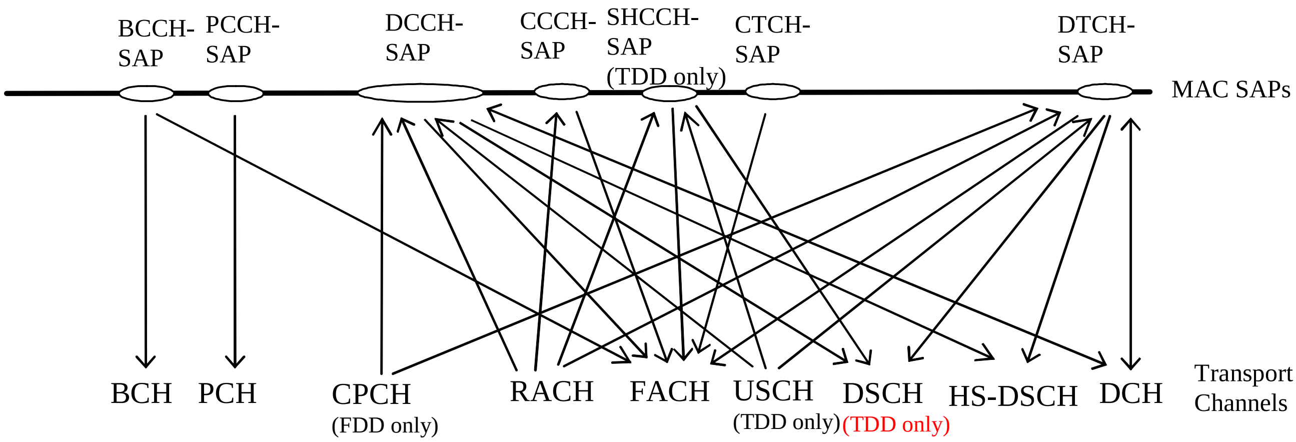


Figure 5: Logical channels mapped onto transport channels, seen from the UTRAN side

5.3.1.2 MAC functions

The functions of MAC include:

- **Mapping between logical channels and transport channels.** The MAC is responsible for mapping of logical channel(s) onto the appropriate transport channel(s).

- **Selection of appropriate Transport Format for each Transport Channel depending on instantaneous source rate**. Given the Transport Format Combination Set assigned by RRC, MAC selects the appropriate transport format within an assigned transport format set for each active transport channel depending on source rate**.** The control of transport formats ensures efficient use of transport channels.

- **Priority handling between data flows of one UE**. When selecting between the Transport Format Combinations in the given Transport Format Combination Set, priorities of the data flows to be mapped onto the corresponding Transport Channels can be taken into account. Priorities are e.g. given by attributes of Radio Bearer services and RLC buffer status. The priority handling is achieved by selecting a Transport Format Combination for which high priority data is mapped onto L1 with a "high bit rate" Transport Format, at the same time letting lower priority data be mapped with a "low bit rate" (could be zero bit rate) Transport Format. Transport format selection may also take into account transmit power indication from Layer 1.

- **Priority handling between UEs by means of dynamic scheduling**. In order to utilise the spectrum resources efficiently for bursty transfer, a dynamic scheduling function may be applied. MAC realises priority handling on common and shared transport channels. Note that for dedicated transport channels, the equivalent of the dynamic scheduling function is implicitly included as part of the reconfiguration function of the RRC sublayer.

NOTE: In the TDD mode the data to be transported are represented in terms of sets of resource units.

- **Identification of UEs on common transport channels**. When a particular UE is addressed on a common downlink channel, or when a UE is using the RACH, there is a need for inband identification of the UE. Since the MAC layer handles the access to, and multiplexing onto, the transport channels, the identification functionality is naturally also placed in MAC.

- **Multiplexing/demultiplexing of upper layer PDUs into/from transport blocks delivered to/from the physical layer on common transport channels**. MAC should support service multiplexing for common transport channels, since the physical layer does not support multiplexing of these channels.

- **Multiplexing/demultiplexing of upper layer PDUs into/from transport block sets delivered to/from the physical layer on dedicated transport channels**. The MAC allows service multiplexing for dedicated transport channels. This function can be utilised when several upper layer services (e.g. RLC instances) can be mapped efficiently on the same transport channel. In this case the identification of multiplexing is contained in the MAC protocol control information.

- **Traffic volume measurement**. Measurement of traffic volume on logical channels and reporting to RRC. Based on the reported traffic volume information, RRC performs transport channel switching decisions.

- **Transport Channel type switching.** Execution of the switching between common and dedicated transport channels based on a switching decision derived by RRC**.**

- **Ciphering**. This function prevents unauthorised acquisition of data. Ciphering is performed in the MAC layer for transparent RLC mode. Details of the security architecture are specified in [15].

- **Access Service Class selection for RACH and CPCH transmission**. The RACH resources (i.e. access slots and preamble signatures for FDD, timeslot and channelisation code for TDD) and CPCH resources (i.e. access slots and preamble signatures for FDD only) may be divided between different Access Service Classes in order to provide different priorities of RACH and CPCH usage. In addition it is possible for more than one ASC or for all ASCs to be assigned to the same access slot/signature space. Each access service class will also have a set of back-off parameters associated with it, some or all of which may be broadcast by the network. The MAC function applies the appropriate back-off and indicates to the PHY layer the RACH and CPCH partition associated to a given MAC PDU transfer.

- **HARQ functionality for HS-DSCH transmission**. The MAC-hs entity is responsible for establishing the HARQ entity in accordance with the higher layer configuration and handling all the tasks required to perform HARQ functionality. This functionality ensures delivery between peer entities by use of the ACK and NACK signalling between the peer entities.

- **In-sequence delivery and assembly/disassembly of higher layer PDUs on HS-DSCH**. The transmitting MAC-hs entity assembles the data block payload for the MAC-hs PDUs from the delivered MAC-d PDUs. The MAC-d PDUs that are assembled in any one MAC-hs PDU are the same priority, and from the same MAC-d flow. The receiving MAC-hs entity is then responsible for the reordering of the received data blocks according to the received TSN, per priority and MAC-d flow, and then disassembling the data block into MAC-d PDUs for in-sequence delivery to the higher layers.

5.3.2 RLC Services and Functions

This subclause provides an overview on services and functions provided by the RLC sublayer. A detailed description of the RLC protocol is given in [8].

5.3.2.1 Services provided to the upper layer

- **Transparent data transfer**. This service transmits upper layer PDUs without adding any protocol information, possibly including segmentation/reassembly functionality.

- **Unacknowledged data transfer**. This service transmits upper layer PDUs without guaranteeing delivery to the peer entity. The unacknowledged data transfer mode has the following characteristics:

  - Detection of erroneous data: The RLC sublayer shall deliver only those SDUs to the receiving upper layer that are free of transmission errors by using the sequence-number check function.

- Immediate delivery: The receiving RLC sublayer entity shall deliver a SDU to the upper layer receiving entity as soon as it arrives at the receiver.

- **Acknowledged data transfer**. This service transmits upper layer PDUs and guarantees delivery to the peer entity. In case RLC is unable to deliver the data correctly, the user of RLC at the transmitting side is notified. For this service, both in-sequence and out-of-sequence delivery are supported. In many cases a upper layer protocol can restore the order of its PDUs. As long as the out-of-sequence properties of the lower layer are known and controlled (i.e. the upper layer protocol will not immediately request retransmission of a missing PDU) allowing out-of-sequence delivery can save memory space in the receiving RLC. The acknowledged data transfer mode has the following characteristics:

  - Error-free delivery: Error-free delivery is ensured by means of retransmission. The receiving RLC entity delivers only error-free SDUs to the upper layer.

  - Unique delivery: The RLC sublayer shall deliver each SDU only once to the receiving upper layer using duplication detection function.

  - In-sequence delivery: RLC sublayer shall provide support for in-order delivery of SDUs, i.e., RLC sublayer should deliver SDUs to the receiving upper layer entity in the same order as the transmitting upper layer entity submits them to the RLC sublayer.

  - Out-of-sequence delivery: Alternatively to in-sequence delivery, it shall also be possible to allow that the receiving RLC entity delivers SDUs to upper layer in different order than submitted to RLC sublayer at the transmitting side.

- **Maintenance of QoS as defined by upper layers.** The retransmission protocol shall be configurable by layer 3 to provide different levels of QoS. This can be controlled.

- **Notification of unrecoverable errors**. RLC notifies the upper layer of errors that cannot be resolved by RLC itself by normal exception handling procedures, e.g. by adjusting the maximum number of retransmissions according to delay requirements.

For AM RLC, there is only one RLC entity per Radio Bearer. For UM and TM RLC, there is one or two (one for each direction) RLC entities per Radio Bearer.

5.3.2.2 RLC Functions

- **Segmentation and reassembly.** This function performs segmentation/reassembly of variable-length upper layer PDUs into/from smaller RLC PDUs. The RLC PDU size is adjustable to the actual set of transport formats.

- **Concatenation.** If the contents of an RLC SDU cannot be carried by one RLC PDU, the first segment of the next RLC SDU may be put into the RLC PDU in concatenation with the last segment of the previous RLC SDU.

- **Padding.** When concatenation is not applicable and the remaining data to be transmitted does not fill an entire RLC PDU of given size, the remainder of the data field shall be filled with padding bits.

- **Transfer of user data.** This function is used for conveyance of data between users of RLC services. RLC supports acknowledged, unacknowledged and transparent data transfer. QoS setting controls transfer of user data.

- **Error correction.** This function provides error correction by retransmission (e.g. Selective Repeat, Go Back N, or a Stop-and-Wait ARQ) in acknowledged data transfer mode.

- **In-sequence delivery of upper layer PDUs**. This function preserves the order of upper layer PDUs that were submitted for transfer by RLC using the acknowledged data transfer service. If this function is not used, out-of-sequence delivery is provided.

- **Duplicate Detection.** This function detects duplicated received RLC PDUs and ensures that the resultant upper layer PDU is delivered only once to the upper layer.

- **Flow control**. This function allows an RLC receiver to control the rate at which the peer RLC transmitting entity may send information.

- **Sequence number check.** This function is used in unacknowledged mode and guarantees the integrity of reassembled PDUs and provides a mechanism for the detection of corrupted RLC SDUs through checking sequence number in RLC PDUs when they are reassembled into a RLC SDU. A corrupted RLC SDU will be discarded.

- **Protocol error detection and recovery**. This function detects and recovers from errors in the operation of the RLC protocol.
- **Ciphering**. This function prevents unauthorised acquisition of data. Ciphering is performed in RLC layer for non-transparent RLC mode. Details of the security architecture are specified in [15].
- **SDU discard**. This function allows an RLC transmitter to discharge RLC SDU from the buffer.

5.3.3 PDCP Services and Function

This subclause provides an overview on services and functions provided by the Packet Data Convergence Protocol (PDCP). A detailed description of the PDCP is given in [10].

5.3.3.1 PDCP Services provided to upper layers

- PDCP SDU delivery.

5.3.3.2 PDCP Functions

- **Header compression and decompression.** Header compression and decompression of IP data streams (e.g., TCP/IP and RTP/UDP/IP headers) at the transmitting and receiving entity, respectively. The header compression method is specific to the particular network layer, transport layer or upper layer protocol combinations e.g. TCP/IP and RTP/UDP/IP.
- **Transfer of user data.** Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa.
- **Support for lossless SRNS relocation or lossless DL RLC PDU size change.** Maintenance of PDCP sequence numbers for radio bearers that are configured to support lossless SRNS relocation or lossless DL RLC PDU size change.

5.3.4 Broadcast/Multicast Control - Services and functions

This subclause provides an overview on services and functions provided by the BMC sublayer. A detailed description of the BMC protocol is given in [10].

5.3.4.1 BMC Services

The BMC-SAP provides a broadcast/multicast transmission service in the user plane on the radio interface for common user data in unacknowledged mode.

5.3.4.2 BMC Functions

- **Storage of Cell Broadcast Messages.**
  The BMC stores the Cell Broadcast messages received over the CBC-RNC interface for scheduled transmission.
- **Traffic volume monitoring and radio resource request for CBS.**
  At the UTRAN side, the BMC calculates the required transmission rate for Cell Broadcast Service based on the messages received over the CBC-RNC interface, and requests for appropriate CTCH/FACH resources from RRC.
- **Scheduling of BMC messages.**
  The BMC receives scheduling information together with each Cell Broadcast message over the CBC-RNC-interface. Based on this scheduling information, at the UTRAN side, BMC generates schedule messages and schedules BMC message sequences accordingly. At the UE side, BMC evaluates the schedule messages and indicates scheduling parameters to RRC, which are used by RRC to configure the lower layers for CBS discontinuous reception.

- **Transmission of BMC messages to UE.**
  This function transmits the BMC messages (Scheduling and Cell Broadcast messages) according to schedule.

- **Delivery of Cell Broadcast messages to upper layer (NAS).**
  This functions delivers the received Cell Broadcast messages to upper layer (NAS) in the UE. Only non-corrupted Cell Broadcast messages are delivered.

5.3.5 Data flows through Layer 2

Data flows through layer 2 are characterised by the applied data transfer modes on RLC (acknowledged, unacknowledged and transparent transmission) in combination with the data transfer type on MAC, i.e. whether or not a MAC header is required. The case where no MAC header is required is referred to as "transparent" MAC transmission. Acknowledged and unacknowledged RLC transmissions both require a RLC header. In unacknowledged transmission, only one type of unacknowledged data PDU is exchanged between peer RLC entities. In acknowledged transmission, both (acknowledged) data PDUs and control PDUs are exchanged between peer RLC entities.

The resulting different data flow cases are illustrated in Figures 6 - 9. On the level of detail presented here, differences between acknowledged and unacknowledged RLC transmission are not visible. Acknowledged and unacknowledged RLC transmission is shown as one case, referred to as non-transparent RLC.

NOTE: The term "transparent transmission" is used here to characterise the case where a protocol, MAC or RLC, does not require any protocol control information (e.g. header). In transparent transmission mode, however, some protocol functions may still be applied. In this case an entity of the respective protocol must be present even when the protocol is transparent. For the RLC protocol the segmentation/reassembly function may be applied. This can be performed without segmentation header when a given higher layer PDU fits into a fixed number of RLC PDUs to be transferred in a given transmission time interval. In this case segmentation/reassembly follows predefined rules known to sending and receiving RLC entities. For instance in the user plane, the segmentation/reassembly function is needed for the case of real-time services using high and possibly variable bit rates. For such services higher layer PDUs shall be segmented into reasonably sized RLC PDUs of fixed length allowing efficient FCS error detection on the physical layer. The higher layer PDU can be reassembled by simply concatenating all RLC PDUs included in a transport block set as implied by the used transport format.

Figure 6 and Figure 7 illustrate the data flows for transparent RLC with transparent and non-transparent MAC transmission, respectively.

Figure 8 and Figure 9 illustrate the data flows for non-transparent RLC with transparent and non-transparent MAC transmission, respectively.

A number of MAC PDUs shown in the figures shall comprise a transport block set. Note, however, that in all cases a transport block set must not necessarily match with a RLC SDU. The span of a transport block set can be smaller or larger than an RLC SDU.

Each mapping between a logical channel and a transport channel as defined in Figure 4 and Figure 5 in combination with the respective RLC transmission mode implies a certain data flow that is specified on a general level in the following.

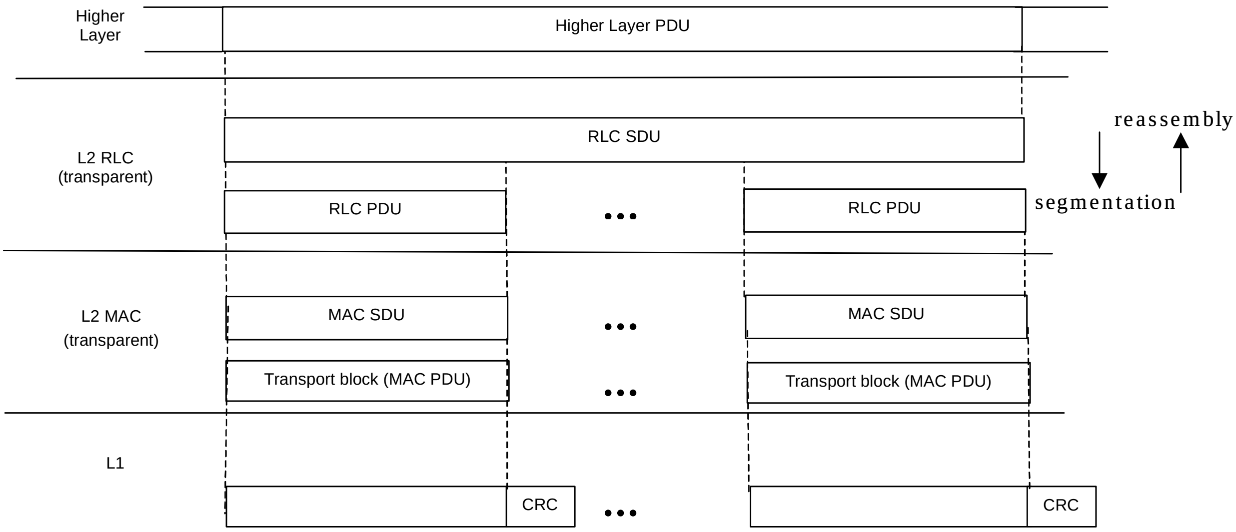


Figure 6: Data flow for transparent RLC and MAC

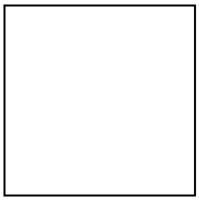


Figure 7: Data flow for transparent RLC and non-transparent MAC

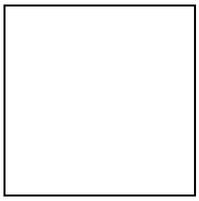


Figure 8: Data flow for non-transparent RLC and transparent MAC

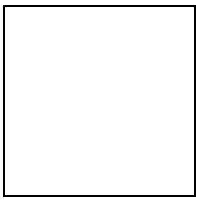


Figure 9: Data flow for non-transparent RLC and MAC

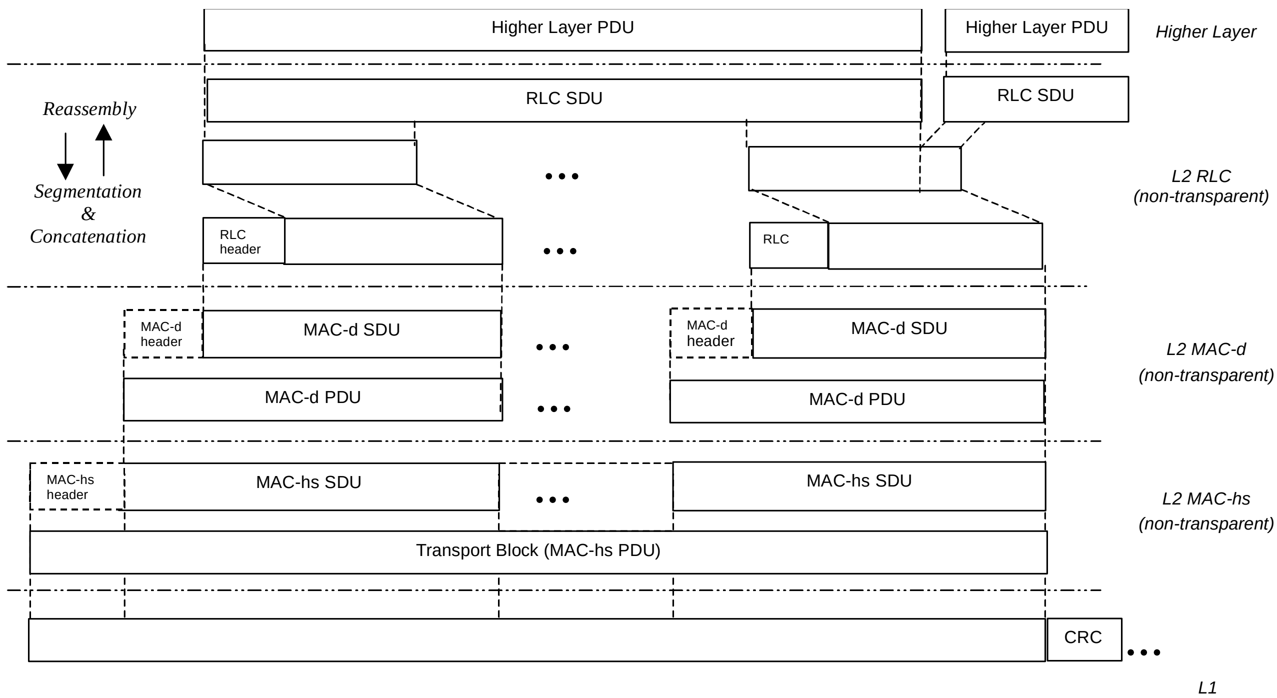


Figure 9a: Data flow for non-transparent RLC and MAC mapped to HS-DSCH

5.3.5.1 Data flow for BCCH mapped to BCH

All RRC PDUs transmitted on BCCH have a fixed length and fit into one RLC PDU (and, equivalently, MAC PDU, as defined by the transport format). No RLC header is needed, i.e. the transparent data transfer mode of RLC is applied.

No MAC header is needed since only one BCCH logical channel is mapped onto a BCH. Figure 6 is applicable.

5.3.5.2 Data flow for BCCH mapped to FACH

No RLC header is needed, i.e. the transparent data transfer mode of RLC is applied. A MAC header is required for identification of the logical channel carried by the FACH. The data flow shown in Figure 7 is applicable.

5.3.5.3 Data flow for PCCH mapped to PCH

No RLC or MAC header is needed, i.e. the data flow in Figure 6 is applicable.

5.3.5.4 Data flow for CCCH mapped to FACH/RACH

For CCCH, transparent transmission mode on RLC is employed on the uplink (when mapped to RACH). Unacknowledged transmission mode on RLC is employed on the downlink (when mapped to FACH). A MAC header is used for logical channel identification (CCCH, CTCH, SHCCH, DCCH, DTCH). If the transparent RLC transfer mode is applied, the data flow Figure 7 is applicable. If the unacknowledged RLC transfer mode is applied, the data flow Figure 9 is applicable.

5.3.5.5 Data flow for SHCCH mapped to USCH

For SHCCH mapped on USCH, transparent transmission mode on RLC is employed. A MAC header may be used for logical channel identification (SHCCH, DCCH, DTCH). When no MAC header is used, SHCCH must be the only channel mapped to USCH/DSCH. Depending on whether the MAC header is needed or not, either the data flow Figure 6 or Figure 7 is applicable.

5.3.5.6 Data flow for SHCCH mapped to FACH/RACH

For SHCCH, transparent transmission mode on RLC is employed on the uplink (when mapped to RACH). Unacknowledged transmission mode on RLC is employed on the downlink (when mapped to FACH). A MAC header may be used for logical channel identification (CCCH, CTCH, SHCCH, DCCH, DTCH). When no MAC header is used, SHCCH must be the only channel mapped to RACH/FACH. If the transparent RLC transfer mode is applied, depending on whether the MAC header is needed or not, either the data flow Figure 6 or Figure 7 is applicable. If the unacknowledged RLC transfer mode is applied, depending on whether the MAC header is needed or not, either the data flow Figure 8 or Figure 9 is applicable.

5.3.5.7 Data flow for DCCH mapped to FACH/RACH

For DCCH, both unacknowledged and acknowledged transmission mode on RLC is employed. A MAC header is mandatory for FACH/RACH carrying DCCH. The data flow shown in Figure 9 is applicable.

5.3.5.8 Data flow for DCCH mapped to DSCH

For DCCH, both unacknowledged and acknowledged transmission mode on RLC is employed. A ~~MAC header is mandatory when DCCH is mapped to a DSCH for FDD mode, i.e. the data flow in Figure 9 is applicable. For TDD a~~ MAC header is optional, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.9 Data flow for DCCH mapped to USCH

For DCCH, both unacknowledged and acknowledged transmission mode on RLC is employed. A MAC header is needed if DCCH and DTCH logical channels are multiplexed in MAC before mapping to a USCH, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.10 Data flow for DCCH mapped to CPCH

For DCCH mapped to CPCH, unacknowledged or acknowledged transmission modes on RLC are employed. The MAC header is needed for logical channel service multiplexing. Figure 9 is the applicable data flow to this case.

5.3.5.11 Data flow for DTCH (non-transparent RLC) mapped to FACH/RACH

Mapping to FACH/RACH implies a DTCH with acknowledged or unacknowledged transmission on RLC. A MAC header is mandatory for FACH/RACH when carrying DTCH. The data flow shown in Figure 9 is applicable.

5.3.5.12 Data flow for DTCH (non-transparent RLC) mapped to DSCH

Mapping to DSCH implies a DTCH with acknowledged or unacknowledged transmission on RLC. A ~~MAC header is mandatory when DTCH is mapped to a DSCH in FDD mode, i.e. the data flow in Figure 9 is applicable. In TDD mode a~~ MAC header is optional, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.13 Data flow for DTCH (non-transparent RLC) mapped to USCH

Mapping to USCH implies a DTCH with acknowledged or unacknowledged transmission on RLC. A MAC header is needed if DCCH and DTCH logical channels are multiplexed in MAC before mapping to a USCH, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.14 Data flow for DTCH (transparent RLC) mapped to DCH

Continuous DTCH data stream is segmented into transport blocks on RLC and mapped on a DCH transport channel on MAC. The transport block size is naturally implied by the data rate. Both RLC and MAC sublayers are transparent, i.e. no protocol control information is added, when no multiplexing of DTCH on MAC is applied. The data flow shown in Figure 6 is applicable. If multiplexing on MAC is performed, a MAC header is needed, and Figure 7 applies.

5.3.5.15 Data flow for DTCH (non-transparent RLC) mapped to DCH

In this case acknowledged or unacknowledged transmission on RLC is applied. A MAC header is needed only if multiple DTCH logical channels are multiplexed in MAC before mapping to a DCH, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.16 Data flow for DTCH (non-transparent RLC) mapped to CPCH.

This case requires both non-transparent RLC and MAC operations. The data flow shown in Figure 9 is applicable.

5.3.5.17 Data flow for DCCH mapped to DCH

In this case non-transparent or transparent transmission mode on RLC is applied. A MAC header is needed only if DCCH and DTCH logical channels are multiplexed in MAC before mapping to a DCH, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.18 Data flow for CTCH mapped to FACH

For CTCH, unacknowledged transmission mode on RLC is employed. A MAC header is used for logical channel identification (CCCH, CTCH, DCCH, DTCH). The data flow shown in Figure 9 is applicable.

5.3.5.19 Data flow for DCCH mapped to HS-DSCH (TDD only)

For DCCH, both unacknowledged and acknowledged transmission mode on RLC is employed. A MAC header is mandatory when the DCCH is mapped to the HS-DSCH, i.e. the data flow in figure 9a is applicable.

5.3.5.20 Data flow for DTCH (non-transparent RLC) mapped to HS-DSCH

Mapping to HS-DSCH implies a DTCH with acknowledged or unacknowledged transmission on RLC. A MAC header is mandatory when the DCCH is mapped to the HS-DSCH, i.e. the data flow in figure 9a is applicable.

5.3.6 Transport Channel, Logical Channel and MAC-d flow Numbering

The UE model for transport channel and logical channel numbering is defined by the following:

- For FACH transport channels:
  - A transport channel identity is associated with each FACH transport channel. Each identity is unique within the downlink FACHs mapped onto the same physical channel.
  - Transport channel identities can be allocated non sequentially.
  - Transport channel identity is not used to determine the radio bearer mapping. The transport channels that can be used are determined from the available physical channels.
  - Each downlink DCCH and DTCH has a unique logical channel identity.
- For RACH and CPCH transport channels:
  - A transport channel identity is associated with each RACH transport channel. Each identity is unique within the RACHs mapped onto the same PRACH.
  - A transport channel identity is associated with each CPCH transport channel. Each identity is unique within the CPCHs mapped onto the same CPCH set.
  - Transport channel identities can be allocated non sequentially.
  - Transport channel identity is not used to determine the radio bearer mapping. The transport channels that can be used are determined from the available physical channels.
  - Each uplink DCCH and DTCH has a unique logical channel identity.

- For downlink DCH and DSCH transport channels:
  - A transport channel identity is associated with each downlink DCH transport channel. Each identity is unique within the downlink DCHs configured in the UE;
  - Transport channel identities can be allocated non sequentially.
  - A transport channel identity is associated with each DSCH transport channel. Each identity is unique within the DSCHs configured in the UE;
  - A logical channel identity is associated with each logical channel that is multiplexed with other logical channels before being mapped to a transport channel. Each identity is unique within the logical channels mapped to the same transport channel.
  - A logical channel that is mapped to DCH and DSCH simultaneously in TDD has one logical channel identity.
- For HS-DSCH:
  - A MAC-flow identity is associated with each MAC-d flow. Each identity is unique within the MAC-d flows configured in the UE;
  - A logical channel identity is associated with each logical channel that is multiplexed with other logical channels before being mapped to a MAC-d flow. Each identity is unique within the logical channels mapped to the same MAC-d flow.

    A logical channel that is mapped to DCH and HS-DSCH simultaneously has one logical channel identity.
- For uplink DCH and USCH transport channels:
  - A transport channel identity is associated with each uplink DCH transport channel. Each identity is unique within the uplink DCHs configured in the UE;
  - Transport channel identities can be allocated non sequentially.
  - A transport channel identity is associated with each USCH transport channel. Each identity is unique within the USCHs configured in the UE;
  - A logical channel identity is associated with each logical channel that is multiplexed with other logical channels before being mapped to a transport channel. Each identity is unique within the logical channels mapped to the same transport channel.

5.4 Layer 3 - Uu Stratum Services and Functions

This subclause provides an overview on Layer 3 services and functions provided by the Uu Stratum as a whole. A detailed description of the RRC protocol is given in [11]. Examples of structured procedures involving RRC in Idle Mode and Connected Mode are described in [5] and [6], respectively.

5.4.1 Uu Stratum services

5.4.1.1 General Control

The GC SAP provides an information broadcast service. This service broadcasts information to all UEs in a certain geographical area. The basic requirements from such service are:

- It should be possible to broadcast non-access stratum information in a certain geographical area.
- The information is transferred on an unacknowledged mode link. Unacknowledged mode means that the delivery of the broadcast information can not be guaranteed (typically no retransmission scheme is used). It seems reasonable to use an unacknowledged mode link since the information is broadcast to a lot of UEs and since broadcast information often is repeated periodically.

- It should be possible to do repeated transmissions of the broadcast information (how it is repeated is controlled by the non-access stratum).
- The point where the UE received the broadcast information should be included, when the access stratum delivers broadcast information to the non-access stratum.

5.4.1.2 Notification

The Nt SAP provides paging and notification broadcast services. The paging service sends information to a specific UE(s). The information is broadcast in a certain geographical area but addressed to a specific UE(s). The basic requirements from such service are:

- It should be possible to broadcast paging information to a number of UEs in a certain geographical area.
- The information is transferred on an unacknowledged mode link. It is assumed that the protocol entities in non-access stratum handle any kind of retransmission of paging information.

The notification broadcast service broadcasts information to all UEs in a certain geographical. The basic requirements from this service are typically the same as for the information broadcast service of the GC SAP:

- It should be possible to broadcast notification information in a certain geographical area.
- The information is transferred on an unacknowledged mode link.

5.4.1.3 Dedicated Control

The DC SAP provides services for establishment/release of a connection and transfer of messages using this connection. It should also be possible to transfer a message during the establishment phase. The basic requirements from the establishment/release services are:

- It should be possible to establish connections (both point and group connections).
- It should be possible to transfer an initial message during the connection establishment phase. This message transfer has the same requirements as the information transfer service.
- It should be possible to release connections.

The information transfer service sends a message using the earlier established connection. According to [1] it is possible to specify the quality of service requirements for each message. A finite number of quality of service classes will be specified in [1], but currently no class has been specified. In order to get an idea of the basic requirements, the CC and MM protocols in GSM are used as a reference. A GSM based core network is chosen since it is one main option for UMTS. Considering the existing GSM specification of CC and MM the basic requirements from the information transfer service provided by the 'Duplication avoidance' function are (these are some of the services provided by the combination of a duplication layer, RR and the data link layer in GSM):

- In-sequence transfer of messages
  Messages are delivered to the NAS on the receiver side exactly in the order they have been submitted by the NAS on the sending side, without loss or duplication, except possibly for the loss of last messages in case of connection abortion.
- Priority handling
  If SMS messages should be transported through the control plane it should be possible to give higher priority to signalling messages.

The CC and MM protocols also expect other services, which can not be supported by the current primitives of the DC SAP, e.g. indication of radio link failure.

The information transfer service is provided by a combination of the services provided by the data link layer, RNC and the 'Duplication avoidance' function.

5.4.2 RRC functions

The Radio Resource Control (RRC) layer handles the control plane signalling of Layer 3 between the UEs and UTRAN. The RRC performs the following functions:

- **Broadcast of information provided by the non-access stratum (Core Network).** The RRC layer performs system information broadcasting from the network to all UEs. The system information is normally repeated on a regular basis. The RRC layer performs the scheduling, segmentation and repetition. This function supports broadcast of higher layer (above RRC) information. This information may be cell specific or not. As an example RRC may broadcast Core Network location service area information related to some specific cells.

- **Broadcast of information related to the access stratum.** The RRC layer performs system information broadcasting from the network to all UEs. The system information is normally repeated on a regular basis. The RRC layer performs the scheduling, segmentation and repetition. This function supports broadcast of typically cell-specific information.

- **Establishment, re-establishment, maintenance and release of an RRC connection between the UE and UTRAN.** The establishment of an RRC connection is initiated by a request from higher layers at the UE side to establish the first Signalling Connection for the UE. The establishment of an RRC connection includes an optional cell re-selection, an admission control, and a layer 2 signalling link establishment. The release of an RRC connection can be initiated by a request from higher layers to release the last Signalling Connection for the UE or by the RRC layer itself in case of RRC connection failure. In case of connection loss, the UE requests re-establishment of the RRC connection. In case of RRC connection failure, RRC releases resources associated with the RRC connection.

- **Establishment, reconfiguration and release of Radio Bearers.** The RRC layer can, on request from higher layers, perform the establishment, reconfiguration and release of Radio Bearers in the user plane. A number of Radio Bearers can be established to an UE at the same time. At establishment and reconfiguration, the RRC layer performs admission control and selects parameters describing the Radio Bearer processing in layer 2 and layer 1, based on information from higher layers.

- **Assignment, reconfiguration and release of radio resources for the RRC connection.** The RRC layer handles the assignment of radio resources (e.g. codes, CPCH channels) needed for the RRC connection including needs from both the control and user plane. The RRC layer may reconfigure radio resources during an established RRC connection. This function includes coordination of the radio resource allocation between multiple radio bearers related to the same RRC connection. RRC controls the radio resources in the uplink and downlink such that UE and UTRAN can communicate using unbalanced radio resources (asymmetric uplink and downlink). RRC signals to the UE to indicate resource allocations for purposes of handover to GSM or other radio systems.

- **RRC connection mobility functions.** The RRC layer performs evaluation, decision and execution related to RRC connection mobility during an established RRC connection, such as handover, preparation of handover to GSM or other systems, cell re-selection and cell/paging area update procedures, based on e.g. measurements done by the UE**.**

- **Paging/notification.** The RRC layer can broadcast paging information from the network to selected UEs. Higher layers on the network side can request paging and notification. The RRC layer can also initiate paging during an established RRC connection.

- **Routing of higher layer PDUs.** This function performs at the UE side routing of higher layer PDUs to the correct higher layer entity, at the UTRAN side to the correct RANAP entity.

- **Control of requested QoS**. This function shall ensure that the QoS requested for the Radio Bearers can be met. This includes the allocation of a sufficient number of radio resources.

- **UE measurement reporting and control of the reporting.** The measurements performed by the UE are controlled by the RRC layer, in terms of what to measure, when to measure and how to report, including both UMTS air interface and other systems. The RRC layer also performs the reporting of the measurements from the UE to the network.

- **Outer loop power control.** The RRC layer controls setting of the target of the closed loop power control.

- **Control of ciphering.** The RRC layer provides procedures for setting of ciphering (on/off) between the UE and UTRAN. Details of the security architecture are specified in [15].

- **Slow DCA**. Allocation of preferred radio resources based on long-term decision criteria. It is applicable only in TDD mode.

- **Arbitration of radio resources on uplink DCH**. This function controls the allocation of radio resources on uplink DCH on a fast basis, using a broadcast channel to send control information to all involved users.

NOTE: This function is implemented in the CRNC.

- **Initial cell selection and re-selection in idle mode.** Selection of the most suitable cell based on idle mode measurements and cell selection criteria.

- **Integrity protection.** This function adds a Message Authentication Code (MAC-I) to those RRC messages that are considered sensitive and/or contain sensitive information. The mechanism how the MAC-I is calculated is described in [14].

- **Initial Configuration for CBS**
  This function performs the initial configuration of the BMC sublayer.

- **Allocation of radio resources for CBS**
  This function allocates radio resources for CBS based on traffic volume requirements indicated by BMC. The radio resource allocation set by RRC (i.e. the schedule for mapping of CTCH onto FACH/S-CCPCH) is indicated to BMC to enable generation of schedule messages. The resource allocation for CBS shall be broadcast as system information.

- **Configuration for CBS discontinuous reception**
  This function configures the lower layers (L1, L2) of the UE when it shall listen to the resources allocated for CBS based on scheduling information received from BMC.

- **Timing advance control.** The RRC controls the operation of timing advance. It is applicable only in 3.84 Mcps TDD.

5.5 Interactions between RRC and lower layers in the C plane

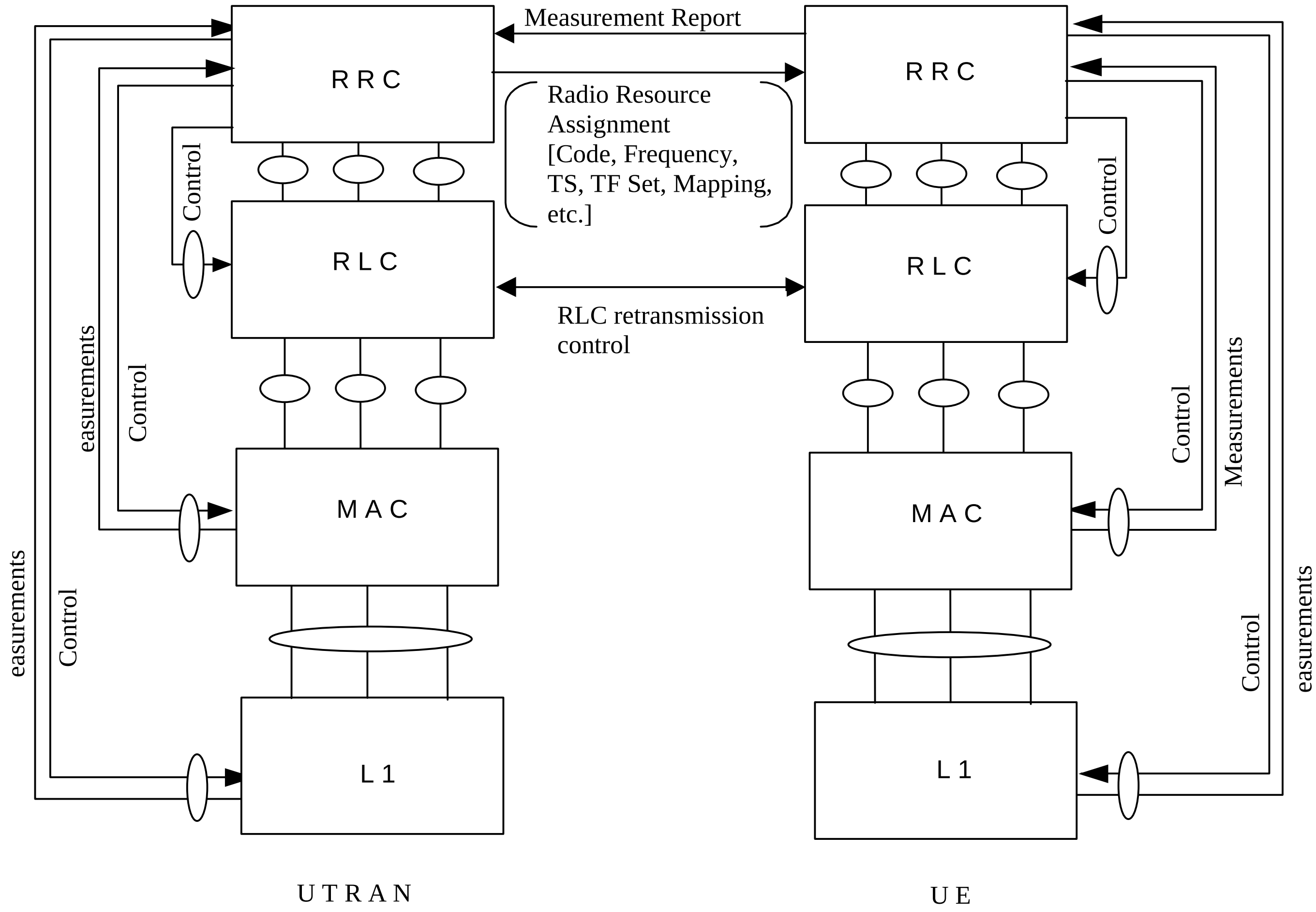


Figure 10: Interactions between RRC and lower layers

The RRC protocol controls and signals the allocation of radio resources to the UE. RRC allows MAC to arbitrate between users and Radio Bearers within the radio resource allocation. The RRC uses the measurements done by the lower layers to determine which radio resources that are available. Therefore it is a need for a measurement report from the UE RRC to the UTRAN RRC. Figure 10 illustrates the principle. The local control and local measurements reporting is handled through the control SAPs between RRC and the lower layers.

5.6 Protocol termination

This subclause specifies in which node of the UTRAN the radio interface protocols are terminated, i.e. where within UTRAN the respective protocol services are accessible. Dashed lines indicate those protocols whose presence is dependent on the service provided to upper layers.

5.6.1 Protocol termination for DCH

Figure 11 and Figure 12 show the protocol termination for DCH for the control and user planes, respectively. The part of physical layer terminating in the Serving RNC is the topmost macro-diversity combining and splitting function for the FDD mode. If no macrodiversity applies, the physical layer is terminated in Node B.

Figure 11: Protocol Termination for DCH, control plane

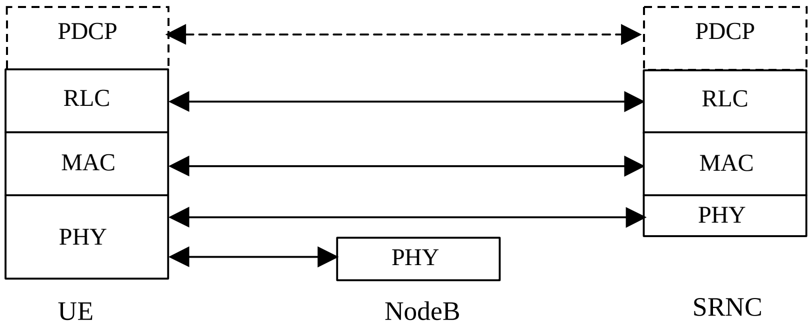


Figure 12: Protocol Termination for DCH, user plane

5.6.2 Protocol termination for RACH/FACH

Figure 13 and Figure 14 show the protocol termination for RACH/FACH for the control and user planes, respectively. Control plane termination refers to the case where RACH/FACH carry dedicated, common or shared control information (i.e. CCCH, DCCH or SHCCH, and in the downlink possibly also BCCH). User plane termination refers to the case where RACH/FACH carry dedicated user data (DTCH) or common user data (CTCH).

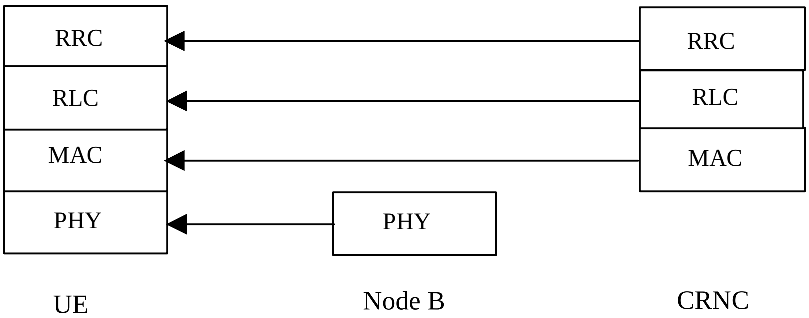
It is assumed that macrodiversity/soft handover is not applied for RACH/FACH. Therefore, the physical layer terminates in Node B. For RACH/FACH carrying DCCH, MAC is split between Controlling and Serving RNC. RLC, and in the C plane also RRC terminate in the Serving RNC. Since Iur can support common channel data streams, the users of that common channel can depend on different SRNCs. However, they depend on the same Controlling RNC. Therefore, for a given user, the Controlling RNC and the Serving RNC can be separate RNCs.

For FACH carrying BCCH, MAC, RLC and RRC are terminated in the CRNC.

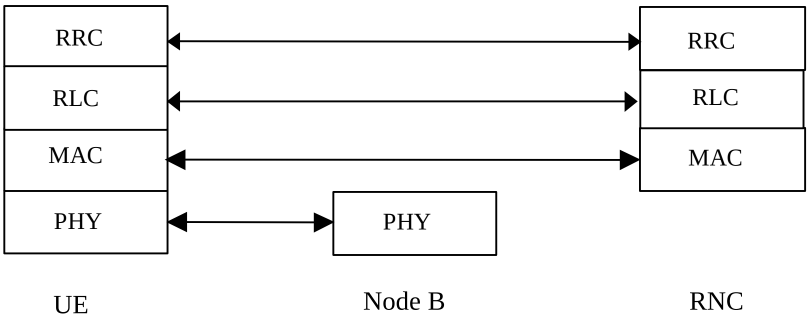
For RACH/FACH carrying SHCCH, MAC, RLC and RRC are terminated in the Controlling RNC (TDD only).

For RACH/FACH carrying CCCH, MAC, RLC and RRC are terminated in the RNC.

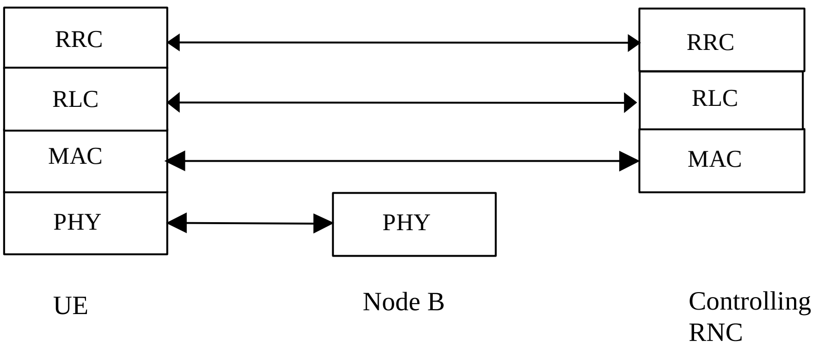
BCCH :



CCCH :



SHCCH:
(TDD only)



DCCH:

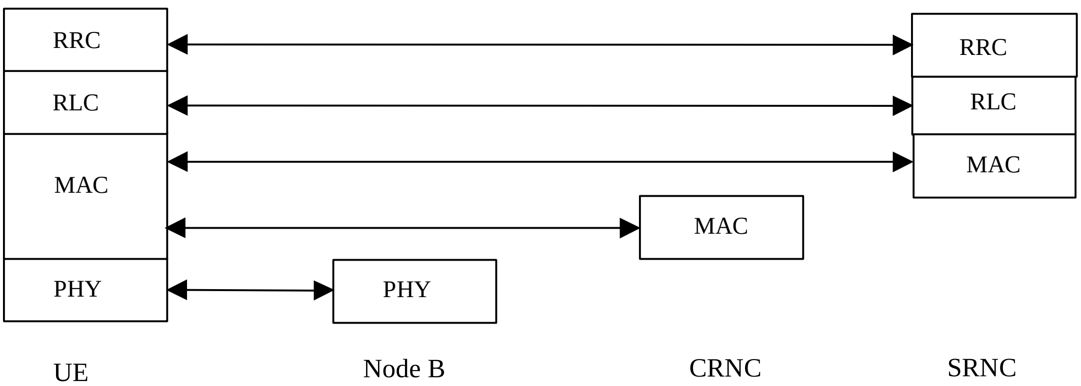
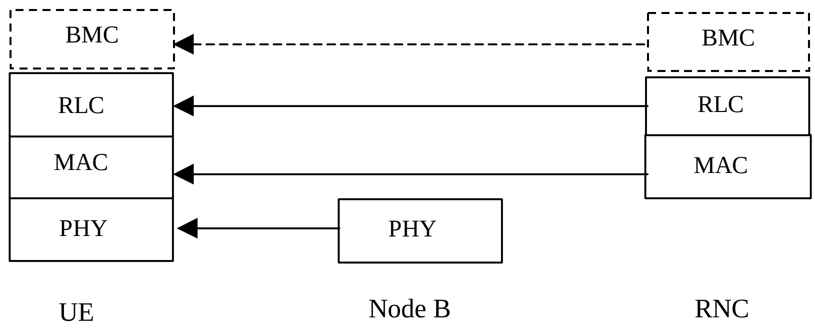


Figure 13: Protocol Termination for RACH/FACH, control plane

CTCH:



DTCH:

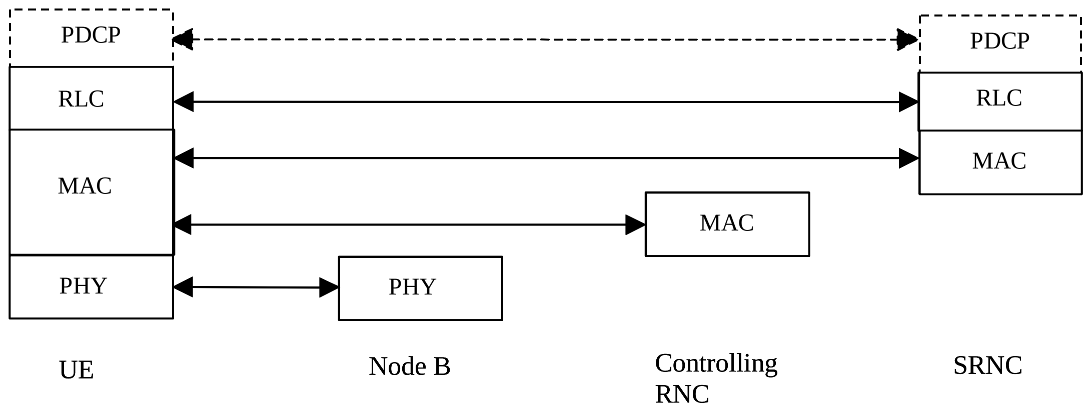


Figure 14: Protocol Termination for RACH/FACH, user plane

5.6.3 Void

5.6.4 Protocol termination for CPCH

The protocol termination for CPCH is identical to the termination for RACH. Figure 13 (for DCCH) presents the control plane protocol termination. Figure 14 presents the user plane protocol termination.

5.6.5 Protocol termination for DSCH

5.6.5.1 DSCH definition

The DSCH is only supported for TDD. The DSCH is a resource that exists in downlink only. It has only impact on the physical and transport channel levels, so there is no definition of shared channel in the logical channels provided by MAC.

The DSCH is a transport channel shared dynamically between several UEs. The DSCH is mapped to one or several physical channels such that a specified part of the downlink resources is employed. For the DSCH no macrodiversity is applied, i.e. a specific DSCH is transmitted in a single cell only.

~~The following two DSCH cases are supported in Release 99, in the following denoted as cases A and B:~~

- ~~**Case A:** The DSCH is defined as an extension to DCH transmission. DSCH related resource allocation is signalled utilising the transport format indication field (TFI) that will be mapped to the TFCI of the associated DCH.~~

- ~~Case B:~~ The DSCH is defined as a shared downlink channel for which resource allocation is performed by RRC in Controlling RNC. The allocation messages, including UE identification, are transmitted on SHCCH, which is mapped on RACH/FACH. Several DSCH can be multiplexed on a CCTrCH in the physical layer, the transport formats of the DSCHs have to be selected from the transport format combination set of this CCTrCH. Each CCTrCH is mapped on one or more PDSCHs. If the transport format combination subset of a CCTrCH contains more than one transport format combination, a TFCI can be transmitted inside the PDSCH, or blind detection can be applied in the UE. ~~This case is supported for TDD only.~~

~~NOTE: Cases A and B of DSCH can be employed concurrently for TDD (at the same time on a single PDSCH).~~

Interleaving for the DSCH may be applied over a multiplicity of radio frames. Nevertheless, here the basic case is considered where the interleaving is rectangular for a given MAC PDU, and equal to one radio frame (10 ms). The framing is synchronised on the SCH.

In every radio frame, one or several PDSCHs can be used in the downlink. Therefore, the DSCH supports code multiplexing. MAC multiplexing of different UEs shall not be applied within a radio frame, i.e. within one radio frame a PDSCH is assigned to a single UE. However, MAC multiplexing is allowed on a frame by frame basis, i.e. one PDSCH may be allocated to different UEs at each frame.

Transport blocks on the DSCH may be of constant size, so that the Transport Block Set may be derived from the code allocated to each UE on the DSCH. For case B, the transport format combination set can change with each transmission time interval.

5.6.5.2 Resource allocation and UE identification on DSCH

The principles of capacity allocation and UE identification on the DSCH are described in more detail below.

5.6.5.2.1 Void~~Case A (UE requires a downlink TFCI on a DPCCH)~~

~~The TFCI of the dedicated physical channel may carry the information that a given code of the DSCH must be listened to by the UE. Fast power control can be applied per code based on the dedicated physical control channel, DPCCH.~~

~~Alternatively, a UE may be requested on the DCH to listen to a DSCH for a given period of time, and to decode the data so that the address of the destination UE can be decoded. This does not require more TFCI values because signalling is done in layers 2 and 3.~~

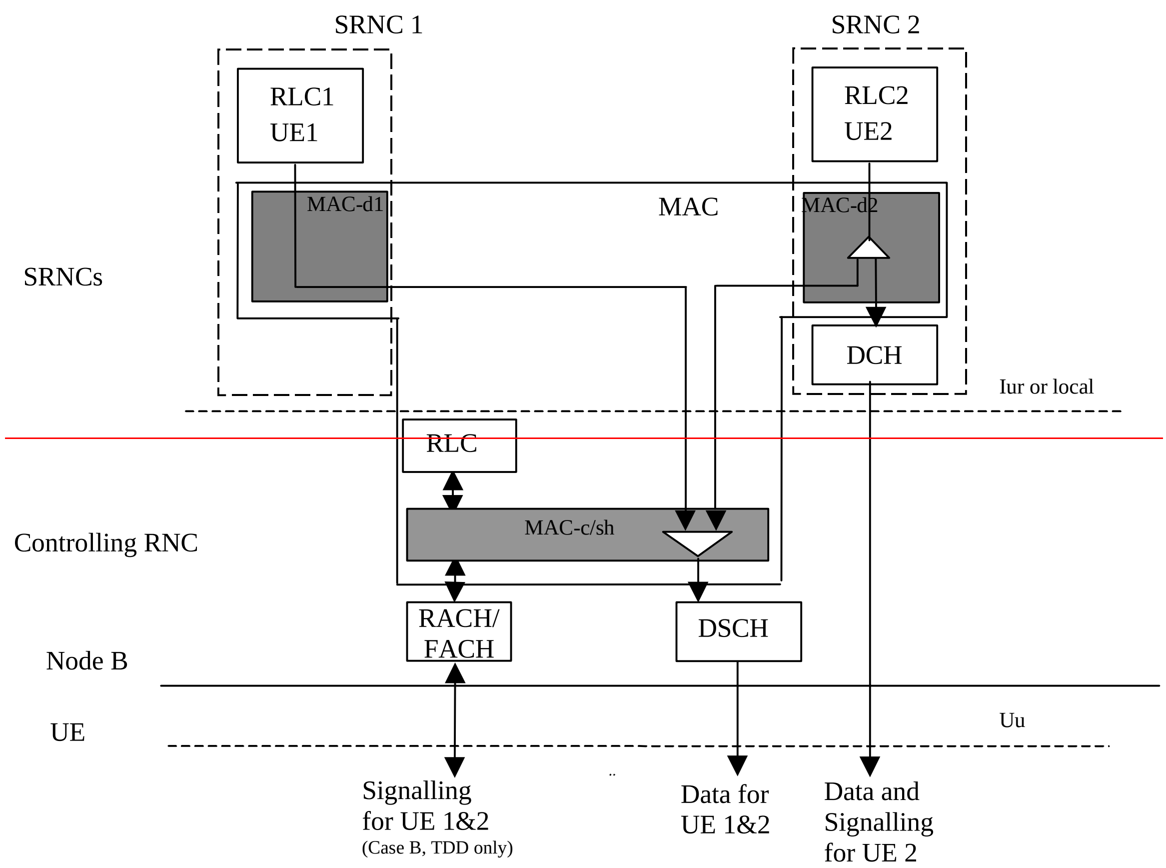
5.6.5.2.2 ~~Case B (~~UE requires a downlink SHCCH~~) (TDD only)~~

The information which physical downlink shared channels to listen to and when, is sent by RRC on the SHCCH logical channel, which is mapped on RACH and USCH/FACH and DSCH. The transmitted Layer 3 messages contain information about the used PDSCHs and the timing of the allocation.

5.6.5.3 Model of DSCH in UTRAN

Figure 15 captures the working assumption on the Downlink Shared Channel (DSCH). The two RLCs point to logical channel (DTCH) specific RLC-entities of specific users while MAC refers to the provision of MAC sublayer functions for all users.

The MAC sublayer of a DSCH is split between the Controlling RNC and SRNC. For a given user, the RLC sublayer is terminated in its SRNC. Since Iur can support DSCH data streams, the users on that DSCH can depend on different SRNCs. For a given user, the Controlling RNC and the Serving RNC can be separate RNCs. The MAC in the network takes care of mapping downlink data either to a common channel (FACH, not shown in this figure), or to a DCH and/or the DSCH.



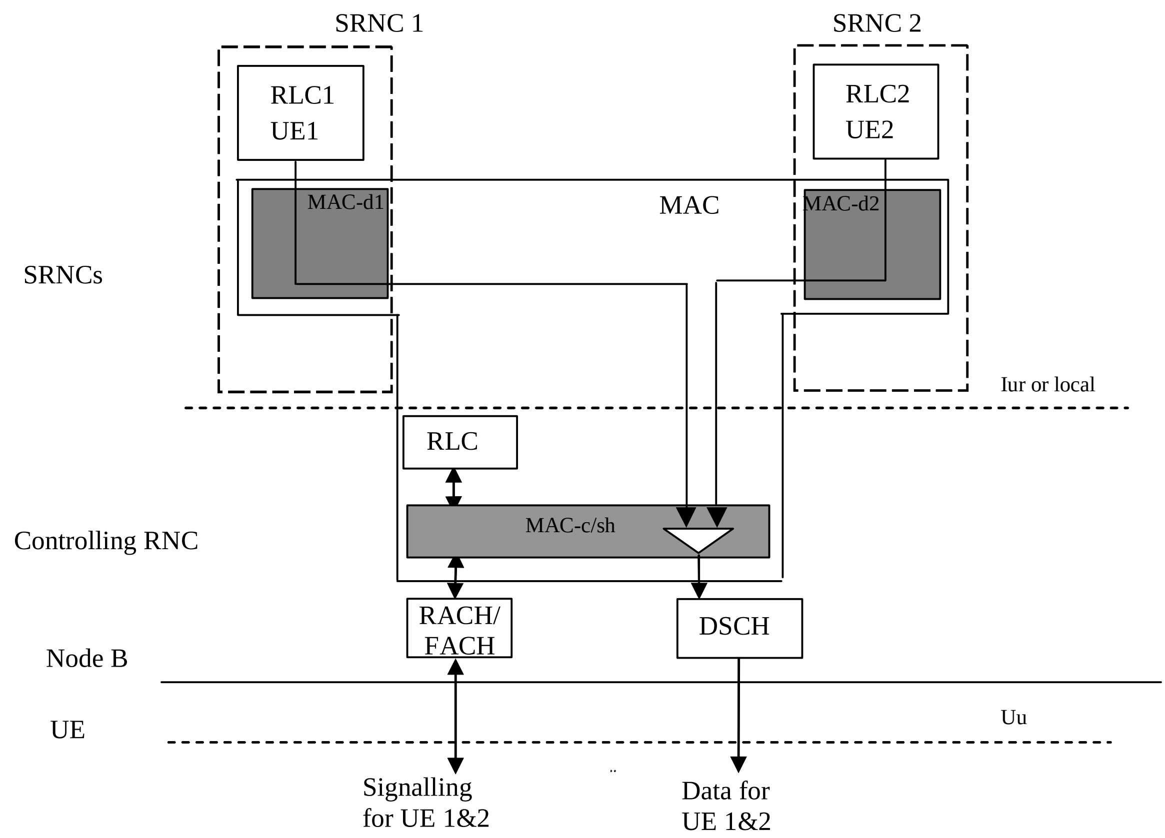


Figure 15: Model of downlink shared channel (DSCH) in UTRAN (TDD only)

5.6.5.4 Protocol termination

The protocol termination points for DSCH in control and user planes are presented in Figure 16 and Figure 17, respectively. The DSCH is for TDD only.

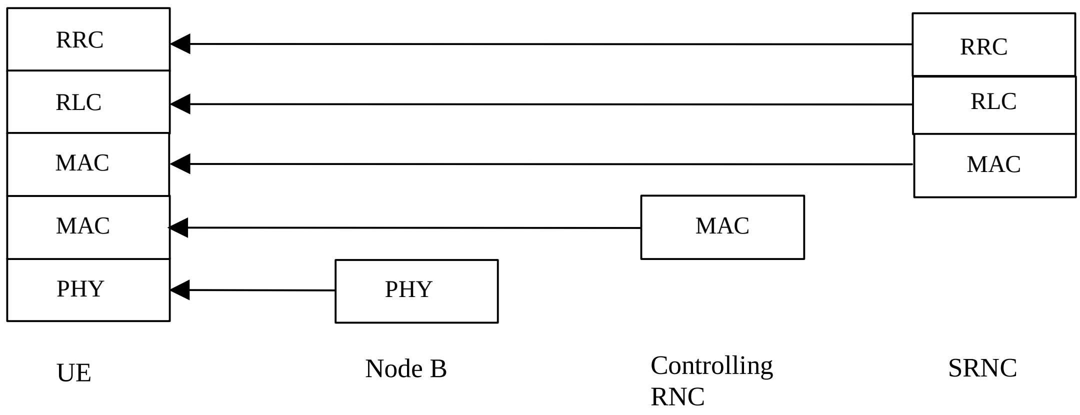


Figure 16: Protocol termination points for DSCH, control plane (TDD only)

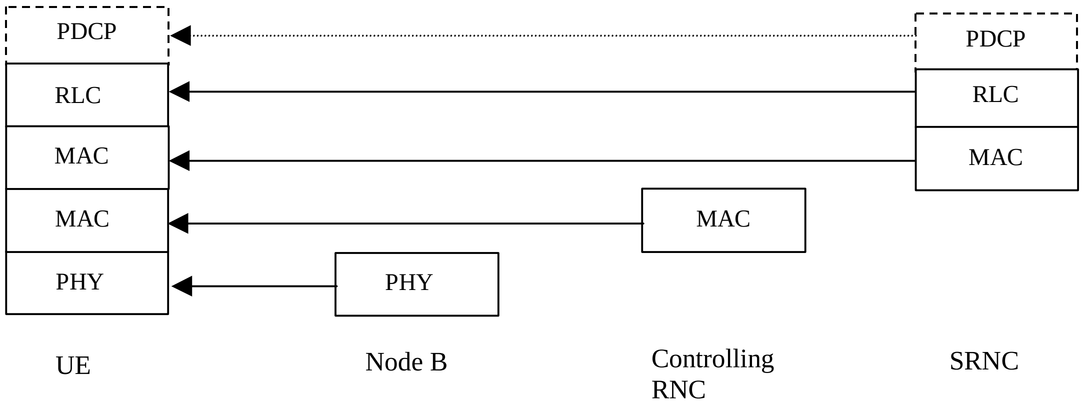


Figure 17: Protocol termination points for DSCH, user plane (TDD only)

5.6.6 Protocol termination for transport channel of type USCH

5.6.6.1 USCH definition

The USCH is only supported for TDD. It is a resource that exists in uplink only. It has only impact on the physical and transport channel levels, so there is no definition of shared channel in the logical channels provided by MAC.

The USCH is a transport channel shared dynamically between several UEs. The USCH is mapped to one or several physical channels such that a specified part of the uplink resources is employed.

The USCH is defined as a shared uplink channel for which resource allocation is performed by RRC in Controlling RNC. The allocation requests and allocation messages, including UE identification, are transmitted on SHCCH, which is mapped on RACH and USCH/FACH and DSCH. Several USCHs can be multiplexed on a CCTrCH in the physical layer, the transport formats of the USCHs have to be selected from the transport format combination set of this CCTrCH. Each CCTrCH is mapped on one or more PUSCHs. If the transport format combination subset of a CCTrCH contains more than one transport format combination, a TFCI can be transmitted inside the PUSCH, or blind detection can be applied in the Node B.

Interleaving for the USCH may be applied over a multiplicity of radio frames.

In every radio frame, one or several PUSCHs can be used in the uplink. Therefore, the USCH supports physical channel multiplexing. MAC multiplexing of different UEs shall not be applied within a radio frame, i.e. within one radio frame a PUSCH is assigned to a single UE. However, MAC multiplexing is allowed on a frame by frame basis, i.e. one PUSCH may be allocated to different UEs at each frame.

The transport format combination set on the USCH can change with each transmission time interval.

5.6.6.2 Resource allocation and UE identification on USCH

The information which physical uplink shared channels to transmit on and when is sent by RRC on the SHCCH logical channel, which is mapped on RACH and USCH/FACH and DSCH. The transmitted Layer 3 messages contain information about the assigned PUSCHs and the timing of the allocation.

5.6.6.3 Model of USCH in UTRAN

Figure 18 captures the working assumption on the Uplink Shared Channel (USCH). The two RLCs point to logical channel (DTCH) specific RLC-entities of specific users while MAC refers to the provision of MAC sublayer functions for all users.

The MAC sublayer of a USCH is split between the Controlling RNC and SRNC. For a given user, the RLC sublayer is terminated in its SRNC. Since Iur can support USCH data streams, the users on that USCH can depend on different SRNCs. For a given user, the Controlling RNC and the Serving RNC can be separate RNCs. The MAC in the network takes care of mapping uplink data either from a common channel (RACH, not shown in this figure), DCH or the USCH.

Allocations of uplink capacity are requested by the UEs and signalled to the UEs on the SHCCH (Shared channel control channel), which is mapped on RACH and USCH/FACH and DSCH.

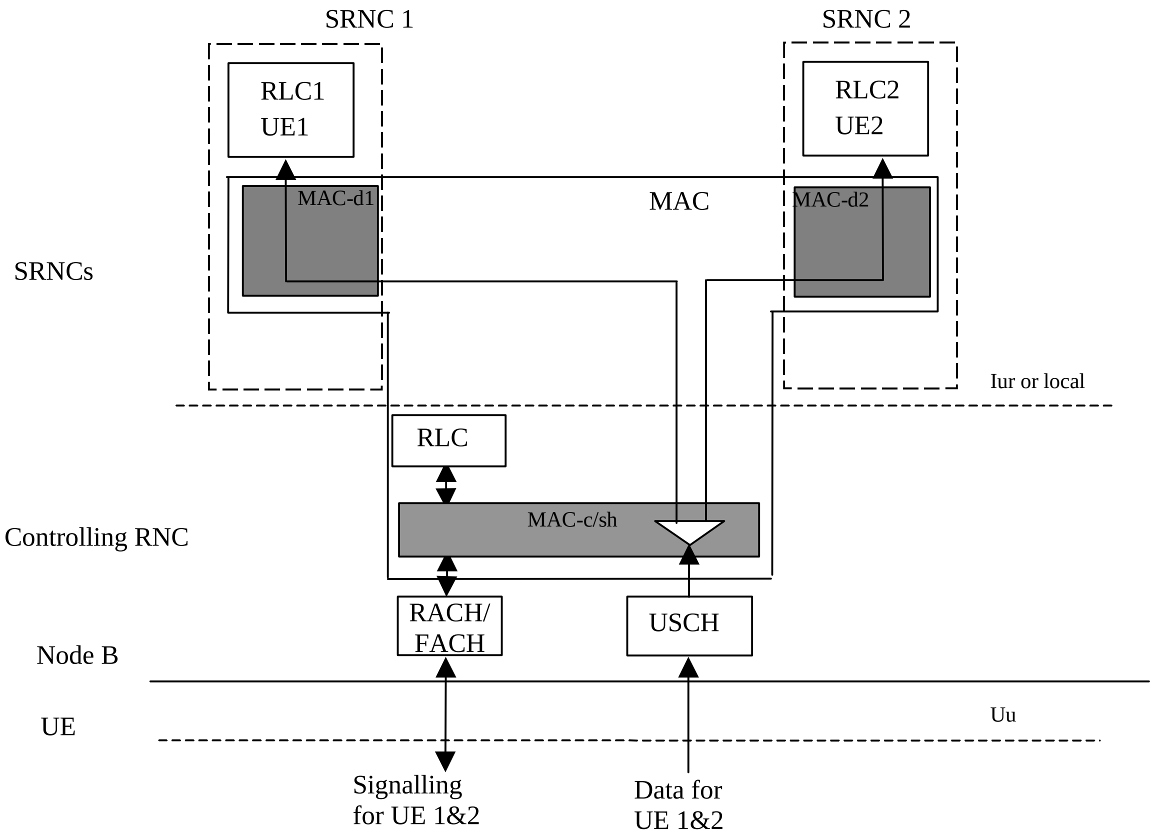


Figure 18: Model of uplink shared channel (USCH) in UTRAN (TDD only)

5.6.6.4 Protocol termination

The protocol termination points for USCH in control and user planes are presented in Figure 19 and Figure 20, respectively. The USCH is for TDD only.

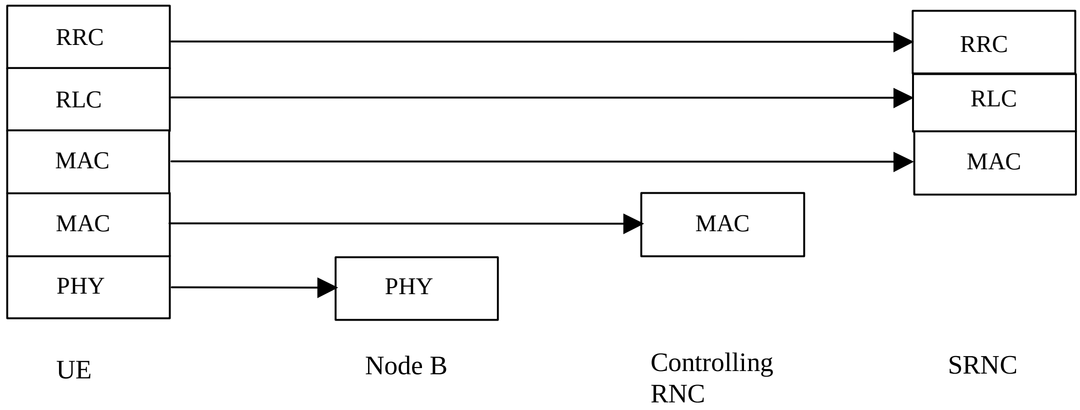


Figure 19: Protocol termination points for USCH, control plane (TDD only)

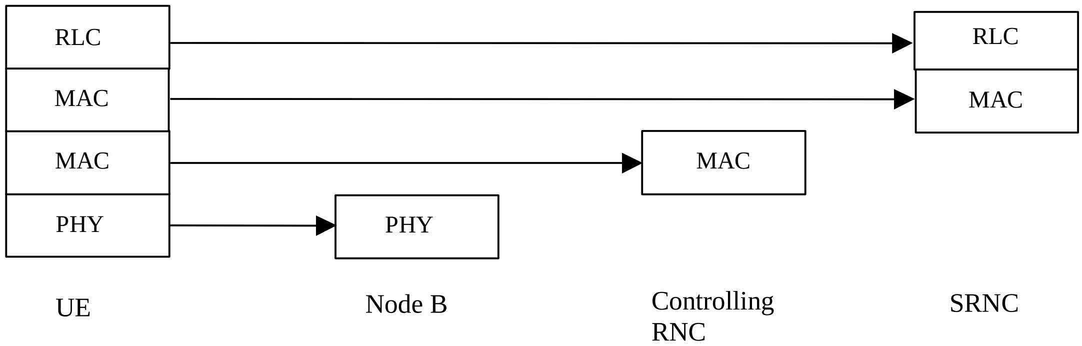


Figure 20: Protocol termination points for USCH, user plane (TDD only)

5.6.7 Protocol termination for transport channel of type BCH

System information on BCH can include information that is available only in Node B, and need to be updated very frequently (each 20-100 ms), such as uplink interference in the cell. Also, for the system information originating from the RNC, it is assumed that the updating of system information is at least one magnitude less (minutes) than the repetition frequency on the BCH (in the order of 1s). The system information originating from the CRNC should be sent transparently to Node B, which then handles the repetition. Protocol termination for the BCH shall therefore be distributed between the Node B and the CRNC, resulting in less signalling on Iub and lower processor load. Note that the RLC sublayer is transparent for this transport channel type.

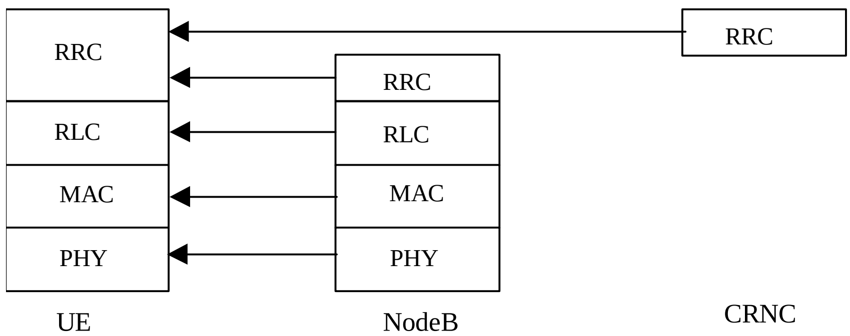


Figure 21: Protocol termination for BCH

5.6.8 Protocol termination for transport channel of type PCH

In order to enable co-ordinated scheduling between PCH and FACH/DSCH the corresponding MAC scheduling functions shall be allocated in the same node. MAC-c/sh is terminated in CRNC. A natural implication is that RLC and RRC also are terminated in CRNC.

Note that the RLC sublayer is transparent for this channel.

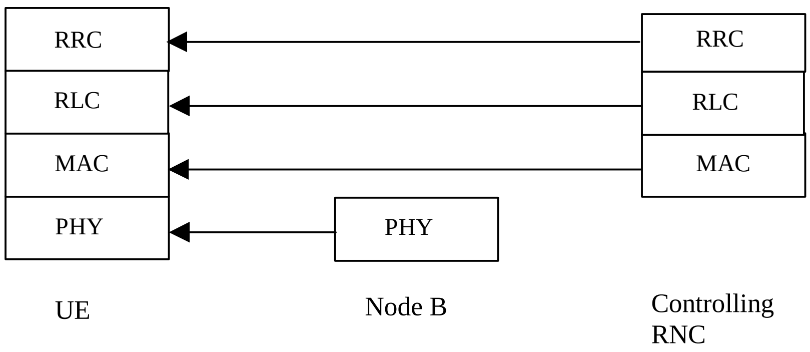


Figure 22: Protocol termination for PCH

5.6.9 Protocol termination for HS-DSCH

5.6.9.1 HS-DSCH definition

The HS-DSCH is a resource that exists in downlink only. It has only impact on the physical and transport channel levels, so there is no definition of shared channel in the logical channels provided by MAC.

The HS-DSCH is a transport channel for which a common pool of radio resources is shared dynamically between several UEs. The HS-DSCH is mapped to one or several physical channels such that a specified part of the downlink resources is employed. For the HS-DSCH no macrodiversity is applied, i.e. a specific HS-DSCH is transmitted in a single cell only.

- The HS-DSCH is defined as an extension to DCH transmission. Physical channel signalling is used for indicating to a UE when it has been scheduled and then the necessary signalling information for the UE to decode the HS-PDSCH.

In every HS-DSCH TTI, one or several HS-PDSCHs can be used in the downlink. Therefore, the HS-DSCH supports code multiplexing. MAC multiplexing of different UEs shall not be applied within an HS-DSCH TTI, i.e. within one HS-DSCH TTI an HS-PDSCH is assigned to a single UE. However, MAC multiplexing is allowed on a TTI by TTI basis, i.e. one HS-PDSCH may be allocated to different UEs at each TTI.

5.6.9.2 Resource allocation and UE identification on HS-DSCH

For each HS-DSCH TTI, each HS-SCCH carries HS-DSCH related downlink signalling for one UE, along with a UE identity (via a UE specific CRC) that identifies the UE for which this information is necessary in order to decode the scheduled HS-PDSCH.

5.6.9.3 Protocol termination

The protocol termination points for HS-DSCH in the control and user planes are presented in figure 5.6.9.3-1 and figure 5.6.9.3-2, respectively. Two configurations exist, a Configuration with MAC-c/sh and a Configuration without MAC-c/sh.

- Configuration with MAC-c/sh: In this case, the MAC-hs in Node B is located below MAC-c/sh in CRNC.

- Configuration without MAC-c/sh: In this case, the CRNC does not have any function for the HS-DSCH. MAC-d in SRNC is located directly above MAC-hs in Node B, i.e. in the HS-DSCH the SRNC is directly connected to the Node B, thus bypassing the DRNC.

Both configurations are transparent to both the UE and Node B. Figures 5.6.9.3-2 and 5.6.9.3-3 show the respective user plane protocol architecture with termination points for the above two configurations.

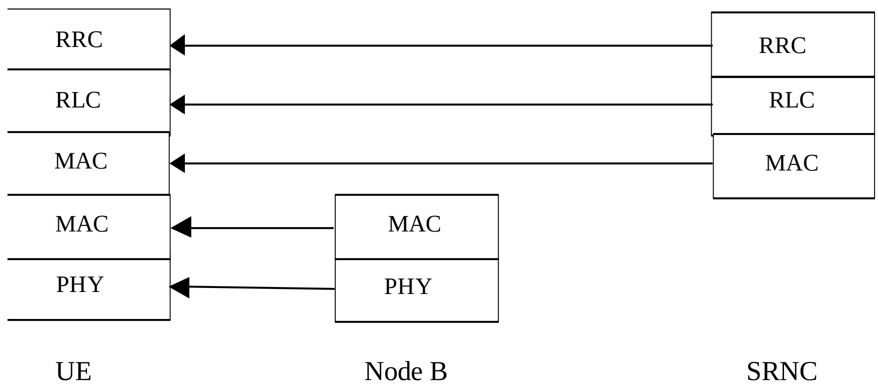


Figure 5.6.9.3-1: Protocol termination points for HS-DSCH, control plane

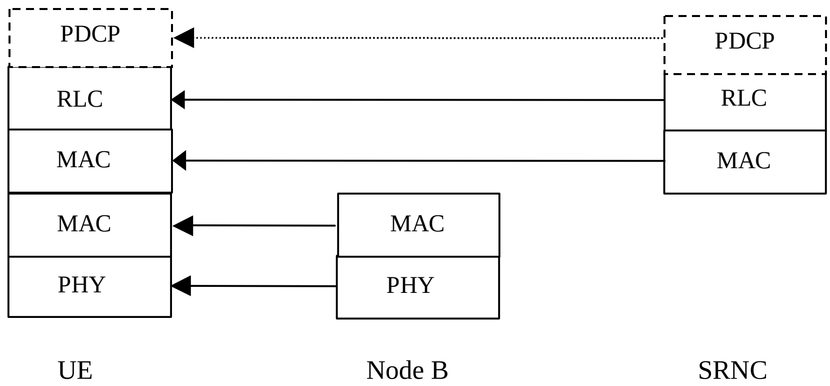


Figure 5.6.9.3-2: Protocol termination points for HS-DSCH, user plane

6 User Identification and RRC Connection Mobility

6.1 UE identification on the radio interface

A Radio Network Temporary Identity (RNTI) is used as an UE identifier on RACH/FACH, RACH+CPCH/FACH or, for ~~FDD~~ TDD mode, also on DSCH by the ~~MAC protocol~~RRC, or on PCH by the RRC, when a RRC connection exists. For the HS-DSCH the UE identification is included by the physical layer with the help of a UE-specific CRC.

Definition of UE identifiers

Several types of RNTIs exist. One is used within the Serving RNC and it is denoted by Serving RNC RNTI (S-RNTI). A second type is used within a cell controlled by a CRNC, when applicable, and it is denoted by Cell RNTI (C-RNTI). A third type is used only for TDD within a cell controlled by a CRNC when a DSCH is allocated and it is denoted by DSCH-RNTI. A fourth type is used within a cell controlled by a CRNC when an HS-DSCH is configured and it is denoted by HS-DSCH-RNTI (H-RNTI).

S-RNTI is allocated for all UEs having a RRC connection. It is allocated by the Serving RNC and it is unique within the Serving RNC. S-RNTI is reallocated always when the Serving RNC for the RRC connection is changed and deallocated when the RRC connection is released.

In addition for each UE having an RRC connection, there is an identifier of its current serving RNC, which is denoted as SRNC identifier. The SRNC identifier together with S-RNTI is a unique identifier of the RRC connection within PLMN. The combination of SRNC identifier and S-RNTI is referred to as U-RNTI (UTRAN Radio Network Temporary Identity), which is used on the radio interface.

C-RNTI for a UE is allocated by a controlling RNC and it is unique within one cell controlled by the allocating CRNC. C-RNTI can be reallocated when a UE accesses a new cell with the cell update procedure.

In TDD mode, DSCH-RNTI for a UE is allocated by controlling RNC when a DSCH channel is configured. DSCH-RNTI is unique within the cell carrying the DSCH.

H-RNTI for a UE is allocated by a controlling RNC and it is unique within one cell controlled by the allocating CRNC. H-RNTI is reallocated when an HS-DSCH cell change is performed.

Usage of UE identifiers

U-RNTI is allocated to an UE having a RRC connection. It identifies the UE within UTRAN and is used as a UE identifier in cell update, URA update, RRC connection reestablishment and (UTRAN originated) paging messages and associated responses on the radio interface. The SRNC identifier within the U-RNTI is used by the Controlling RNC to route the received uplink messages towards the Serving RNC.

C-RNTI is used as a UE identifier in all other DCCH/DTCH common channel messages on the radio interface.

In TDD mode, DSCH-RNTI is used as a UE identifier for DTCH and DCCH in downlink when mapped onto DSCH transport channel.

H-RNTI is used as a UE identifier for the HS-DSCH.

NAS identifiers are used as the UE identifier in the initial access CCCH message on the radio interface.

6.2 UE connection to UTRAN

The different levels of UE connection to UTRAN are listed below:

- No signalling connection exist
  The UE has no relation to UTRAN, only to CN. For data transfer, a signalling connection has to be established.
- Signalling connection exist
  There is a RRC connection between UE and UTRAN. The UE position can be known on different levels:
  - UTRAN Registration Area (URA) level
    The UE position is known on UTRAN registration area level. URA is a specified set of cell, which can be identified on the BCCH.
  - Cell level
    The UE position is known on cell level. Different channel types can be used for data transfer:
    - Common transport channels (RACH, FACH, CPCH, DSCH, HS-DSCH);
    - Dedicated transport channels (DCH).

7 UE modes

Two modes of operation are currently defined for the UE, idle mode and connected mode [5, 6].

After power on, the UE stays in idle mode until it transmits a request to establish an RRC connection. In idle mode the UE is identified by non-access stratum identities such as IMSI, TMSI and P-TMSI. In addition, the UTRAN has no own information about the individual idle mode UEs, and can only address e.g. all UEs in a cell or all UEs monitoring a specific paging occasion.

The connected mode is entered when the RRC connection is established. A RRC connection is established between the UE and a RNC called SRNC. The UE is assigned a radio network temporary identity (U-RNTI and possibly in addition

C-RNTI or, only for TDD, DSCH-RNTI) to be used as UE identity on common transport channels. RRC connection is within a UTRAN identified with the U-RNTI.

The UE leaves the connected mode and returns to idle mode when the RRC connection is released or at RRC connection failure.

Reception of SMS cell broadcast can be done in both idle and connected mode.

3GPP TSG-RAN Working Group 2 #47 **Tdoc ⌘ R2-051605**
Athens, Greece, 9 – 13 May 2005

CR-Form-v7

CHANGE REQUEST

⌘	**25.301**	**CR**	**0077**	⌘ **rev**	**-**	⌘	Current version:	**6.2.0**	⌘

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

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

Title:	⌘	Feature Clean-up: Removal of DSCH (FDD)
Source:	⌘	RAN WG2
Work item code:	⌘	TEI5 — ***Date:*** ⌘ 10/05/2005
Category:	⌘	**C** — ***Release:*** ⌘ REL-6

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
- *2 (GSM Phase 2)*
- *R96 (Release 1996)*
- *R97 (Release 1997)*
- *R98 (Release 1998)*
- *R99 (Release 1999)*
- *Rel-4 (Release 4)*
- *Rel-5 (Release 5)*
- *Rel-6 (Release 6)*

Reason for change:	⌘	Removal of DSCH for FDD
Summary of change:	⌘	Removal of DSCH for FDD
Consequences if not approved:	⌘	DSCH for FDD mode will remain specified

Clauses affected:	⌘	5.2.1.1, 5.3.1.1.2.2, 5.3.5.8, 5.3.5.12, 5.3.5.20, 5.3.6, 5.6.5.1, 5.6.5.2.1, 5.6.5.2.2, 5.6.5.3, 5.6.5.4, 6.1, 7				
		Y	**N**			
Other specs affected:	⌘	**X**		Other core specifications	⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
		X		Test specifications		34.108, 34.123
				O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

5.2 Layer 1 Services and Functions

This subclause shall provide an overview on services and functions provided by the physical layer. A detailed description of Layer 1 general requirements can be found in [4].

5.2.1 L1 Services

The physical layer offers information transfer services to MAC and higher layers. The physical layer transport services are described by *how* and with what characteristics data are transferred over the radio interface. An adequate term for this is 'Transport Channel'.

NOTE: This should be clearly separated from the classification of *what* is transported, which relates to the concept of logical channels. Thus DCH is used to denote that the physical layer offers the same type of service for both control and traffic.

5.2.1.1 Transport channels

A general classification of transport channels is into two groups:

- common transport channels (where there is a need for inband identification of the UEs when particular UEs are addressed); and

- dedicated transport channels (where the UEs are identified by the physical channel, i.e. code and frequency for FDD and code, time slot and frequency for TDD).

Common transport channel types are (a more detailed description can be found in [4]):

- **Random Access Channel (RACH)**

  A contention based uplink channel used for transmission of relatively small amounts of data, e.g. for initial access or non-real-time dedicated control or traffic data.

- **Common Packet Channel (CPCH)**

  A contention based channel used for transmission of bursty data traffic. This channel only exists in FDD mode and only in the uplink direction. The common packet channel is shared by the UEs in a cell and therefore, it is a common resource. The CPCH is fast power controlled.

- **Forward Access Channel (FACH)**

  Common downlink channel without closed-loop power control used for transmission of relatively small amount of data. In addition FACH is used to carry broadcast and multicast data.

- **Downlink Shared Channel (DSCH)**

  A downlink channel shared by several UEs carrying dedicated control or traffic data, used in TDD mode only.

- **Uplink Shared Channel (USCH)**

  An uplink channel shared by several UEs carrying dedicated control or traffic data, used in TDD mode only.

- **Broadcast Channel (BCH)**

  A downlink channel used for broadcast of system information into an entire cell.

- **Paging Channel (PCH)**

  A downlink channel used for broadcast of control information into an entire cell allowing efficient UE sleep mode procedures. Currently identified information types are paging and notification. Another use could be UTRAN notification of change of BCCH information.

- **High Speed Downlink Shared Channel (HS-DSCH)**

A downlink channel shared between UEs by allocation of individual codes, from a common pool of codes assigned for the channel.

Dedicated transport channel types are:

- **Dedicated Channel (DCH)**

  A channel dedicated to one UE used in uplink or downlink.

- **Enhanced Dedicated Channel (E-DCH)**

  A channel dedicated to one UE used in uplink only. The E-DCH is subject to Node-B controlled scheduling and HARQ.

To each transport channel, there is an associated Transport Format (for transport channels with a fixed or slow changing rate) or an associated Transport Format Set (for transport channels with fast changing rate). A Transport Format is defined as a combination of encodings, interleaving, bit rate and mapping onto physical channels (see [4] for details). A Transport Format Set is a set of Transport Formats. E.g., a variable rate DCH has a Transport Format Set (one Transport Format for each rate), whereas a fixed rate DCH has a single Transport Format.

5.2.2 L1 Functions

The physical layer performs the following main functions:

- Macrodiversity distribution/combining and soft handover execution;
- Error detection on transport channels and indication to higher layers;
- FEC encoding/decoding and interleaving/deinterleaving of transport channels;
- Multiplexing of transport channels and demultiplexing of coded composite transport channels;
- Rate matching;
- Mapping of coded composite transport channels on physical channels;
- Power weighting and combining of physical channels;
- Modulation and spreading/demodulation and despreading of physical channels;
- Frequency and time (chip, bit, slot, frame) synchronisation;
- Measurements and indication to higher layers (e.g. FER, SIR, interference power, transmit power, etc.);
- Closed-loop power control;
- RF processing;
- Support of timing advance on uplink channels (TDD only);
- Support of Uplink Synchronisation as defined in [12] (TDD only).

5.3 Layer 2 Services and Functions

5.3.1 MAC Services and Functions

This subclause provides an overview on services and functions provided by the MAC sublayer. A detailed description of the MAC protocol is given in [7].

5.3.1.1 MAC Services to upper layers

- **Data transfer**. This service provides unacknowledged transfer of MAC SDUs between peer MAC entities. This service does not provide any data segmentation. Therefore, segmentation/reassembly function should be achieved by upper layer.

- **Reallocation of radio resources and MAC parameters**. This service performs on request of RRC execution of radio resource reallocation and change of MAC parameters, i.e. reconfiguration of MAC functions such as change of identity of UE, change of transport format (combination) sets, change of transport channel type. In TDD mode, in addition, the MAC can handle resource allocation autonomously.

- **Reporting of measurements**. Local measurements such as traffic volume and quality indication are reported to RRC.

5.3.1.1.1 Logical channels

The MAC layer provides data transfer services on logical channels. A set of logical channel types is defined for different kinds of data transfer services as offered by MAC. Each logical channel type is defined by what type of information is transferred.

A general classification of logical channels is into two groups:

- Control Channels (for the transfer of control plane information);

- Traffic Channels (for the transfer of user plane information).

The configuration of logical channel types is depicted in Figure 3.

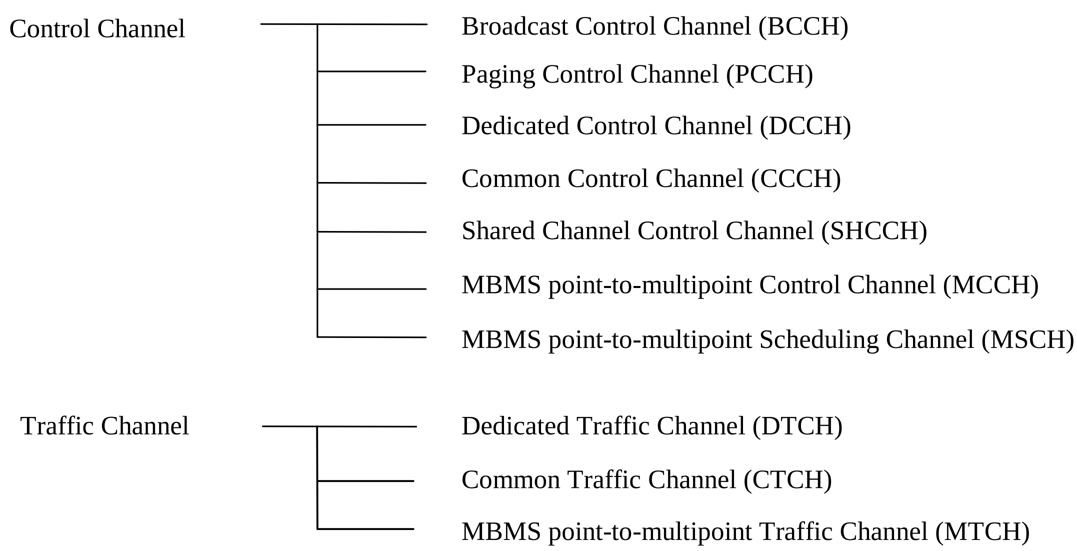


Figure 3: Logical channel structure

Control Channels

Control channels are used for transfer of control plane information only.

Broadcast Control Channel (BCCH)

A downlink channel for broadcasting system control information.

Paging Control Channel (PCCH)

A downlink channel that transfers paging information. This channel is used when the network does not know the location cell of the UE, or, the UE is in the cell connected state (utilising UE sleep mode procedures).

Common Control Channel (CCCH)

Bi-directional channel for transmitting control information between network and UEs. This channel is commonly used by the UEs having no RRC connection with the network and by the UEs using common transport channels when accessing a new cell after cell reselection.

Dedicated Control Channel (DCCH)

A point-to-point bi-directional channel that transmits dedicated control information between a UE and the network. This channel is established through RRC connection setup procedure.

Shared Channel Control Channel (SHCCH)

Bi-directional channel that transmits control information for uplink and downlink shared channels between network and UEs. This channel is for TDD only.

MBMS point-to-multipoint Control Channel (MCCH)

A point-to-multipoint downlink channel used for transmitting control information from the network to the UE. This channel is only used by UEs that receive MBMS.

MBMS point-to-multipoint Scheduling Channel (MSCH)

A point-to-multipoint downlink channel used for transmitting scheduling control information, from the network to the UE, for one or several MTCHs carried on a CCTrCH. This channel is only used by UEs that receive MBMS.

Traffic Channels

Traffic channels are used for the transfer of user plane information only.

Dedicated Traffic Channel (DTCH)

A Dedicated Traffic Channel (DTCH) is a point-to-point channel, dedicated to one UE, for the transfer of user information. A DTCH can exist in both uplink and downlink.

Common Traffic Channel (CTCH)

A point-to-multipoint unidirectional channel for transfer of dedicated user information for all or a group of specified UEs.

MBMS point-to-multipoint Traffic Channel (MTCH)

A point-to-multipoint downlink channel used for transmitting traffic data from the network to the UE. This channel is only used for MBMS.

5.3.1.1.2 Mapping between logical channels and transport channels

5.3.1.1.2.1 Mapping in Uplink

In Uplink, the following connections between logical channels and transport channels exist:

- CCCH can be mapped to RACH;
- DCCH can be mapped to RACH;
- DCCH can be mapped to CPCH (in FDD mode only);
- DCCH can be mapped to DCH;
- DCCH can be mapped to USCH (in TDD mode only);
- DCCH can be mapped to E-DCH;
- DTCH can be mapped to RACH;
- DTCH can be mapped to CPCH (in FDD mode only);
- DTCH can be mapped to DCH;
- DTCH can be mapped to USCH (in TDD mode only);
- SHCCH can be mapped to RACH (in TDD mode only);
- SHCCH can be mapped to USCH (in TDD mode only);

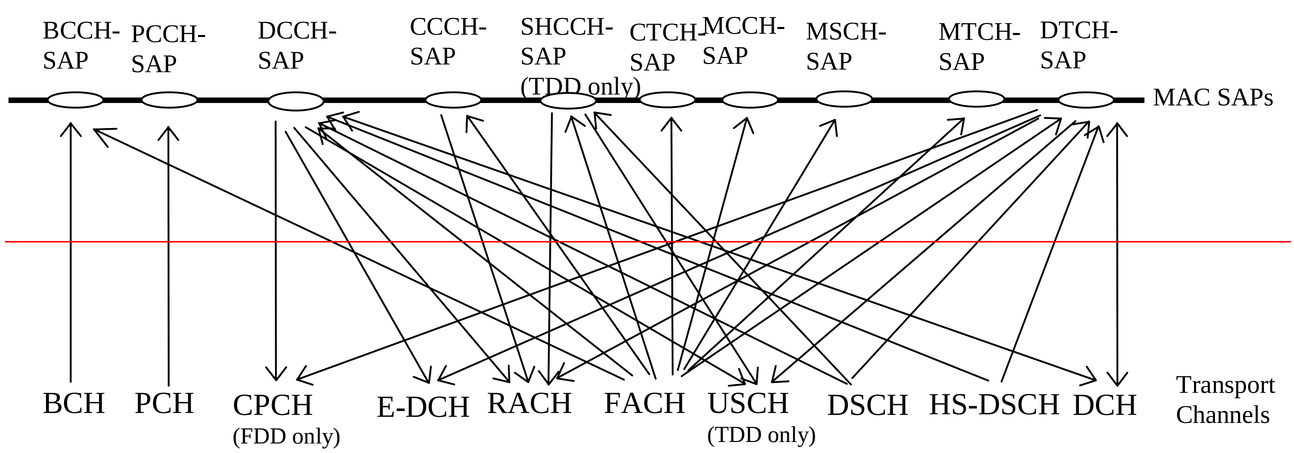
- DTCH can be mapped to E-DCH.

5.3.1.1.2.2 Mapping in Downlink

In Downlink, the following connections between logical channels and transport channels exist:

- BCCH can be mapped to BCH;
- BCCH can be mapped to FACH;
- PCCH can be mapped to PCH;
- CCCH can be mapped to FACH;
- DCCH can be mapped to FACH;
- DCCH can be mapped to DSCH (in TDD mode only);
- DCCH can be mapped to HS-DSCH;
- DCCH can be mapped to DCH;
- MCCH can be mapped to FACH;
- MSCH can be mapped to FACH;
- DTCH can be mapped to FACH;
- DTCH can be mapped to DSCH (in TDD mode only);
- DTCH can be mapped to HS-DSCH;
- DTCH can be mapped to DCH;
- CTCH can be mapped to FACH;
- MTCH can be mapped to FACH;
- SHCCH can be mapped to FACH (in TDD mode only);
- SHCCH can be mapped to DSCH (in TDD mode only).

The mappings as seen from the UE and UTRAN sides are shown in Figure 4 and Figure 5 respectively.



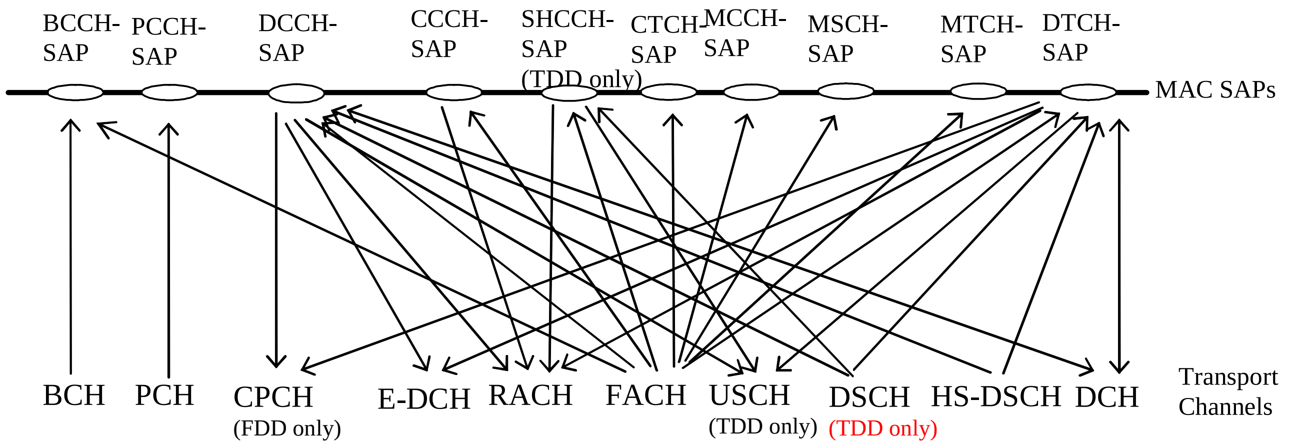


Figure 4: Logical channels mapped onto transport channels, seen from the UE side

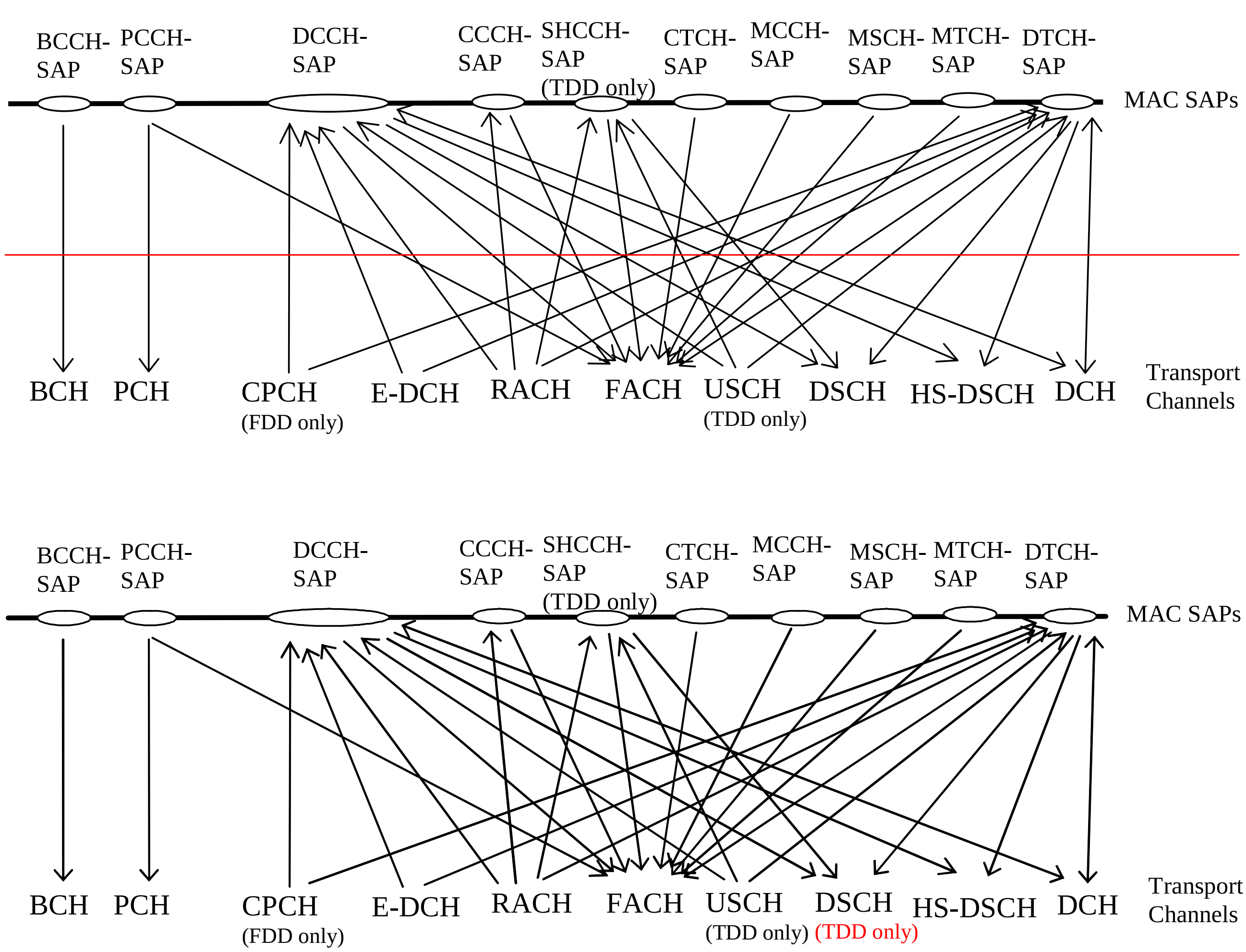


Figure 5: Logical channels mapped onto transport channels, seen from the UTRAN side

5.3.1.2 MAC functions

The functions of MAC include:

- **Mapping between logical channels and transport channels.** The MAC is responsible for mapping of logical channel(s) onto the appropriate transport channel(s).

- **Selection of appropriate Transport Format for each Transport Channel depending on instantaneous source rate**. Given the Transport Format Combination Set assigned by RRC, MAC selects the appropriate transport format within an assigned transport format set for each active transport channel depending on source rate**.** The control of transport formats ensures efficient use of transport channels.

- **Priority handling between data flows of one UE**. When selecting between the Transport Format Combinations in the given Transport Format Combination Set, priorities of the data flows to be mapped onto the corresponding Transport Channels can be taken into account. Priorities are e.g. given by attributes of Radio Bearer services and RLC buffer status. The priority handling is achieved by selecting a Transport Format Combination for which high priority data is mapped onto L1 with a "high bit rate" Transport Format, at the same time letting lower priority data be mapped with a "low bit rate" (could be zero bit rate) Transport Format. Transport format selection may also take into account transmit power indication from Layer 1.

- **Priority handling between UEs by means of dynamic scheduling**. In order to utilise the spectrum resources efficiently for bursty transfer, a dynamic scheduling function may be applied. MAC realises priority handling on common transport channels, shared transport channels and for the dedicated E-DCH transport channel. Note that for dedicated transport channels other than E-DCH, the equivalent of the dynamic scheduling function is implicitly included as part of the reconfiguration function of the RRC sublayer.

NOTE: In the TDD mode the data to be transported are represented in terms of sets of resource units.

- **Identification of UEs on common transport channels**. When a particular UE is addressed on a common downlink channel, or when a UE is using the RACH, there is a need for inband identification of the UE. Since the MAC layer handles the access to, and multiplexing onto, the transport channels, the identification functionality is naturally also placed in MAC.
- **Multiplexing/demultiplexing of upper layer PDUs into/from transport blocks delivered to/from the physical layer on common transport channels**. MAC should support service multiplexing for common transport channels, since the physical layer does not support multiplexing of these channels.
- **Multiplexing/demultiplexing of upper layer PDUs into/from transport block sets delivered to/from the physical layer on dedicated transport channels**. The MAC allows service multiplexing for dedicated transport channels. This function can be utilised when several upper layer services (e.g. RLC instances) can be mapped efficiently on the same transport channel. In this case the identification of multiplexing is contained in the MAC protocol control information.
- **Traffic volume measurement**. Measurement of traffic volume on logical channels and reporting to RRC. Based on the reported traffic volume information, RRC performs transport channel switching decisions.
- **Transport Channel type switching.** Execution of the switching between common and dedicated transport channels based on a switching decision derived by RRC**.**
- **Ciphering**. This function prevents unauthorised acquisition of data. Ciphering is performed in the MAC layer for transparent RLC mode. Details of the security architecture are specified in [15].
- **Access Service Class selection for RACH and CPCH transmission**. The RACH resources (i.e. access slots and preamble signatures for FDD, timeslot and channelisation code for TDD) and CPCH resources (i.e. access slots and preamble signatures for FDD only) may be divided between different Access Service Classes in order to provide different priorities of RACH and CPCH usage. In addition it is possible for more than one ASC or for all ASCs to be assigned to the same access slot/signature space. Each access service class will also have a set of back-off parameters associated with it, some or all of which may be broadcast by the network. The MAC function applies the appropriate back-off and indicates to the PHY layer the RACH and CPCH partition associated to a given MAC PDU transfer.
- **HARQ functionality for HS-DSCH and E-DCH transmission**. The MAC-hs and MAC-e entities are responsible for establishing the HARQ entity in accordance with the higher layer configuration and handling all the tasks required to perform HARQ functionality. This functionality ensures delivery between peer entities by use of the ACK and NACK signalling between the peer entities.
- **In-sequence delivery and assembly/disassembly of higher layer PDUs on HS-DSCH**. The transmitting MAC-hs entity assembles the data block payload for the MAC-hs PDUs from the delivered MAC-d PDUs. The MAC-d PDUs that are assembled in any one MAC-hs PDU are the same priority, and from the same MAC-d flow. The receiving MAC-hs entity is then responsible for the reordering of the received data blocks according to the received TSN, per priority and MAC-d flow, and then disassembling the data block into MAC-d PDUs for in-sequence delivery to the higher layers.
- **In-sequence delivery and assembly/disassembly of higher layer PDUs on E-DCH**. The transmitting MAC-es/MAC-e entity assembles the data block payload for the MAC-e PDUs from the delivered MAC-d PDUs. The receiving MAC-es entity is then responsible for the reordering of the received data blocks according to the received TSN and Node-B tagging information, per re-ordering queue, and then disassembling the data block into MAC-d PDUs for in-sequence delivery to the higher layers.

5.3.2 RLC Services and Functions

This subclause provides an overview on services and functions provided by the RLC sublayer. A detailed description of the RLC protocol is given in [8].

5.3.2.1 Services provided to the upper layer

- **Transparent data transfer**. This service transmits upper layer PDUs without adding any protocol information, possibly including segmentation/reassembly functionality.
- **Unacknowledged data transfer**. This service transmits upper layer PDUs without guaranteeing delivery to the peer entity. The unacknowledged data transfer mode has the following characteristics:
  - Detection of erroneous data: The RLC sublayer shall deliver only those SDUs to the receiving upper layer that are free of transmission errors by using the sequence-number check function.
  - Immediate delivery: The receiving RLC sublayer entity shall deliver a SDU to the upper layer receiving entity as soon as it arrives at the receiver.
  - Duplication avoidance and reordering: Alternative to immediate delivery, the RLC sublayer shall deliver SDUs to the receiving upper layer entity in the same order as the transmitting upper layer entity submits them to the RLC sublayer without duplication. SDUs may be delayed by this procedure to ensure in-sequence delivery.
  - Out-of-sequence SDU delivery: Alternative to immediate delivery, the RLC sublayer shall deliver SDUs to the upper layer receiving entity as soon as they can be recovered from PDUs, without waiting for earlier in-sequence SDUs to be recovered.
- **Acknowledged data transfer**. This service transmits upper layer PDUs and guarantees delivery to the peer entity. In case RLC is unable to deliver the data correctly, the user of RLC at the transmitting side is notified. For this service, both in-sequence and out-of-sequence delivery are supported. In many cases a upper layer protocol can restore the order of its PDUs. As long as the out-of-sequence properties of the lower layer are known and controlled (i.e. the upper layer protocol will not immediately request retransmission of a missing PDU) allowing out-of-sequence delivery can save memory space in the receiving RLC. The acknowledged data transfer mode has the following characteristics:
  - Error-free delivery: Error-free delivery is ensured by means of retransmission. The receiving RLC entity delivers only error-free SDUs to the upper layer.
  - Unique delivery: The RLC sublayer shall deliver each SDU only once to the receiving upper layer using duplication detection function.
  - In-sequence delivery: RLC sublayer shall provide support for in-order delivery of SDUs, i.e., RLC sublayer should deliver SDUs to the receiving upper layer entity in the same order as the transmitting upper layer entity submits them to the RLC sublayer.
  - Out-of-sequence delivery: Alternatively to in-sequence delivery, it shall also be possible to allow that the receiving RLC entity delivers SDUs to upper layer in different order than submitted to RLC sublayer at the transmitting side.
- **Maintenance of QoS as defined by upper layers.** The retransmission protocol shall be configurable by layer 3 to provide different levels of QoS. This can be controlled.
- **Notification of unrecoverable errors**. RLC notifies the upper layer of errors that cannot be resolved by RLC itself by normal exception handling procedures, e.g. by adjusting the maximum number of retransmissions according to delay requirements.

For AM RLC, there is only one RLC entity per Radio Bearer. For UM and TM RLC, there is one or two (one for each direction) RLC entities per Radio Bearer.

5.3.2.2 RLC Functions

- **Segmentation and reassembly.** This function performs segmentation/reassembly of variable-length upper layer PDUs into/from smaller RLC PDUs. The RLC PDU size is adjustable to the actual set of transport formats.
- **Concatenation.** If the contents of an RLC SDU cannot be carried by one RLC PDU, the first segment of the next RLC SDU may be put into the RLC PDU in concatenation with the last segment of the previous RLC SDU.
- **Padding.** When concatenation is not applicable and the remaining data to be transmitted does not fill an entire RLC PDU of given size, the remainder of the data field shall be filled with padding bits.

- **Transfer of user data.** This function is used for conveyance of data between users of RLC services. RLC supports acknowledged, unacknowledged and transparent data transfer. QoS setting controls transfer of user data.
- **Error correction.** This function provides error correction by retransmission (e.g. Selective Repeat, Go Back N, or a Stop-and-Wait ARQ) in acknowledged data transfer mode.
- **In-sequence delivery of upper layer PDUs**. This function preserves the order of upper layer PDUs that were submitted for transfer by RLC using the acknowledged data transfer service. If this function is not used, out-of-sequence delivery is provided.
- **Duplicate Detection.** This function detects duplicated received RLC PDUs and ensures that the resultant upper layer PDU is delivered only once to the upper layer.
- **Flow control**. This function allows an RLC receiver to control the rate at which the peer RLC transmitting entity may send information.
- **Sequence number check.** This function is used in unacknowledged mode and guarantees the integrity of reassembled PDUs and provides a mechanism for the detection of corrupted RLC SDUs through checking sequence number in RLC PDUs when they are reassembled into a RLC SDU. A corrupted RLC SDU will be discarded.
- **Protocol error detection and recovery**. This function detects and recovers from errors in the operation of the RLC protocol.
- **Ciphering**. This function prevents unauthorised acquisition of data. Ciphering is performed in RLC layer for non-transparent RLC mode. Details of the security architecture are specified in [15].
- **SDU discard**. This function allows an RLC transmitter to discharge RLC SDU from the buffer.

5.3.3 PDCP Services and Function

This subclause provides an overview on services and functions provided by the Packet Data Convergence Protocol (PDCP). A detailed description of the PDCP is given in [9].

5.3.3.1 PDCP Services provided to upper layers

- PDCP SDU delivery.

5.3.3.2 PDCP Functions

- **Header compression and decompression.** Header compression and decompression of IP data streams (e.g., TCP/IP and RTP/UDP/IP headers) at the transmitting and receiving entity, respectively. The header compression method is specific to the particular network layer, transport layer or upper layer protocol combinations e.g. TCP/IP and RTP/UDP/IP.
- **Transfer of user data.** Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa.
- **Support for lossless SRNS relocation or lossless DL RLC PDU size change.** Maintenance of PDCP sequence numbers for radio bearers that are configured to support lossless SRNS relocation or lossless DL RLC PDU size change.

5.3.4 Broadcast/Multicast Control - Services and functions

This subclause provides an overview on services and functions provided by the BMC sublayer. A detailed description of the BMC protocol is given in [10].

5.3.4.1 BMC Services

The BMC-SAP provides a broadcast/multicast transmission service in the user plane on the radio interface for common user data in unacknowledged mode.

5.3.4.2 BMC Functions

- **Storage of Cell Broadcast Messages.**
  The BMC stores the Cell Broadcast messages received over the CBC-RNC interface for scheduled transmission.

- **Traffic volume monitoring and radio resource request for CBS.**
  At the UTRAN side, the BMC calculates the required transmission rate for Cell Broadcast Service based on the messages received over the CBC-RNC interface, and requests for appropriate CTCH/FACH resources from RRC.

- **Scheduling of BMC messages.**
  The BMC receives scheduling information together with each Cell Broadcast message over the CBC-RNC-interface. Based on this scheduling information, at the UTRAN side, BMC generates schedule messages and schedules BMC message sequences accordingly. At the UE side, BMC evaluates the schedule messages and indicates scheduling parameters to RRC, which are used by RRC to configure the lower layers for CBS discontinuous reception.

- **Transmission of BMC messages to UE.**
  This function transmits the BMC messages (Scheduling and Cell Broadcast messages) according to schedule.

- **Delivery of Cell Broadcast messages to upper layer (NAS).**
  This functions delivers the received Cell Broadcast messages to upper layer (NAS) in the UE. Only non-corrupted Cell Broadcast messages are delivered.

5.3.5 Data flows through Layer 2

Data flows through layer 2 are characterised by the applied data transfer modes on RLC (acknowledged, unacknowledged and transparent transmission) in combination with the data transfer type on MAC, i.e. whether or not a MAC header is required. The case where no MAC header is required is referred to as "transparent" MAC transmission. Acknowledged and unacknowledged RLC transmissions both require a RLC header. In unacknowledged transmission, only one type of unacknowledged data PDU is exchanged between peer RLC entities. In acknowledged transmission, both (acknowledged) data PDUs and control PDUs are exchanged between peer RLC entities.

The resulting different data flow cases are illustrated in Figures 6 - 9. On the level of detail presented here, differences between acknowledged and unacknowledged RLC transmission are not visible. Acknowledged and unacknowledged RLC transmission is shown as one case, referred to as non-transparent RLC.

NOTE: The term "transparent transmission" is used here to characterise the case where a protocol, MAC or RLC, does not require any protocol control information (e.g. header). In transparent transmission mode, however, some protocol functions may still be applied. In this case an entity of the respective protocol must be present even when the protocol is transparent. For the RLC protocol the segmentation/reassembly function may be applied. This can be performed without segmentation header when a given higher layer PDU fits into a fixed number of RLC PDUs to be transferred in a given transmission time interval. In this case segmentation/reassembly follows predefined rules known to sending and receiving RLC entities. For instance in the user plane, the segmentation/reassembly function is needed for the case of real-time services using high and possibly variable bit rates. For such services higher layer PDUs shall be segmented into reasonably sized RLC PDUs of fixed length allowing efficient FCS error detection on the physical layer. The higher layer PDU can be reassembled by simply concatenating all RLC PDUs included in a transport block set as implied by the used transport format.

Figure 6 and Figure 7 illustrate the data flows for transparent RLC with transparent and non-transparent MAC transmission, respectively.

Figure 8 and Figure 9 illustrate the data flows for non-transparent RLC with transparent and non-transparent MAC transmission, respectively.

A number of MAC PDUs shown in the figures shall comprise a transport block set. Note, however, that in all cases a transport block set must not necessarily match with a RLC SDU. The span of a transport block set can be smaller or larger than an RLC SDU.

Each mapping between a logical channel and a transport channel as defined in Figure 4 and Figure 5 in combination with the respective RLC transmission mode implies a certain data flow that is specified on a general level in the following.

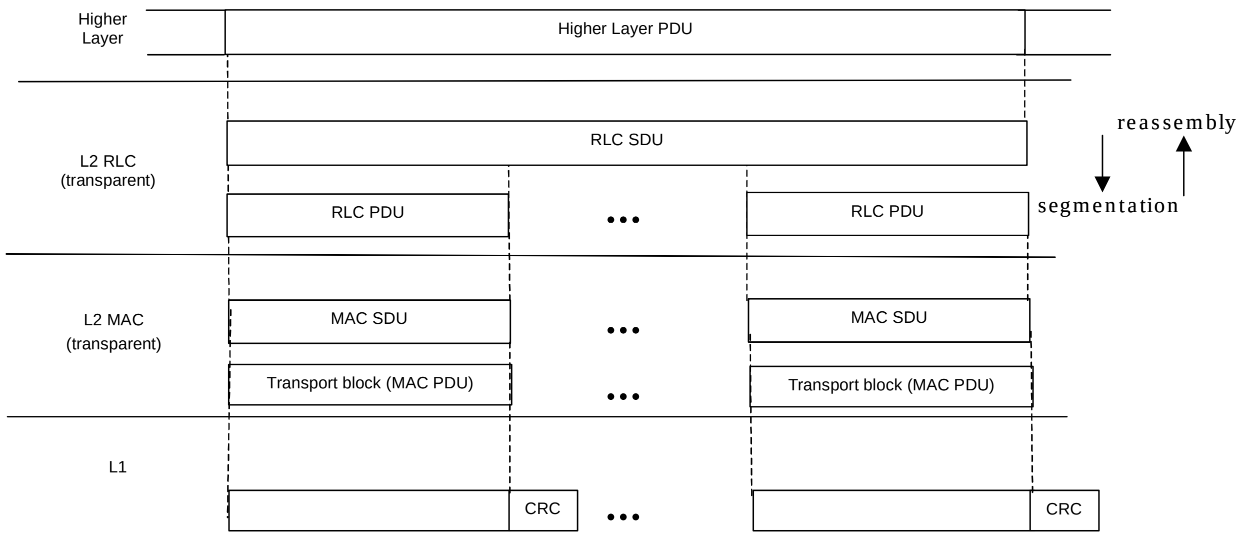


Figure 6: Data flow for transparent RLC and MAC

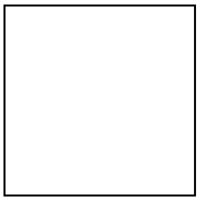


Figure 7: Data flow for transparent RLC and non-transparent MAC

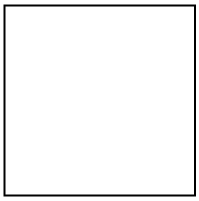


Figure 8: Data flow for non-transparent RLC and transparent MAC

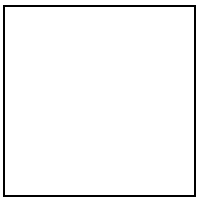


Figure 9: Data flow for non-transparent RLC and MAC

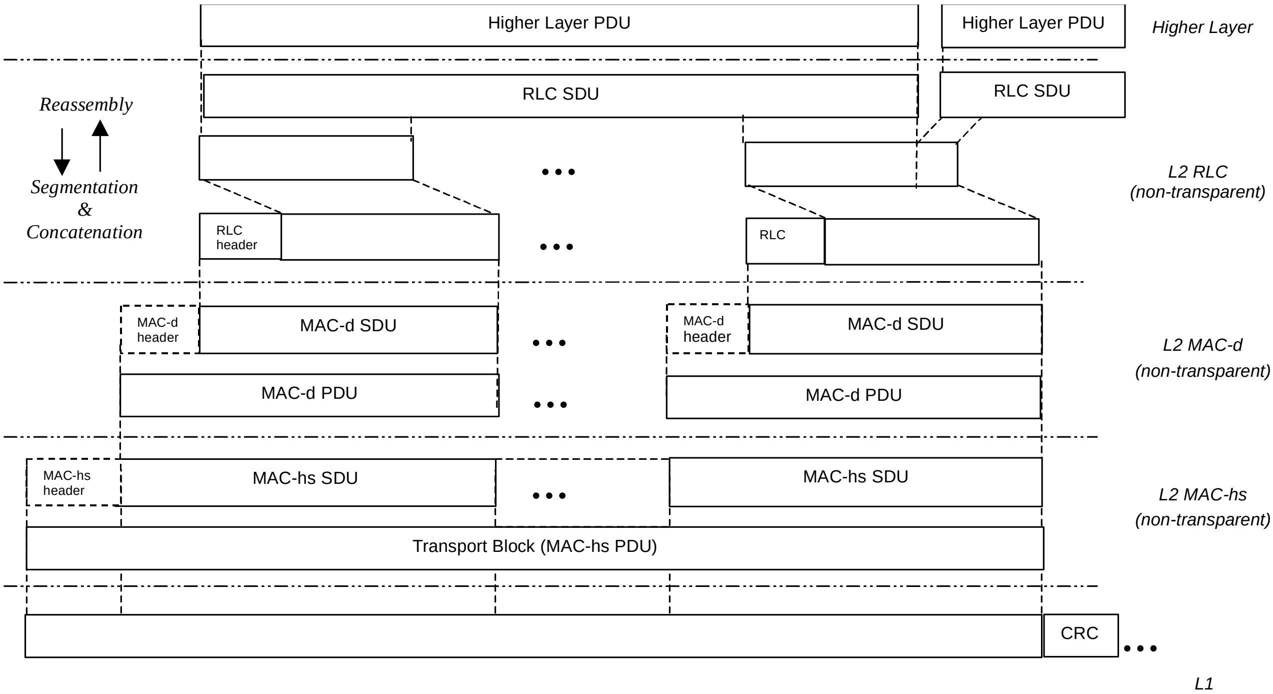


Figure 9a: Data flow for non-transparent RLC and MAC mapped to HS-DSCH

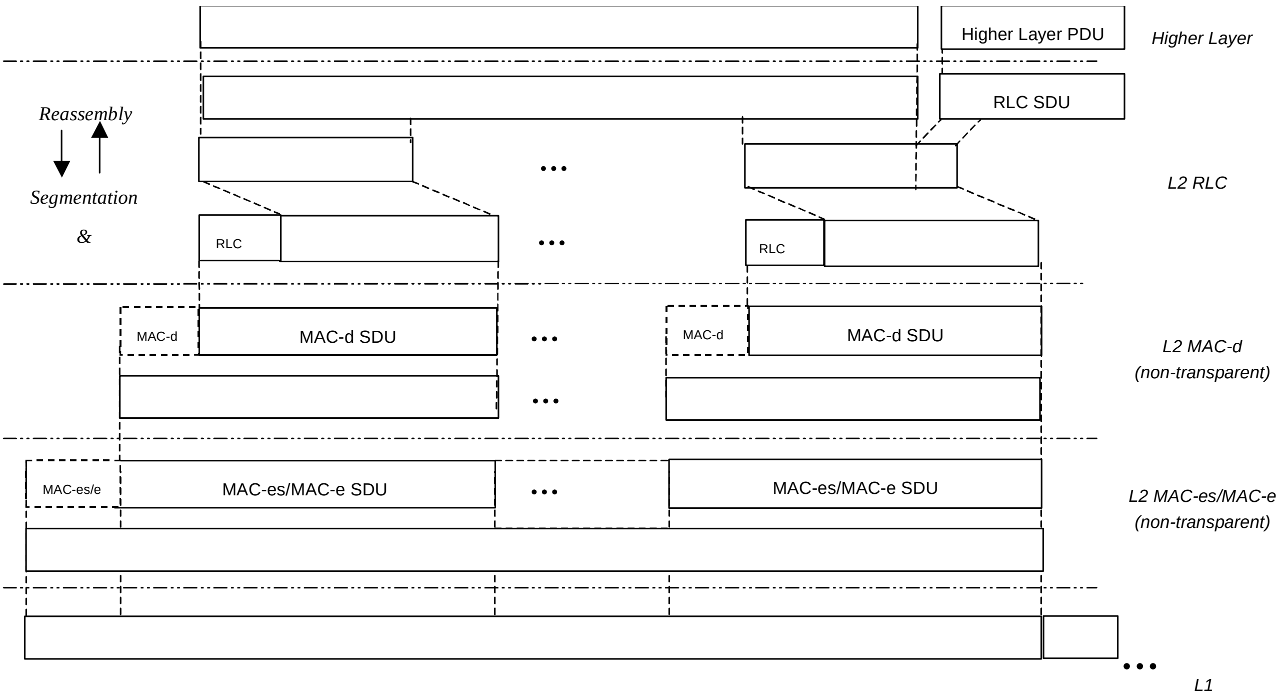


Figure 9b: Data flow for non-transparent RLC and MAC mapped to E-DCH

5.3.5.1 Data flow for BCCH mapped to BCH

All RRC PDUs transmitted on BCCH have a fixed length and fit into one RLC PDU (and, equivalently, MAC PDU, as defined by the transport format). No RLC header is needed, i.e. the transparent data transfer mode of RLC is applied.

No MAC header is needed since only one BCCH logical channel is mapped onto a BCH. Figure 6 is applicable.

5.3.5.2 Data flow for BCCH mapped to FACH

No RLC header is needed, i.e. the transparent data transfer mode of RLC is applied. A MAC header is required for identification of the logical channel carried by the FACH. The data flow shown in Figure 7 is applicable.

5.3.5.3 Data flow for PCCH mapped to PCH

No RLC or MAC header is needed, i.e. the data flow in Figure 6 is applicable.

5.3.5.4 Data flow for CCCH mapped to FACH/RACH

For CCCH, transparent transmission mode on RLC is employed on the uplink (when mapped to RACH). Unacknowledged transmission mode on RLC is employed on the downlink (when mapped to FACH). A MAC header is used for logical channel identification (BCCH, CCCH, CTCH, SHCCH, DCCH, DTCH). If the transparent RLC transfer mode is applied, the data flow Figure 7 is applicable. If the unacknowledged RLC transfer mode is applied, the data flow Figure 9 is applicable.

5.3.5.5 Data flow for SHCCH mapped to USCH

For SHCCH mapped on USCH, transparent transmission mode on RLC is employed. A MAC header may be used for logical channel identification (SHCCH, DCCH, DTCH). When no MAC header is used, SHCCH must be the only channel mapped to USCH/DSCH. Depending on whether the MAC header is needed or not, either the data flow Figure 6 or Figure 7 is applicable.

5.3.5.6 Data flow for SHCCH mapped to FACH/RACH

For SHCCH, transparent transmission mode on RLC is employed on the uplink (when mapped to RACH). Unacknowledged transmission mode on RLC is employed on the downlink (when mapped to FACH). A MAC header may be used for logical channel identification (BCCH, CCCH, CTCH, SHCCH, DCCH, DTCH). When no MAC header is used, SHCCH must be the only channel mapped to RACH/FACH. If the transparent RLC transfer mode is applied, depending on whether the MAC header is needed or not, either the data flow Figure 6 or Figure 7 is applicable. If the unacknowledged RLC transfer mode is applied, depending on whether the MAC header is needed or not, either the data flow Figure 8 or Figure 9 is applicable.

5.3.5.7 Data flow for DCCH mapped to FACH/RACH

For DCCH, both unacknowledged and acknowledged transmission mode on RLC is employed. A MAC header is mandatory for FACH/RACH carrying DCCH. The data flow shown in Figure 9 is applicable.

5.3.5.8 Data flow for DCCH mapped to DSCH

For DCCH, both unacknowledged and acknowledged transmission mode on RLC is employed. A ~~MAC header is mandatory when DCCH is mapped to a DSCH for FDD mode, i.e. the data flow in Figure 9 is applicable. For TDD a~~ MAC header is optional, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.9 Data flow for DCCH mapped to USCH

For DCCH, both unacknowledged and acknowledged transmission mode on RLC is employed. A MAC header is needed if DCCH and DTCH logical channels are multiplexed in MAC before mapping to a USCH, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.10 Data flow for DCCH mapped to CPCH

For DCCH mapped to CPCH, unacknowledged or acknowledged transmission modes on RLC are employed. The MAC header is needed for logical channel service multiplexing. Figure 9 is the applicable data flow to this case.

5.3.5.11 Data flow for DTCH (non-transparent RLC) mapped to FACH/RACH

Mapping to FACH/RACH implies a DTCH with acknowledged or unacknowledged transmission on RLC. A MAC header is mandatory for FACH/RACH when carrying DTCH. The data flow shown in Figure 9 is applicable.

5.3.5.12 Data flow for DTCH (non-transparent RLC) mapped to DSCH

Mapping to DSCH implies a DTCH with acknowledged or unacknowledged transmission on RLC. A ~~MAC header is mandatory when DTCH is mapped to a DSCH in FDD mode, i.e. the data flow in Figure 9 is applicable. In TDD mode a~~ MAC header is optional, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.13 Data flow for DTCH (non-transparent RLC) mapped to USCH

Mapping to USCH implies a DTCH with acknowledged or unacknowledged transmission on RLC. A MAC header is needed if DCCH and DTCH logical channels are multiplexed in MAC before mapping to a USCH, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.14 Data flow for DTCH (transparent RLC) mapped to DCH

Continuous DTCH data stream is segmented into transport blocks on RLC and mapped on a DCH transport channel on MAC. The transport block size is naturally implied by the data rate. Both RLC and MAC sublayers are transparent, i.e. no protocol control information is added, when no multiplexing of DTCH on MAC is applied. The data flow shown in Figure 6 is applicable. If multiplexing on MAC is performed, a MAC header is needed, and Figure 7 applies.

5.3.5.15 Data flow for DTCH (non-transparent RLC) mapped to DCH

In this case acknowledged or unacknowledged transmission on RLC is applied. A MAC header is needed only if multiple DTCH logical channels are multiplexed in MAC before mapping to a DCH, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.16 Data flow for DTCH (non-transparent RLC) mapped to CPCH.

This case requires both non-transparent RLC and MAC operations. The data flow shown in Figure 9 is applicable.

5.3.5.17 Data flow for DCCH mapped to DCH

In this case non-transparent or transparent transmission mode on RLC is applied. A MAC header is needed only if DCCH and DTCH logical channels are multiplexed in MAC before mapping to a DCH, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

5.3.5.18 Data flow for CTCH mapped to FACH

For CTCH, unacknowledged transmission mode on RLC is employed. A MAC header is used for logical channel identification (BCCH, CCCH, CTCH, SHCCH, DCCH, DTCH). The data flow shown in Figure 9 is applicable.

5.3.5.19 Data flow for DCCH mapped to HS-DSCH

For DCCH, both unacknowledged and acknowledged transmission mode on RLC is employed. A MAC header is mandatory when the DCCH is mapped to the HS-DSCH, i.e. the data flow in figure 9a is applicable.

5.3.5.20 Data flow for DTCH (non-transparent RLC) mapped to HS-DSCH

Mapping to HS-DSCH implies a DTCH with acknowledged or unacknowledged transmission on RLC. A MAC header is mandatory when the DCCH is mapped to the HS-DSCH, i.e. the data flow in figure 9a is applicable.

5.3.5.21 Data flow for DCCH mapped to E-DCH

For DCCH, both unacknowledged and acknowledged transmission mode on RLC is employed. A MAC header is mandatory when the DCCH is mapped to the E-DCH, i.e. the data flow in figure 9b is applicable.

5.3.5.22 Data flow for DTCH (non-transparent RLC) mapped to E-DCH

Mapping to E-DCH implies a DTCH with acknowledged or unacknowledged transmission on RLC. A MAC header is mandatory when the DTCH is mapped to the E-DCH, i.e. the data flow in figure 9b is applicable.

5.3.5.23 Data flow for MCCH (non-transparent RLC) mapped to FACH

For MCCH mapped to FACH, unacknowledged transmission mode on RLC is employed. In case of MAC multiplexing the MAC header is needed for logical channel service multiplexing. The data flow in either Figure 8 or Figure 9 is applicable.

5.3.5.24 Data flow for MSCH (non-transparent RLC) mapped to FACH

For MSCH mapped to FACH, unacknowledged transmission mode on RLC is employed. In case of MAC multiplexing the MAC header is needed for logical channel service multiplexing. The data flow in either Figure 8 or Figure 9 is applicable.

5.3.5.25 Data flow for MTCH (non-transparent RLC) mapped to FACH

For MTCH mapped to FACH, unacknowledged transmission mode on RLC is employed. In case of MAC multiplexing the MAC header is needed for logical channel service multiplexing. The data flow in either Figure 8 or Figure 9 is applicable.

5.3.6 Transport Channel, Logical Channel and MAC-d flow Numbering

The UE model for transport channel and logical channel numbering is defined by the following:

- For FACH transport channels:
  - A transport channel identity is associated with each FACH transport channel. Each identity is unique within the downlink FACHs mapped onto the same physical channel.
  - Transport channel identities can be allocated non sequentially.
  - Transport channel identity is not used to determine the radio bearer mapping. The transport channels that can be used are determined from the available physical channels.
  - Each downlink DCCH and DTCH has a unique logical channel identity.
  - A MAC MBMS identity (MBMS-Id) is associated with each MBMS service carried on MTCH on FACH. The identity is unique within a FACH and the mapping of the MBMS service id to the MBMS-Id is provided on the MCCH.
- For RACH and CPCH transport channels:
  - A transport channel identity is associated with each RACH transport channel. Each identity is unique within the RACHs mapped onto the same PRACH.
  - A transport channel identity is associated with each CPCH transport channel. Each identity is unique within the CPCHs mapped onto the same CPCH set.
  - Transport channel identities can be allocated non sequentially.
  - Transport channel identity is not used to determine the radio bearer mapping. The transport channels that can be used are determined from the available physical channels.
  - Each uplink DCCH and DTCH has a unique logical channel identity.
- For downlink DCH and DSCH transport channels:
  - A transport channel identity is associated with each downlink DCH transport channel. Each identity is unique within the downlink DCHs configured in the UE;
  - Transport channel identities can be allocated non sequentially.

  - A transport channel identity is associated with each DSCH transport channel. Each identity is unique within the DSCHs configured in the UE;
  - A logical channel identity is associated with each logical channel that is multiplexed with other logical channels before being mapped to a transport channel. Each identity is unique within the logical channels mapped to the same transport channel.
  - A logical channel that is mapped to DCH and DSCH simultaneously in TDD has one logical channel identity.
- For HS-DSCH:
  - A MAC-flow identity is associated with each MAC-d flow. Each identity is unique within the MAC-d flows configured in the UE;
  - A logical channel identity is associated with each logical channel that is multiplexed with other logical channels before being mapped to a MAC-d flow. Each identity is unique within the logical channels mapped to the same MAC-d flow.

    A logical channel that is mapped to DCH and HS-DSCH simultaneously has one logical channel identity.
- For uplink DCH and USCH transport channels:
  - A transport channel identity is associated with each uplink DCH transport channel. Each identity is unique within the uplink DCHs configured in the UE;
  - Transport channel identities can be allocated non sequentially.
  - A transport channel identity is associated with each USCH transport channel. Each identity is unique within the USCHs configured in the UE;
  - A logical channel identity is associated with each logical channel that is multiplexed with other logical channels before being mapped to a transport channel. Each identity is unique within the logical channels mapped to the same transport channel.
- For E-DCH:
  - A DDI (Data Description Identity) is associated with each MAC-d PDU. The DDI values are unique within the UE;
  - In addition to indicating the MAC-d PDU size, the DDI value indicates MAC-d flow and logical channel for the MAC-d PDU within the MAC-e PDU.

5.4 Layer 3 - Uu Stratum Services and Functions

This subclause provides an overview on Layer 3 services and functions provided by the Uu Stratum as a whole. A detailed description of the RRC protocol is given in [11]. Examples of structured procedures involving RRC in Idle Mode and Connected Mode are described in [5] and [6], respectively.

5.4.1 Uu Stratum services

5.4.1.1 General Control

The GC SAP provides an information broadcast service. This service broadcasts information to all UEs in a certain geographical area. The basic requirements from such service are:

- It should be possible to broadcast non-access stratum information in a certain geographical area.
- The information is transferred on an unacknowledged mode link. Unacknowledged mode means that the delivery of the broadcast information can not be guaranteed (typically no retransmission scheme is used). It seems reasonable to use an unacknowledged mode link since the information is broadcast to a lot of UEs and since broadcast information often is repeated periodically.

- It should be possible to do repeated transmissions of the broadcast information (how it is repeated is controlled by the non-access stratum).
- The point where the UE received the broadcast information should be included, when the access stratum delivers broadcast information to the non-access stratum.

5.4.1.2 Notification

The Nt SAP provides paging and notification broadcast services. The paging service sends information to a specific UE(s). The information is broadcast in a certain geographical area but addressed to a specific UE(s). The basic requirements from such service are:

- It should be possible to broadcast paging information to a number of UEs in a certain geographical area.
- The information is transferred on an unacknowledged mode link. It is assumed that the protocol entities in non-access stratum handle any kind of retransmission of paging information.

The notification broadcast service broadcasts information to all UEs in a certain geographical. The basic requirements from this service are typically the same as for the information broadcast service of the GC SAP:

- It should be possible to broadcast notification information in a certain geographical area.
- The information is transferred on an unacknowledged mode link.

5.4.1.3 Dedicated Control

The DC SAP provides services for establishment/release of a connection and transfer of messages using this connection. It should also be possible to transfer a message during the establishment phase. The basic requirements from the establishment/release services are:

- It should be possible to establish connections (both point and group connections).
- It should be possible to transfer an initial message during the connection establishment phase. This message transfer has the same requirements as the information transfer service.
- It should be possible to release connections.

The information transfer service sends a message using the earlier established connection. According to [1] it is possible to specify the quality of service requirements for each message. A finite number of quality of service classes will be specified in [1], but currently no class has been specified. In order to get an idea of the basic requirements, the CC and MM protocols in GSM are used as a reference. A GSM based core network is chosen since it is one main option for UMTS. Considering the existing GSM specification of CC and MM the basic requirements from the information transfer service provided by the 'Duplication avoidance' function are (these are some of the services provided by the combination of a duplication layer, RR and the data link layer in GSM):

- In-sequence transfer of messages
  Messages are delivered to the NAS on the receiver side exactly in the order they have been submitted by the NAS on the sending side, without loss or duplication, except possibly for the loss of last messages in case of connection abortion.
- Priority handling
  If SMS messages should be transported through the control plane it should be possible to give higher priority to signalling messages.

The CC and MM protocols also expect other services, which can not be supported by the current primitives of the DC SAP, e.g. indication of radio link failure.

The information transfer service is provided by a combination of the services provided by the data link layer, RNC and the 'Duplication avoidance' function.

5.4.2 RRC functions

The Radio Resource Control (RRC) layer handles the control plane signalling of Layer 3 between the UEs and UTRAN. The RRC performs the following functions:

- **Broadcast of information provided by the non-access stratum (Core Network).** The RRC layer performs system information broadcasting from the network to all UEs. The system information is normally repeated on a regular basis. The RRC layer performs the scheduling, segmentation and repetition. This function supports broadcast of higher layer (above RRC) information. This information may be cell specific or not. As an example RRC may broadcast Core Network location service area information related to some specific cells.

- **Broadcast of information related to the access stratum.** The RRC layer performs system information broadcasting from the network to all UEs. The system information is normally repeated on a regular basis. The RRC layer performs the scheduling, segmentation and repetition. This function supports broadcast of typically cell-specific information.

- **Establishment, re-establishment, maintenance and release of an RRC connection between the UE and UTRAN.** The establishment of an RRC connection is initiated by a request from higher layers at the UE side to establish the first Signalling Connection for the UE. The establishment of an RRC connection includes an optional cell re-selection, an admission control, and a layer 2 signalling link establishment. The release of an RRC connection can be initiated by a request from higher layers to release the last Signalling Connection for the UE or by the RRC layer itself in case of RRC connection failure. In case of connection loss, the UE requests re-establishment of the RRC connection. In case of RRC connection failure, RRC releases resources associated with the RRC connection.

- **Establishment, reconfiguration and release of Radio Bearers.** The RRC layer can, on request from higher layers, perform the establishment, reconfiguration and release of Radio Bearers in the user plane. A number of Radio Bearers can be established to an UE at the same time. At establishment and reconfiguration, the RRC layer performs admission control and selects parameters describing the Radio Bearer processing in layer 2 and layer 1, based on information from higher layers.

- **Assignment, reconfiguration and release of radio resources for the RRC connection.** The RRC layer handles the assignment of radio resources (e.g. codes, CPCH channels) needed for the RRC connection including needs from both the control and user plane. The RRC layer may reconfigure radio resources during an established RRC connection. This function includes coordination of the radio resource allocation between multiple radio bearers related to the same RRC connection. RRC controls the radio resources in the uplink and downlink such that UE and UTRAN can communicate using unbalanced radio resources (asymmetric uplink and downlink). RRC signals to the UE to indicate resource allocations for purposes of handover to GSM or other radio systems.

- **RRC connection mobility functions.** The RRC layer performs evaluation, decision and execution related to RRC connection mobility during an established RRC connection, such as handover, preparation of handover to GSM or other systems, cell re-selection and cell/paging area update procedures, based on e.g. measurements done by the UE**.**

- **Paging/notification.** The RRC layer can broadcast paging information from the network to selected UEs. Higher layers on the network side can request paging and notification. The RRC layer can also initiate paging during an established RRC connection.

- **Routing of higher layer PDUs.** This function performs at the UE side routing of higher layer PDUs to the correct higher layer entity, at the UTRAN side to the correct RANAP entity.

- **Control of requested QoS**. This function shall ensure that the QoS requested for the Radio Bearers can be met. This includes the allocation of a sufficient number of radio resources.

- **UE measurement reporting and control of the reporting.** The measurements performed by the UE are controlled by the RRC layer, in terms of what to measure, when to measure and how to report, including both UMTS air interface and other systems. The RRC layer also performs the reporting of the measurements from the UE to the network.

- **Outer loop power control.** The RRC layer controls setting of the target of the closed loop power control.

- **Control of ciphering.** The RRC layer provides procedures for setting of ciphering (on/off) between the UE and UTRAN. Details of the security architecture are specified in [15].

- **Slow DCA**. Allocation of preferred radio resources based on long-term decision criteria. It is applicable only in TDD mode.

- **Arbitration of radio resources on uplink DCH**. This function controls the allocation of radio resources on uplink DCH on a fast basis, using a broadcast channel to send control information to all involved users.

NOTE: This function is implemented in the CRNC.

- **Initial cell selection and re-selection in idle mode.** Selection of the most suitable cell based on idle mode measurements and cell selection criteria.

- **Integrity protection.** This function adds a Message Authentication Code (MAC-I) to those RRC messages that are considered sensitive and/or contain sensitive information. The mechanism how the MAC-I is calculated is described in [14].

- **Initial Configuration for CBS**
  This function performs the initial configuration of the BMC sublayer.

- **Allocation of radio resources for CBS**
  This function allocates radio resources for CBS based on traffic volume requirements indicated by BMC. The radio resource allocation set by RRC (i.e. the schedule for mapping of CTCH onto FACH/S-CCPCH) is indicated to BMC to enable generation of schedule messages. The resource allocation for CBS shall be broadcast as system information.

- **Configuration for CBS discontinuous reception**
  This function configures the lower layers (L1, L2) of the UE when it shall listen to the resources allocated for CBS based on scheduling information received from BMC.

- **Timing advance control.** The RRC controls the operation of timing advance. It is applicable only in 3.84 Mcps TDD.

- **MBMS control.** The RRC controls the operation of MBMS point-to-point and point-to-multipoint radio bearers.

5.5 Interactions between RRC and lower layers in the C plane

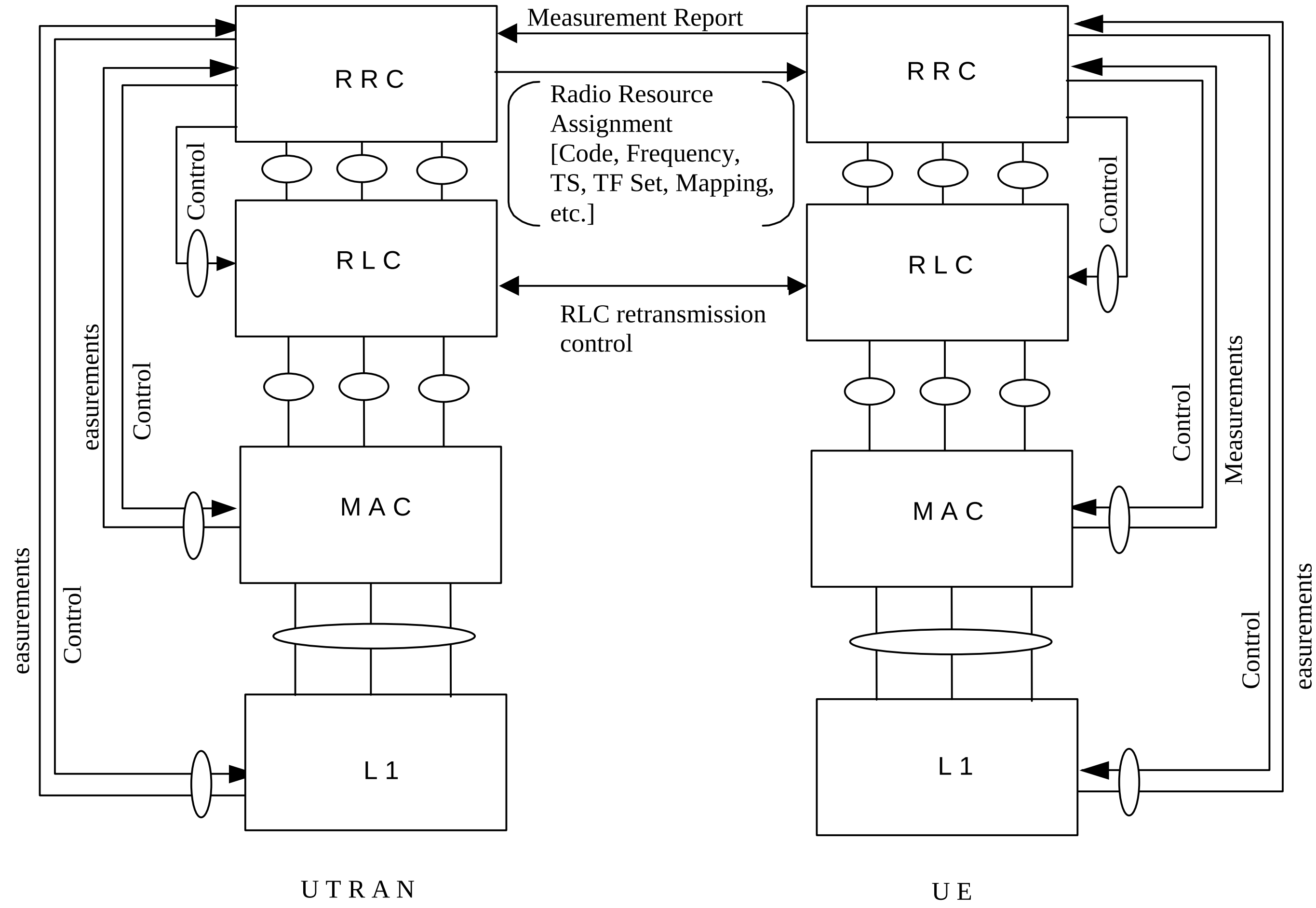


Figure 10: Interactions between RRC and lower layers

The RRC protocol controls and signals the allocation of radio resources to the UE. RRC allows MAC to arbitrate between users and Radio Bearers within the radio resource allocation. The RRC uses the measurements done by the lower layers to determine which radio resources that are available. Therefore it is a need for a measurement report from the UE RRC to the UTRAN RRC. Figure 10 illustrates the principle. The local control and local measurements reporting is handled through the control SAPs between RRC and the lower layers.

5.6 Protocol termination

This subclause specifies in which node of the UTRAN the radio interface protocols are terminated, i.e. where within UTRAN the respective protocol services are accessible. Dashed lines indicate those protocols whose presence is dependent on the service provided to upper layers.

5.6.1 Protocol termination for DCH

Figure 11 and Figure 12 show the protocol termination for DCH for the control and user planes, respectively. The part of physical layer terminating in the Serving RNC is the topmost macro-diversity combining and splitting function for the FDD mode. If no macrodiversity applies, the physical layer is terminated in Node B.

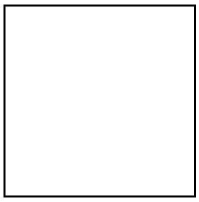


Figure 11: Protocol Termination for DCH, control plane

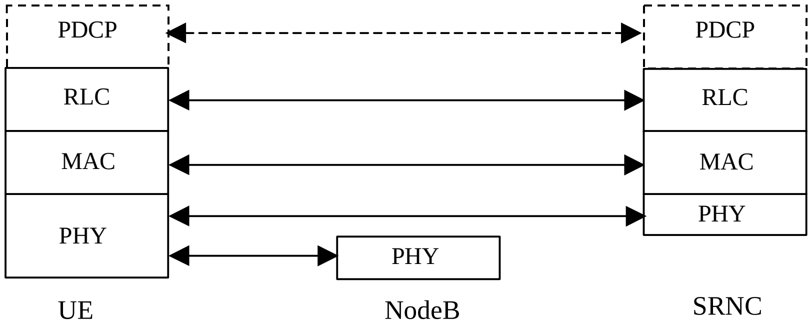


Figure 12: Protocol Termination for DCH, user plane

5.6.2 Protocol termination for RACH/FACH

Figure 13 and Figure 14 show the protocol termination for RACH/FACH for the control and user planes, respectively. Control plane termination refers to the case where RACH/FACH carry dedicated, common or shared control information (i.e. CCCH, DCCH or SHCCH, and in the downlink possibly also BCCH). User plane termination refers to the case where RACH/FACH carry dedicated user data (DTCH) or common user data (CTCH).

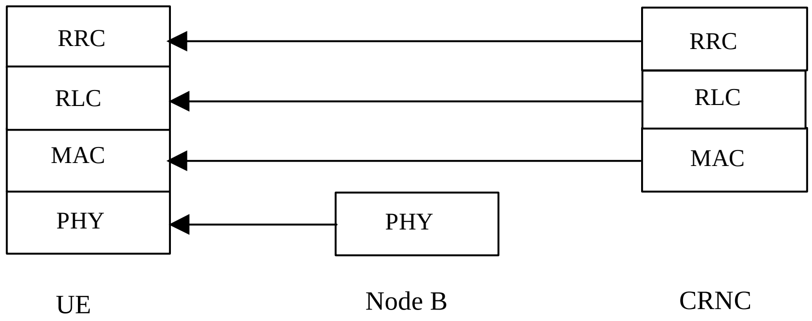
It is assumed that macrodiversity/soft handover is not applied for RACH/FACH. Therefore, the physical layer terminates in Node B. For RACH/FACH carrying DCCH, MAC is split between Controlling and Serving RNC. RLC, and in the C plane also RRC terminate in the Serving RNC. Since Iur can support common channel data streams, the users of that common channel can depend on different SRNCs. However, they depend on the same Controlling RNC. Therefore, for a given user, the Controlling RNC and the Serving RNC can be separate RNCs.

For FACH carrying BCCH, MAC, RLC and RRC are terminated in the CRNC.

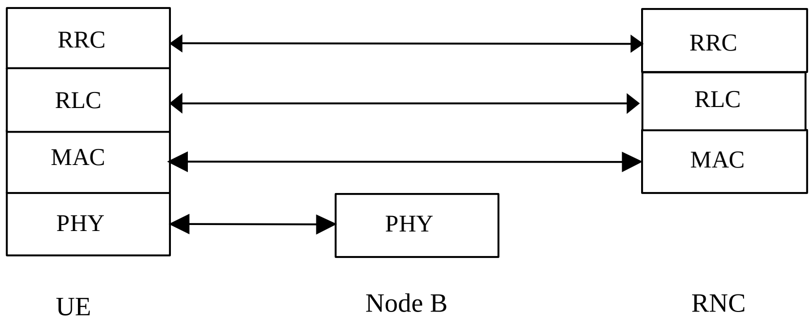
For RACH/FACH carrying SHCCH, MAC, RLC and RRC are terminated in the Controlling RNC (TDD only).

For RACH/FACH carrying CCCH, MAC, RLC and RRC are terminated in the RNC.

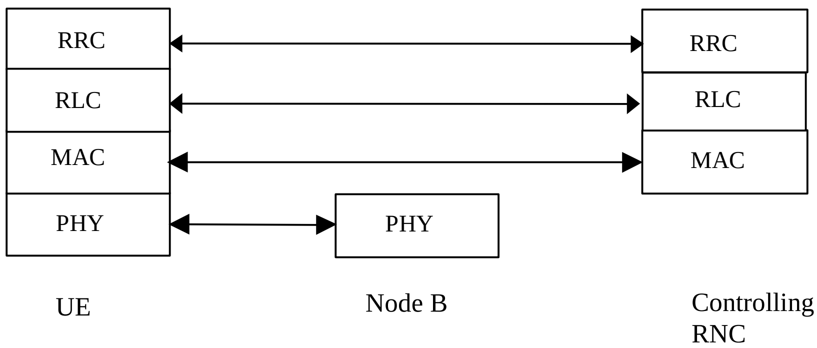
BCCH :



CCCH :



SHCCH:
(TDD only)



DCCH:

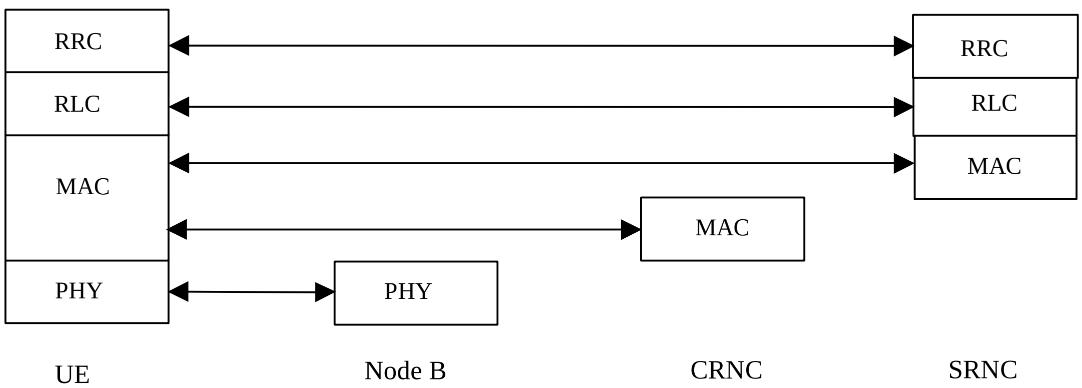


Figure 13: Protocol Termination for RACH/FACH, control plane

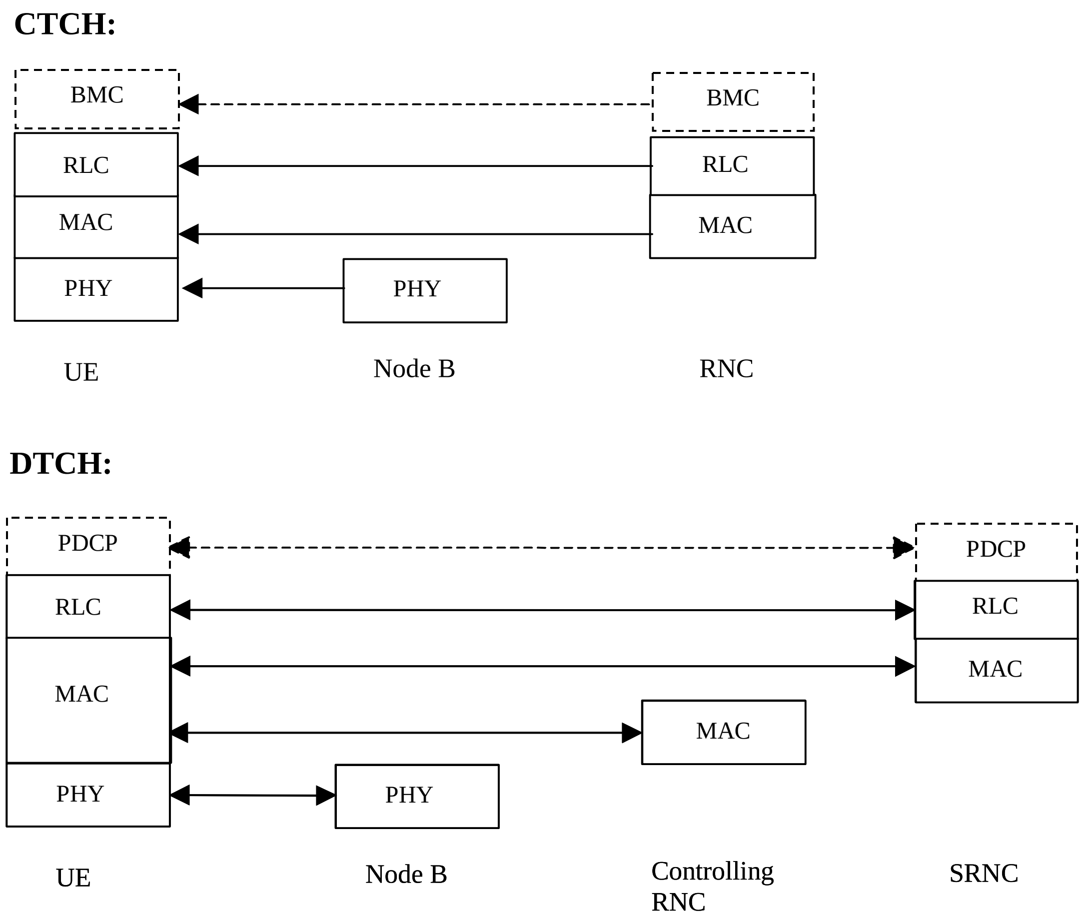


Figure 14: Protocol Termination for RACH/FACH, user plane

5.6.3 Void

5.6.4 Protocol termination for CPCH

The protocol termination for CPCH is identical to the termination for RACH. Figure 13 (for DCCH) presents the control plane protocol termination. Figure 14 presents the user plane protocol termination.

5.6.5 Protocol termination for DSCH

5.6.5.1 DSCH definition

The DSCH is only supported for TDD. The DSCH is a resource that exists in downlink only. It has only impact on the physical and transport channel levels, so there is no definition of shared channel in the logical channels provided by MAC.

The DSCH is a transport channel shared dynamically between several UEs. The DSCH is mapped to one or several physical channels such that a specified part of the downlink resources is employed. For the DSCH no macrodiversity is applied, i.e. a specific DSCH is transmitted in a single cell only.

~~The following two DSCH cases are supported in Release 99, in the following denoted as cases A and B:~~

- ~~**Case A:** The DSCH is defined as an extension to DCH transmission. DSCH related resource allocation is signalled utilising the transport format indication field (TFI) that will be mapped to the TFCI of the associated DCH.~~

- ~~Case B:~~ The DSCH is defined as a shared downlink channel for which resource allocation is performed by RRC in Controlling RNC. The allocation messages, including UE identification, are transmitted on SHCCH, which is mapped on RACH/FACH. Several DSCH can be multiplexed on a CCTrCH in the physical layer, the transport formats of the DSCHs have to be selected from the transport format combination set of this CCTrCH. Each CCTrCH is mapped on one or more PDSCHs. If the transport format combination subset of a CCTrCH contains more than one transport format combination, a TFCI can be transmitted inside the PDSCH, or blind detection can be applied in the UE. ~~This case is supported for TDD only.~~

~~NOTE: Cases A and B of DSCH can be employed concurrently for TDD (at the same time on a single PDSCH).~~

Interleaving for the DSCH may be applied over a multiplicity of radio frames. Nevertheless, here the basic case is considered where the interleaving is rectangular for a given MAC PDU, and equal to one radio frame (10 ms). The framing is synchronised on the SCH.

In every radio frame, one or several PDSCHs can be used in the downlink. Therefore, the DSCH supports code multiplexing. MAC multiplexing of different UEs shall not be applied within a radio frame, i.e. within one radio frame a PDSCH is assigned to a single UE. However, MAC multiplexing is allowed on a frame by frame basis, i.e. one PDSCH may be allocated to different UEs at each frame.

Transport blocks on the DSCH may be of constant size, so that the Transport Block Set may be derived from the code allocated to each UE on the DSCH. For case B, the transport format combination set can change with each transmission time interval.

5.6.5.2 Resource allocation and UE identification on DSCH

The principles of capacity allocation and UE identification on the DSCH are described in more detail below.

5.6.5.2.1 Void~~Case A (UE requires a downlink TFCI on a DPCCH)~~

~~The TFCI of the dedicated physical channel may carry the information that a given code of the DSCH must be listened to by the UE. Fast power control can be applied per code based on the dedicated physical control channel, DPCCH.~~

~~Alternatively, a UE may be requested on the DCH to listen to a DSCH for a given period of time, and to decode the data so that the address of the destination UE can be decoded. This does not require more TFCI values because signalling is done in layers 2 and 3.~~

5.6.5.2.2 ~~Case B (~~UE requires a downlink SHCCH~~) (TDD only)~~

The information which physical downlink shared channels to listen to and when, is sent by RRC on the SHCCH logical channel, which is mapped on RACH and USCH/FACH and DSCH. The transmitted Layer 3 messages contain information about the used PDSCHs and the timing of the allocation.

5.6.5.3 Model of DSCH in UTRAN

Figure 15 captures the working assumption on the Downlink Shared Channel (DSCH). The two RLCs point to logical channel (DTCH) specific RLC-entities of specific users while MAC refers to the provision of MAC sublayer functions for all users.

The MAC sublayer of a DSCH is split between the Controlling RNC and SRNC. For a given user, the RLC sublayer is terminated in its SRNC. Since Iur can support DSCH data streams, the users on that DSCH can depend on different SRNCs. For a given user, the Controlling RNC and the Serving RNC can be separate RNCs. The MAC in the network takes care of mapping downlink data either to a common channel (FACH, not shown in this figure), or to a DCH and/or the DSCH.

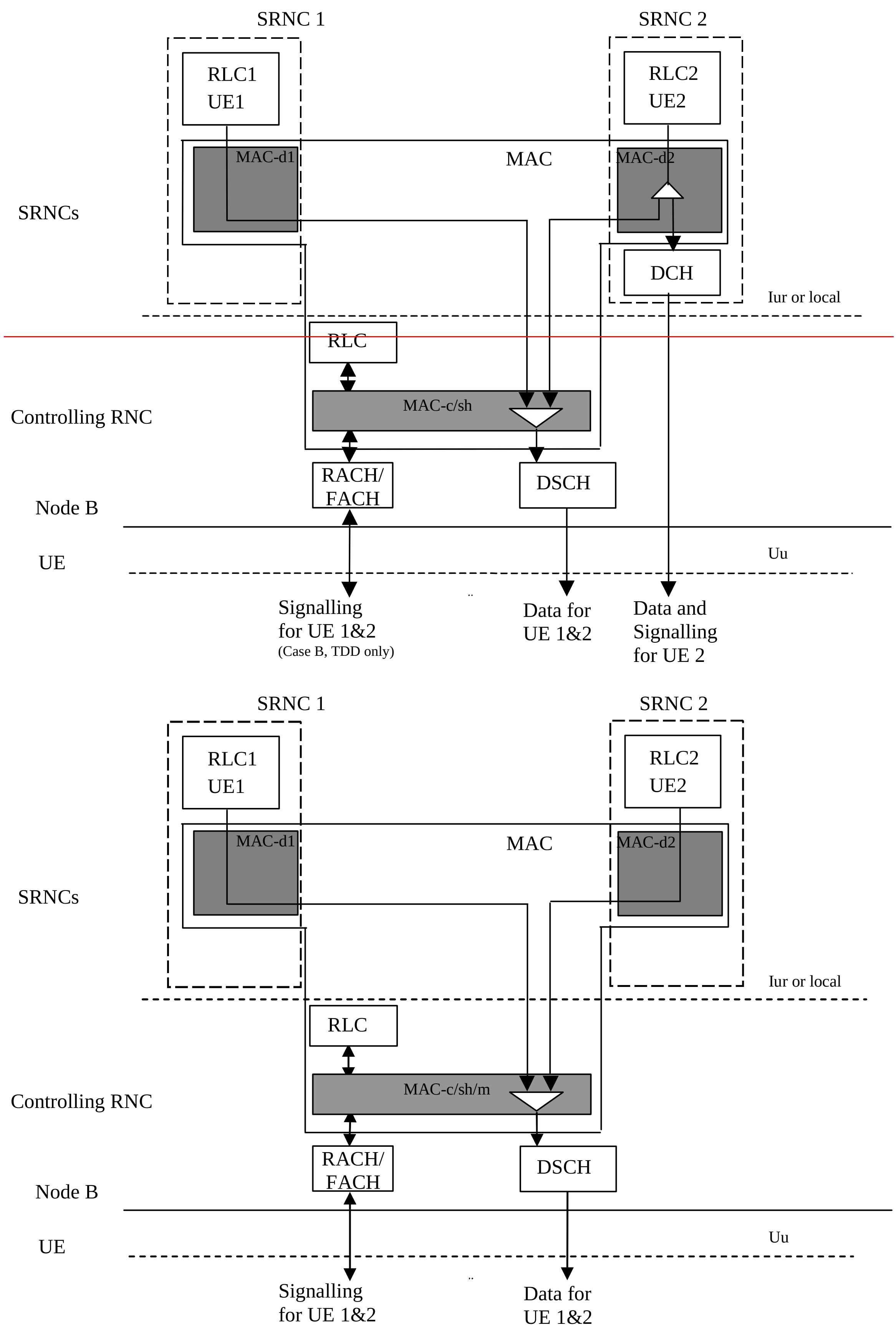


Figure 15: Model of downlink shared channel (DSCH) in UTRAN (TDD only)

5.6.5.4 Protocol termination

The protocol termination points for DSCH in control and user planes are presented in Figure 16 and Figure 17, respectively. The DSCH is for TDD only.

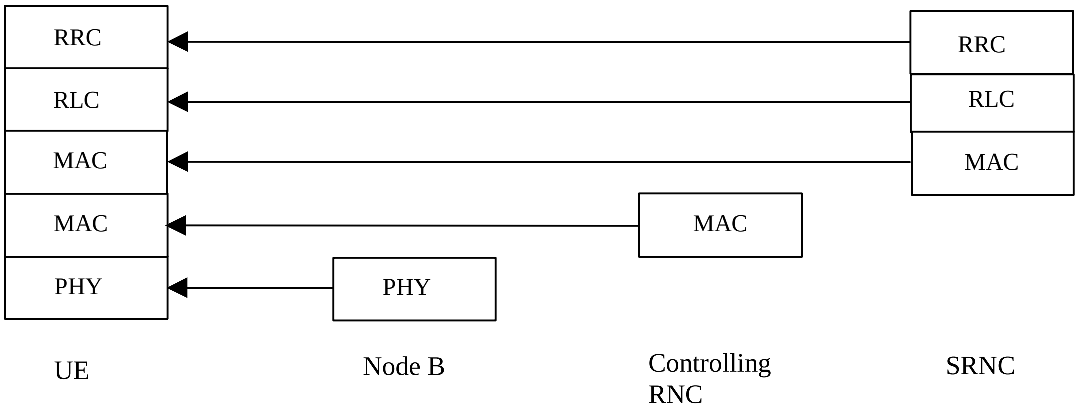


Figure 16: Protocol termination points for DSCH, control plane (TDD only)

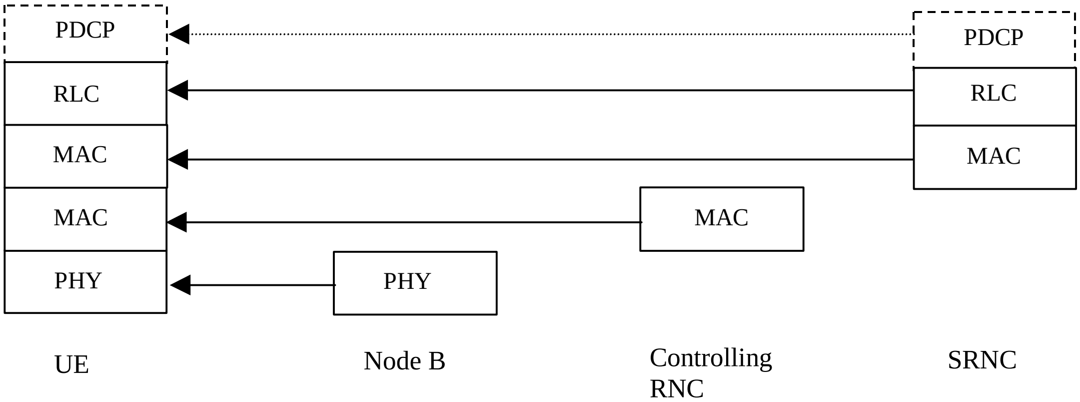


Figure 17: Protocol termination points for DSCH, user plane (TDD only)

5.6.6 Protocol termination for transport channel of type USCH

5.6.6.1 USCH definition

The USCH is only supported for TDD. It is a resource that exists in uplink only. It has only impact on the physical and transport channel levels, so there is no definition of shared channel in the logical channels provided by MAC.

The USCH is a transport channel shared dynamically between several UEs. The USCH is mapped to one or several physical channels such that a specified part of the uplink resources is employed.

The USCH is defined as a shared uplink channel for which resource allocation is performed by RRC in Controlling RNC. The allocation requests and allocation messages, including UE identification, are transmitted on SHCCH, which is mapped on RACH and USCH/FACH and DSCH. Several USCHs can be multiplexed on a CCTrCH in the physical layer, the transport formats of the USCHs have to be selected from the transport format combination set of this CCTrCH. Each CCTrCH is mapped on one or more PUSCHs. If the transport format combination subset of a CCTrCH contains more than one transport format combination, a TFCI can be transmitted inside the PUSCH, or blind detection can be applied in the Node B.

Interleaving for the USCH may be applied over a multiplicity of radio frames.

In every radio frame, one or several PUSCHs can be used in the uplink. Therefore, the USCH supports physical channel multiplexing. MAC multiplexing of different UEs shall not be applied within a radio frame, i.e. within one radio frame a PUSCH is assigned to a single UE. However, MAC multiplexing is allowed on a frame by frame basis, i.e. one PUSCH may be allocated to different UEs at each frame.

The transport format combination set on the USCH can change with each transmission time interval.

5.6.6.2 Resource allocation and UE identification on USCH

The information which physical uplink shared channels to transmit on and when is sent by RRC on the SHCCH logical channel, which is mapped on RACH and USCH/FACH and DSCH. The transmitted Layer 3 messages contain information about the assigned PUSCHs and the timing of the allocation.

5.6.6.3 Model of USCH in UTRAN

Figure 18 captures the working assumption on the Uplink Shared Channel (USCH). The two RLCs point to logical channel (DTCH) specific RLC-entities of specific users while MAC refers to the provision of MAC sublayer functions for all users.

The MAC sublayer of a USCH is split between the Controlling RNC and SRNC. For a given user, the RLC sublayer is terminated in its SRNC. Since Iur can support USCH data streams, the users on that USCH can depend on different SRNCs. For a given user, the Controlling RNC and the Serving RNC can be separate RNCs. The MAC in the network takes care of mapping uplink data either from a common channel (RACH, not shown in this figure), DCH or the USCH.

Allocations of uplink capacity are requested by the UEs and signalled to the UEs on the SHCCH (Shared channel control channel), which is mapped on RACH and USCH/FACH and DSCH.

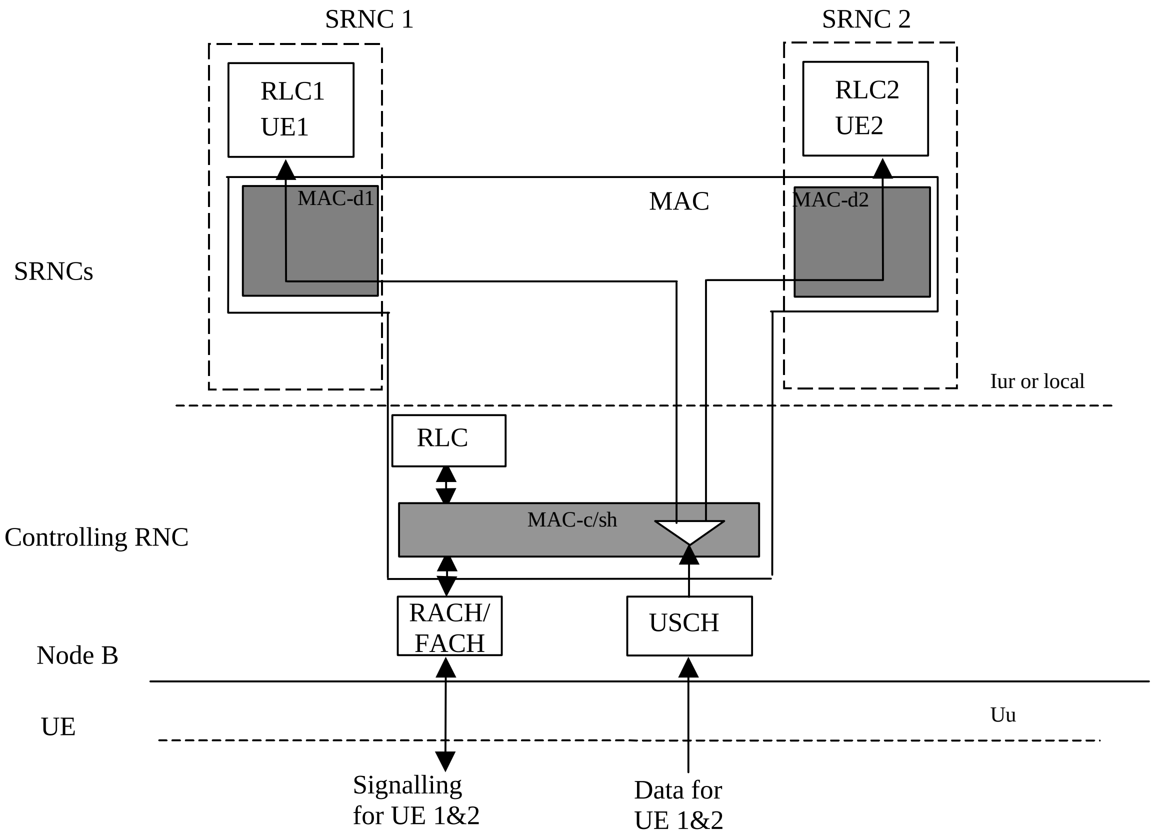


Figure 18: Model of uplink shared channel (USCH) in UTRAN (TDD only)

5.6.6.4 Protocol termination

The protocol termination points for USCH in control and user planes are presented in Figure 19 and Figure 20, respectively. The USCH is for TDD only.

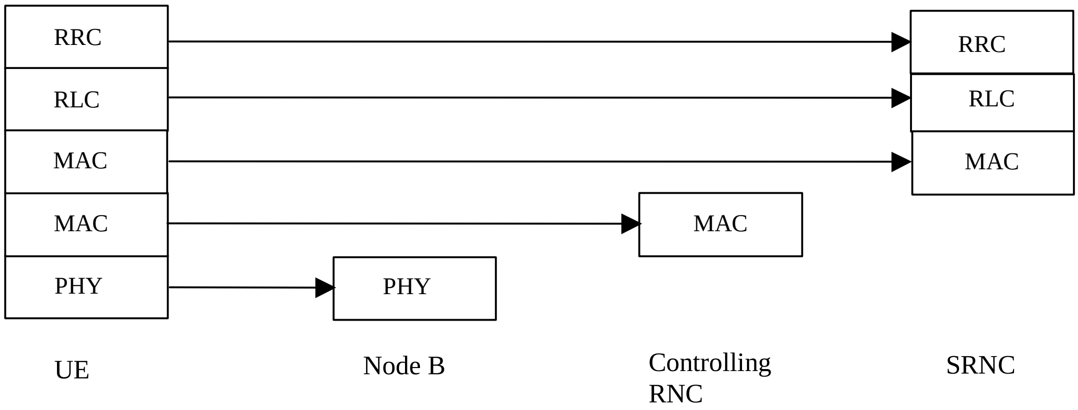


Figure 19: Protocol termination points for USCH, control plane (TDD only)

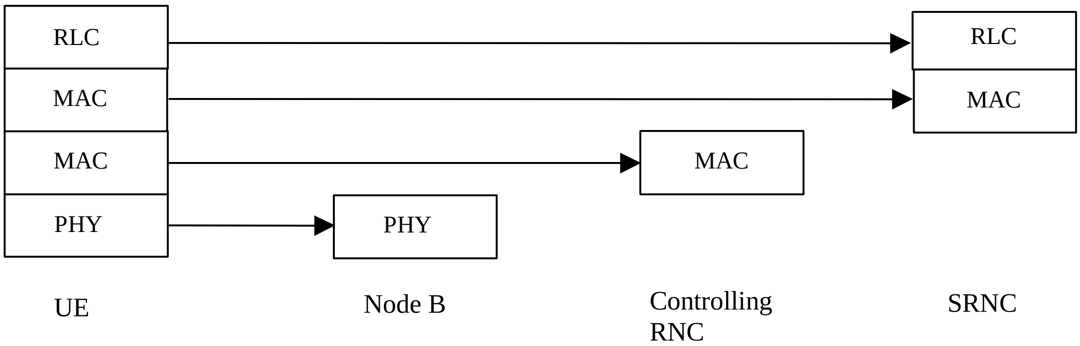


Figure 20: Protocol termination points for USCH, user plane (TDD only)

5.6.7 Protocol termination for transport channel of type BCH

System information on BCH can include information that is available only in Node B, and need to be updated very frequently (each 20-100 ms), such as uplink interference in the cell. Also, for the system information originating from the RNC, it is assumed that the updating of system information is at least one magnitude less (minutes) than the repetition frequency on the BCH (in the order of 1s). The system information originating from the CRNC should be sent transparently to Node B, which then handles the repetition. Protocol termination for the BCH shall therefore be distributed between the Node B and the CRNC, resulting in less signalling on Iub and lower processor load. Note that the RLC sublayer is transparent for this transport channel type.

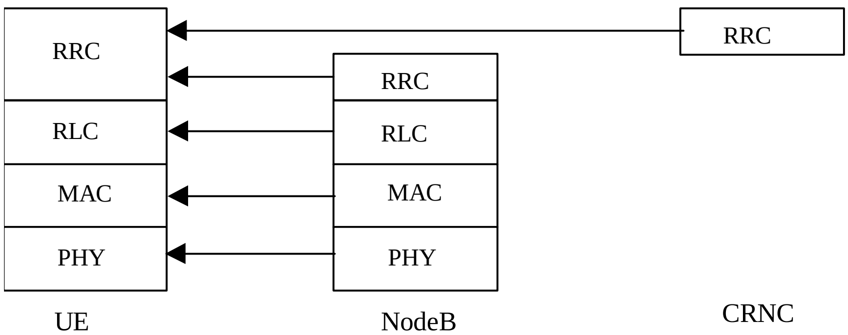


Figure 21: Protocol termination for BCH

5.6.8 Protocol termination for transport channel of type PCH

In order to enable co-ordinated scheduling between PCH and FACH/DSCH the corresponding MAC scheduling functions shall be allocated in the same node. MAC-c/sh is terminated in CRNC. A natural implication is that RLC and RRC also are terminated in CRNC.

Note that the RLC sublayer is transparent for this channel.

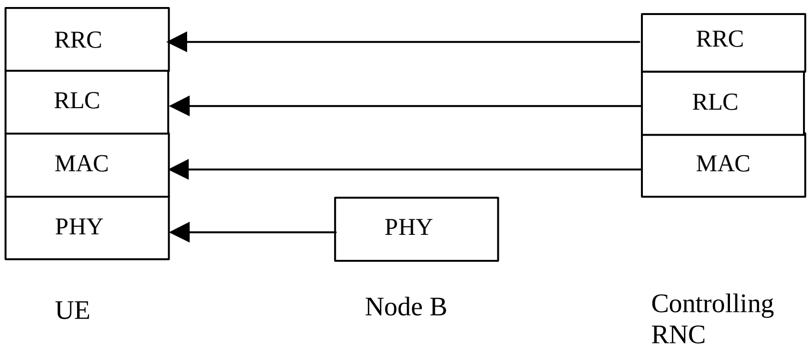


Figure 22: Protocol termination for PCH

5.6.9 Protocol termination for HS-DSCH

5.6.9.1 HS-DSCH definition

The HS-DSCH is a resource that exists in downlink only. It has only impact on the physical and transport channel levels, so there is no definition of shared channel in the logical channels provided by MAC.

The HS-DSCH is a transport channel for which a common pool of radio resources is shared dynamically between several UEs. The HS-DSCH is mapped to one or several physical channels such that a specified part of the downlink resources is employed. For the HS-DSCH no macrodiversity is applied, i.e. a specific HS-DSCH is transmitted in a single cell only.

- The HS-DSCH is defined as an extension to DCH transmission. Physical channel signalling is used for indicating to a UE when it has been scheduled and then the necessary signalling information for the UE to decode the HS-PDSCH.

In every HS-DSCH TTI, one or several HS-PDSCHs can be used in the downlink. Therefore, the HS-DSCH supports code multiplexing. MAC multiplexing of different UEs shall not be applied within an HS-DSCH TTI, i.e. within one HS-DSCH TTI an HS-PDSCH is assigned to a single UE. However, MAC multiplexing is allowed on a TTI by TTI basis, i.e. one HS-PDSCH may be allocated to different UEs at each TTI.

5.6.9.2 Resource allocation and UE identification on HS-DSCH

For each HS-DSCH TTI, each HS-SCCH carries HS-DSCH related downlink signalling for one UE, along with a UE identity (via a UE specific CRC) that identifies the UE for which this information is necessary in order to decode the scheduled HS-PDSCH.

5.6.9.3 Protocol termination

The protocol termination points for HS-DSCH in the control and user planes are presented in figure 5.6.9.3-1 and figure 5.6.9.3-2, respectively. Two configurations exist, a Configuration with MAC-c/sh and a Configuration without MAC-c/sh.

- Configuration with MAC-c/sh: In this case, the MAC-hs in Node B is located below MAC-c/sh in CRNC.

- Configuration without MAC-c/sh: In this case, the CRNC does not have any function for the HS-DSCH. MAC-d in SRNC is located directly above MAC-hs in Node B, i.e. in the HS-DSCH the SRNC is directly connected to the Node B, thus bypassing the DRNC.

Both configurations are transparent to both the UE and Node B. Figures 5.6.9.3-2 and 5.6.9.3-3 show the respective user plane protocol architecture with termination points for the above two configurations.

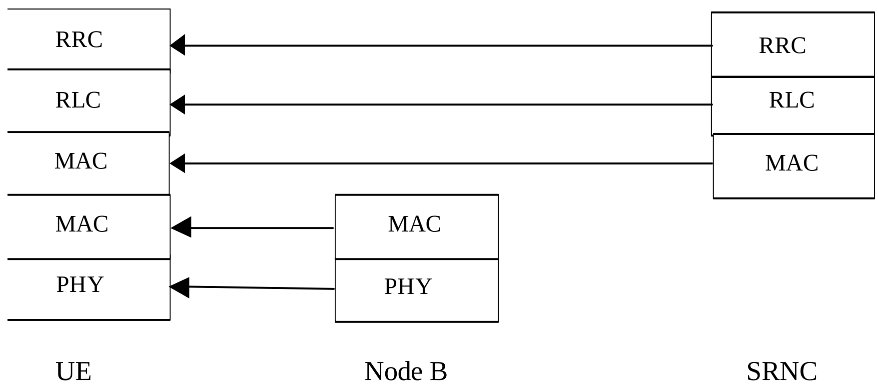


Figure 5.6.9.3-1: Protocol termination points for HS-DSCH, control plane

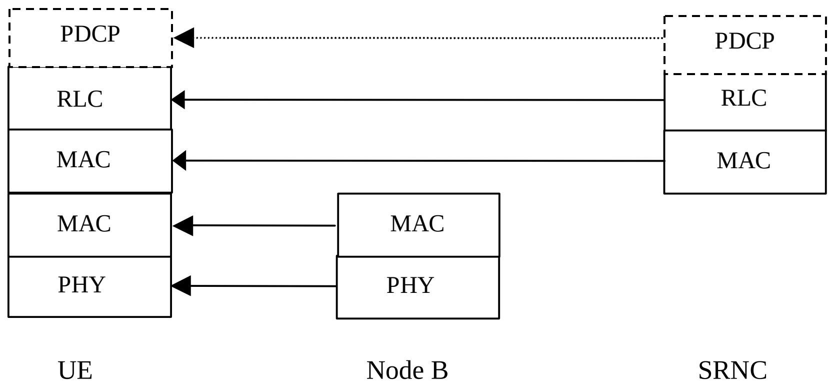


Figure 5.6.9.3-2: Protocol termination points for HS-DSCH, user plane

5.6.10 Protocol termination for E-DCH

5.6.10.1 E-DCH definition

The E-DCH is a resource that exists in uplink only. It has only impact on the physical and transport channel levels, it is not visible in the logical channels provided by MAC.

The E-DCH is a transport channel that is subject to Node-B scheduling. The E-DCH is defined as an extension to DCH transmission.

5.6.10.2 Resource allocation and UE identification related to E-DCH

Physical channel signalling from the Node-B is used for indicating to the UE what amount of uplink resources it is allowed to use. Also the UE sends scheduling requests to the Node-B about the resource needs.

Scheduling information is sent on a common physical channel and a UE identity is used to address the different UEs.

5.6.10.3 Protocol termination

The protocol termination points for E-DCH in the control and user planes are presented in figure 5.6.10.3-1 and figure 5.6.10.3-2, respectively.

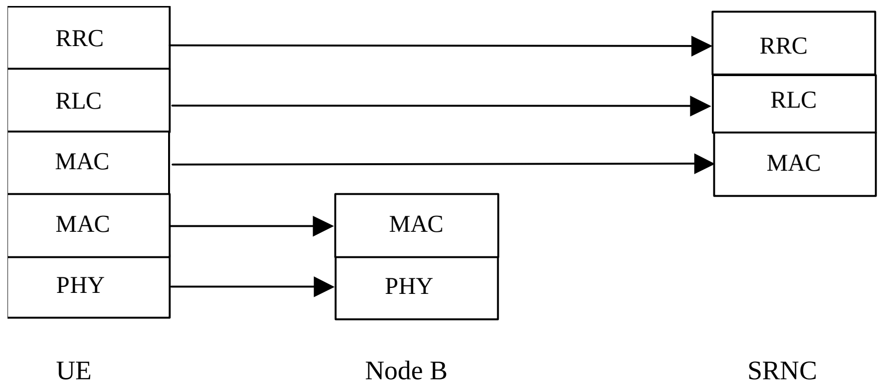


Figure 5.6.10.3-1: Protocol termination points for E-DCH, control plane

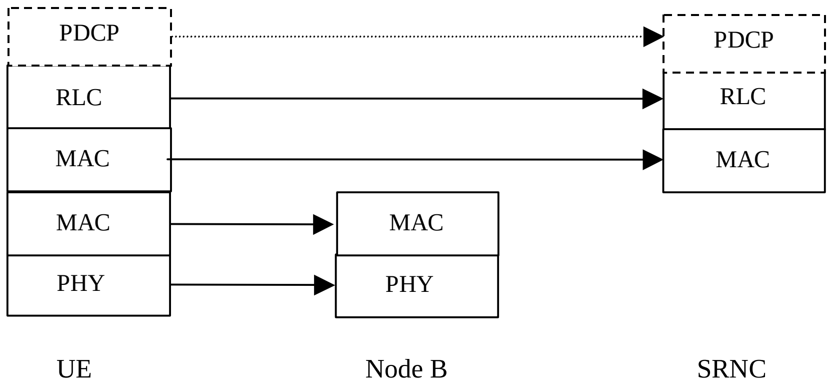


Figure 5.6.10.3-2: Protocol termination points for E-DCH, user plane

5.6.11 Protocol termination for MBMS

5.6.11.1 MBMS definition

The MBMS feature is downlink unidirectional.

MBMS services can be provided in point-to-point and point-to-multipoint. For the point-to-multipoint there exist three logical channels specifically for MBMS: MCCH, MSCH and MTCH.

5.6.11.2 Resource allocation related to MBMS

The radio bearer allocation for the MCCH is indicated in system information on the BCCH. The radio bearer allocations for MSCH and MTCH are indicated on MCCH.

5.6.11.3 Protocol termination

The protocol termination points for MCCH and MSCH in the control plane and MTCH in the user plane are presented in figure 5.6.11.3-1 and figure 5.6.11.3-2, respectively.

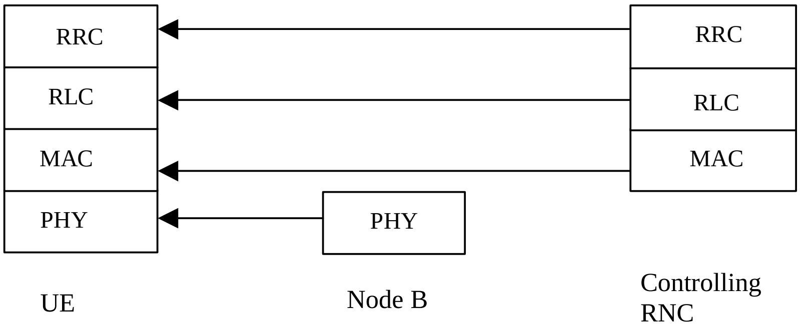


Figure 5.6.11.3-1: Protocol termination points for MCCH and MSCH, control plane

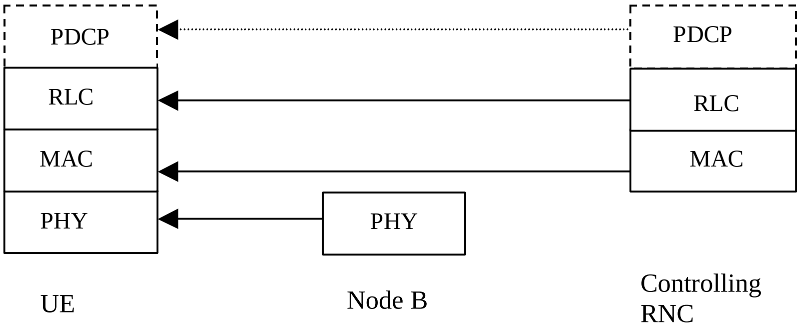


Figure 5.6.11.3-2: Protocol termination points for MTCH, user plane

6 User Identification and RRC Connection Mobility

6.1 UE identification on the radio interface

A Radio Network Temporary Identity (RNTI) is used as an UE identifier on RACH/FACH, RACH+CPCH/FACH or, for ~~FDD~~ TDD mode, also on DSCH by the ~~MAC protocol~~RRC, or on PCH by the RRC, when a RRC connection exists. For the HS-DSCH the UE identification is included by the physical layer with the help of a UE-specific CRC.

Definition of UE identifiers

Several types of RNTIs exist. One is used within the Serving RNC and it is denoted by Serving RNC RNTI (S-RNTI). A second type is used within a cell controlled by a CRNC, when applicable, and it is denoted by Cell RNTI (C-RNTI). A third type is used only for TDD within a cell controlled by a CRNC when a DSCH is allocated and it is denoted by DSCH-RNTI. A fourth type is used within a cell controlled by a CRNC when an HS-DSCH is configured and it is denoted by HS-DSCH-RNTI (H-RNTI). A fifth type is used within a cell when an E-DCH is configured to a UE and it is denoted by E-RNTI.

S-RNTI is allocated for all UEs having a RRC connection. It is allocated by the Serving RNC and it is unique within the Serving RNC. S-RNTI is reallocated always when the Serving RNC for the RRC connection is changed and deallocated when the RRC connection is released.

In addition for each UE having an RRC connection, there is an identifier of its current serving RNC, which is denoted as SRNC identifier. The SRNC identifier together with S-RNTI is a unique identifier of the RRC connection within PLMN. The combination of SRNC identifier and S-RNTI is referred to as U-RNTI (UTRAN Radio Network Temporary Identity), which is used on the radio interface.

C-RNTI for a UE is allocated by a controlling RNC and it is unique within one cell controlled by the allocating CRNC. C-RNTI can be reallocated when a UE accesses a new cell with the cell update procedure.

In TDD mode, DSCH-RNTI for a UE is allocated by controlling RNC when a DSCH channel is configured. DSCH-RNTI is unique within the cell carrying the DSCH.

H-RNTI for a UE is allocated by a controlling RNC and it is unique within one cell controlled by the allocating CRNC. H-RNTI is reallocated when an HS-DSCH cell change is performed.

E-RNTI for a UE is allocated by the Node-B and it is valid within one cell. E-RNTI may be reallocated when the serving E-DCH cell changes. Several UEs may use the same E-RNTI.

Usage of UE identifiers

U-RNTI is allocated to an UE having a RRC connection. It identifies the UE within UTRAN and is used as a UE identifier in cell update, URA update, RRC connection reestablishment and (UTRAN originated) paging messages and associated responses on the radio interface. The SRNC identifier within the U-RNTI is used by the Controlling RNC to route the received uplink messages towards the Serving RNC.

C-RNTI is used as a UE identifier in all other DCCH/DTCH common channel messages on the radio interface.

In TDD mode, DSCH-RNTI is used as a UE identifier for DTCH and DCCH in downlink when mapped onto DSCH transport channel.

H-RNTI is used as a UE identifier for the HS-DSCH.

E-RNTI is used as a UE identifier when controlling UE uplink resources on the E-DCH.

NAS identifiers are used as the UE identifier in the initial access CCCH message on the radio interface.

6.2 UE connection to UTRAN

The different levels of UE connection to UTRAN are listed below:

- No signalling connection exist
  The UE has no relation to UTRAN, only to CN. For data transfer, a signalling connection has to be established.
- Signalling connection exist
  There is a RRC connection between UE and UTRAN. The UE position can be known on different levels:
  - UTRAN Registration Area (URA) level
    The UE position is known on UTRAN registration area level. URA is a specified set of cell, which can be identified on the BCCH.
  - Cell level
    The UE position is known on cell level. Different channel types can be used for data transfer:
    - Common transport channels (RACH, FACH, CPCH, DSCH, HS-DSCH);
    - Dedicated transport channels (DCH, E-DCH).

7 UE modes

Two modes of operation are currently defined for the UE, idle mode and connected mode [5, 6].

After power on, the UE stays in idle mode until it transmits a request to establish an RRC connection. In idle mode the UE is identified by non-access stratum identities such as IMSI, TMSI and P-TMSI. In addition, the UTRAN has no own information about the individual idle mode UEs, and can only address e.g. all UEs in a cell or all UEs monitoring a specific paging occasion.

The connected mode is entered when the RRC connection is established. A RRC connection is established between the UE and a RNC called SRNC. The UE is assigned a radio network temporary identity (U-RNTI and possibly in addition

C-RNTI or, only for TDD, DSCH-RNTI) to be used as UE identity on common transport channels. RRC connection is within a UTRAN identified with the U-RNTI.

The UE leaves the connected mode and returns to idle mode when the RRC connection is released or at RRC connection failure.

Reception of SMS cell broadcast can be done in both idle and connected mode.

3GPP TSG-RAN Working Group 2 #47 **Tdoc ⌘ R2-051606**
Athens, Greece, 9 – 13 May 2005

CR-Form-v7

CHANGE REQUEST

⌘	**25.302**	**CR**	**0157**	⌘ **rev**	**-**	⌘ Current version:	**5.7.0** ⌘

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

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

Title: ⌘	Feature Clean-up: Removal of DSCH (FDD)		
Source: ⌘	RAN WG2		
Work item code: ⌘	TEI5	***Date:*** ⌘	10/05/2005
Category: ⌘	**C**	***Release:*** ⌘	REL-5
	Use one of the following categories: ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *Rel-4 (Release 4)* *Rel-5 (Release 5)* *Rel-6 (Release 6)*

Reason for change: ⌘	Removal of DSCH for FDD
Summary of change: ⌘	Removal of DSCH for FDD
Consequences if not approved: ⌘	DSCH for FDD mode will remain specified

Clauses affected: ⌘	6.2, 7.2, 8.2, 10.3.5.16,				
	Y	**N**			
Other specs ⌘	**X**		Other core specifications	⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
affected:	**X**		Test specifications		34.108, 34.123
			O&M Specifications		
Other comments: ⌘					

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

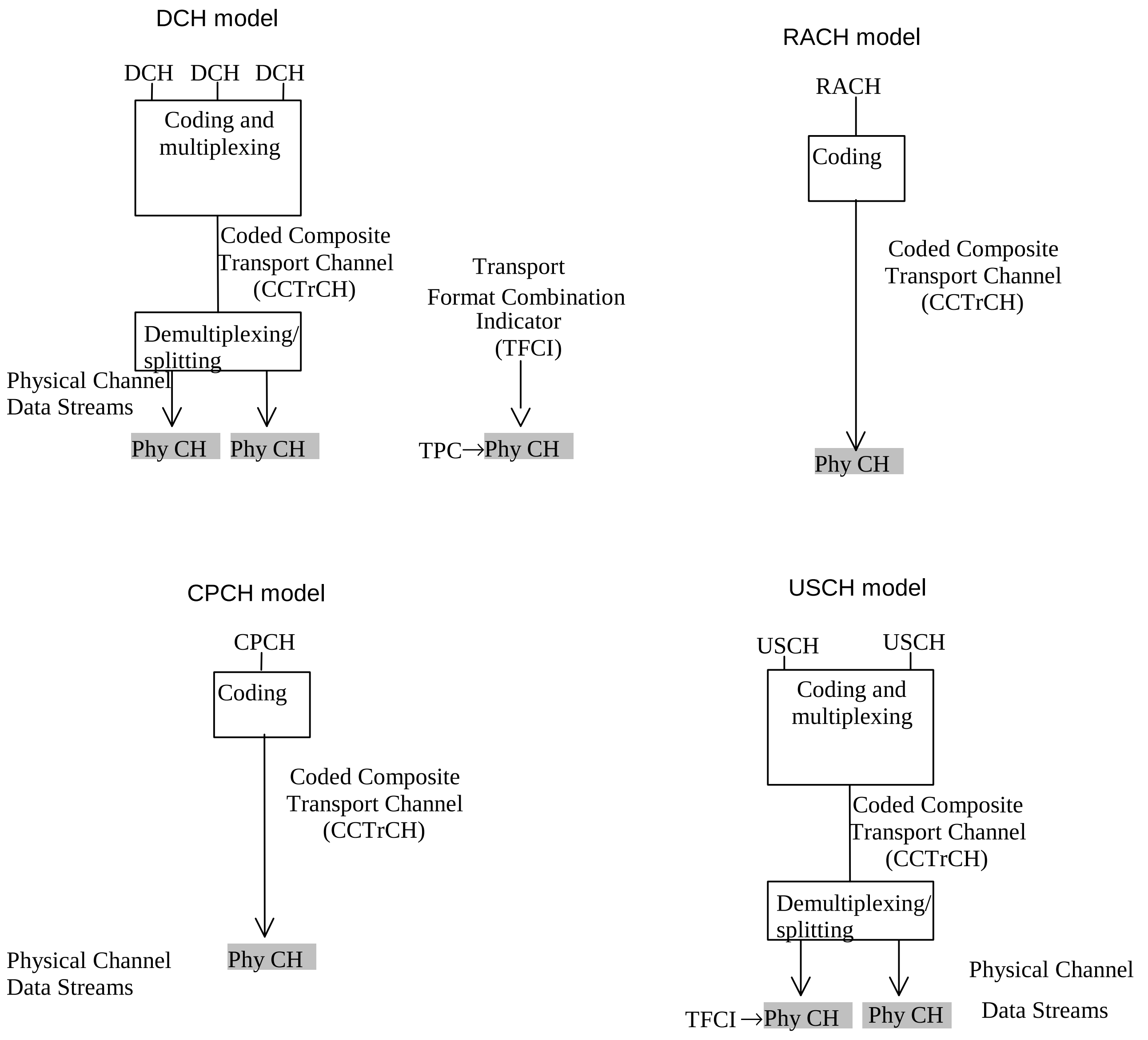
downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

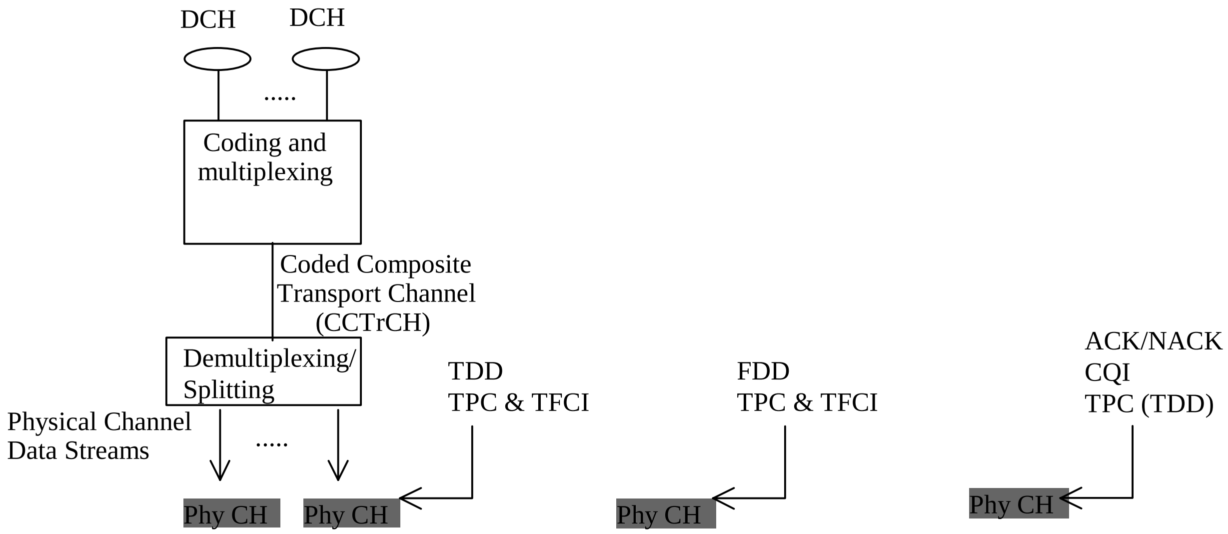
6 Model of physical layer of the UE

6.1 Uplink models

Figure 2 shows models of the UE's physical layer in the uplink for both FDD and TDD mode. It shows the models for DCH, RACH, CPCH (the latter two used in FDD mode only) and USCH (TDD only). Some restriction exist for the use of different types of transport channel at the same time, these restrictions are described in the clause "UE Simultaneous Physical Channel combinations". More details can be found in [3] and [4].



DCH model with HS-DSCH support



NOTE 1: CPCH is for FDD only.

NOTE 2: USCH is for TDD only.

Figure 2: Model of the UE's physical layer - uplink

The DCH model shows that one or several DCHs can be processed and multiplexed together by the same coding and multiplexing unit. The detailed functions of the coding and multiplexing unit are not defined in the present document but in [3] and [4]. The single output data stream from the coding and multiplexing unit is denoted *Coded Composite Transport Channel (CCTrCH).*

The bits on a CCTrCH Data Stream can be mapped on the same Physical Channel and should have the same C/I requirement.

On the downlink, multiple CCTrCH can be used simultaneously with one UE. In the case of FDD, only one fast power control loop is necessary for these different CCtrCH, but the different CCtrCH can have different C/I requirements to provide different QoS on the mapped Transport Channels. In the case of TDD, different power control loops can be applied for different CCTrCH. One physical channel can only have bits coming from the same CCTrCH.

On the uplink and in the case of FDD, only one CCTrCH can be used simultaneously. On the uplink and in the case of TDD, multiple CCTrCH can be used simultaneously.

When multiple CCTrCH are used by one UE, one or several TFCI can be used, but each CCTrCH has only zero or one corresponding TFCI. In the case of FDD, these different words are mapped on the same DPCCH. In the case of TDD, these different TFCIs can be mapped on different DPCH.

The data stream of the CCTrCH is fed to a data demultiplexing/splitting unit that demultiplexes/splits the CCTrCH's data stream onto one or several *Physical Channel Data Streams*.

The current configuration of the coding and multiplexing unit is either signalled to, or optionally blindly detected by, the network for each 10 ms frame. If the configuration is signalled, it is represented by the *Transport Format Combination Indicator (TFCI)* bits. Note that the TFCI signalling only consists of pointing out the current transport format combination within the already configured transport format combination set. In the uplink there is only one TFCI representing the current transport formats on all DCHs of one CCTrCH simultaneously. In FDD mode, the physical channel data stream carrying the TFCI is mapped onto the physical channel carrying the power control bits and the pilot. In TDD mode the TFCI is time multiplexed onto the same physical channel(s) as the DCHs. The exact locations and coding of the TFCI are signalled by higher layers.

The DCH and USCH have the possibility to perform Timing Advance in TDD mode.

The model for the RACH case shows that RACH is a common type transport channel in the uplink. RACHs are always mapped one-to-one onto physical channels (PRACHs), i.e. there is no physical layer multiplexing of RACHs, and there can only be one RACH TrCH and no other TrCH in a RACH CCTrCH. Service multiplexing is handled by the MAC layer. In one cell several RACHs/PRACHs may be configured. If more than one PRACH is configured in a cell, the UE performs PRACH selection as specified in [4].

In FDD, the RACHs mapped to the PRACHs may all employ the same Transport Format and Transport Format Combination Sets, respectively. It is however also possible that individual RACH Transport Format Sets are applied on each available RACH/PRACH.

In TDD, there is no TFCI transmitted in the burst, and therefore each RACH is configured with a single transport format within its TFS. The RACHs mapped to the PRACHs may all employ the same Transport Format. It is however also possible that individual RACH Transport Formats are applied on each available RACH/PRACH combination.

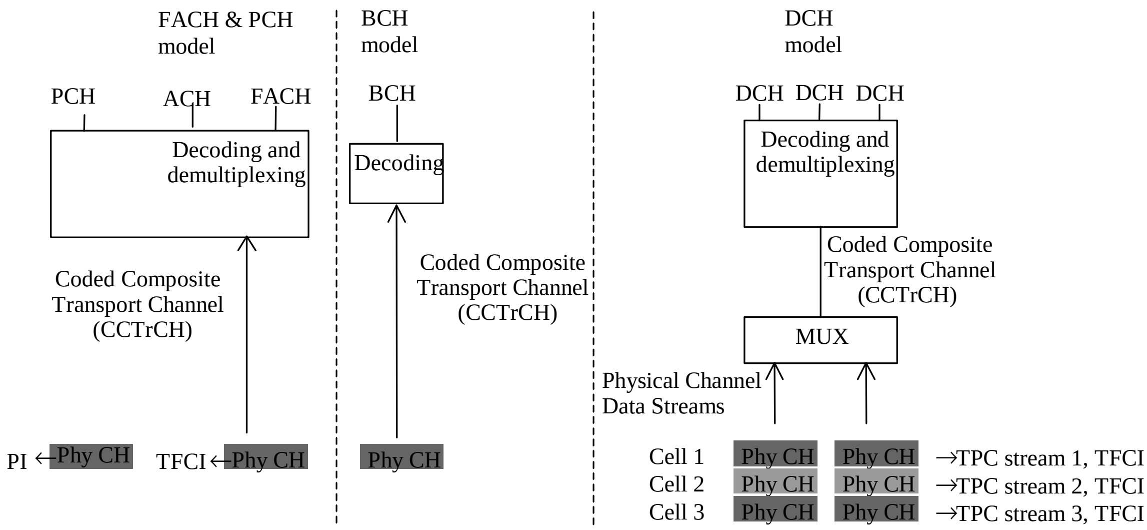
The available pairs of RACH and PRACHs and their parameters are indicated in system information. In FDD mode, the various PRACHs are distinguished either by employing different preamble scrambling codes, or by using a common scrambling code but distinct (non-overlapping) partitions of available signatures and available subchannels. In TDD mode, the various PRACHs are distinguished either by employing different timeslots, or by using a common timeslot but distinct (non-overlapping) partitions of available channelisation codes and available subchannels. Examples of RACH/PRACH configurations are given in [6].

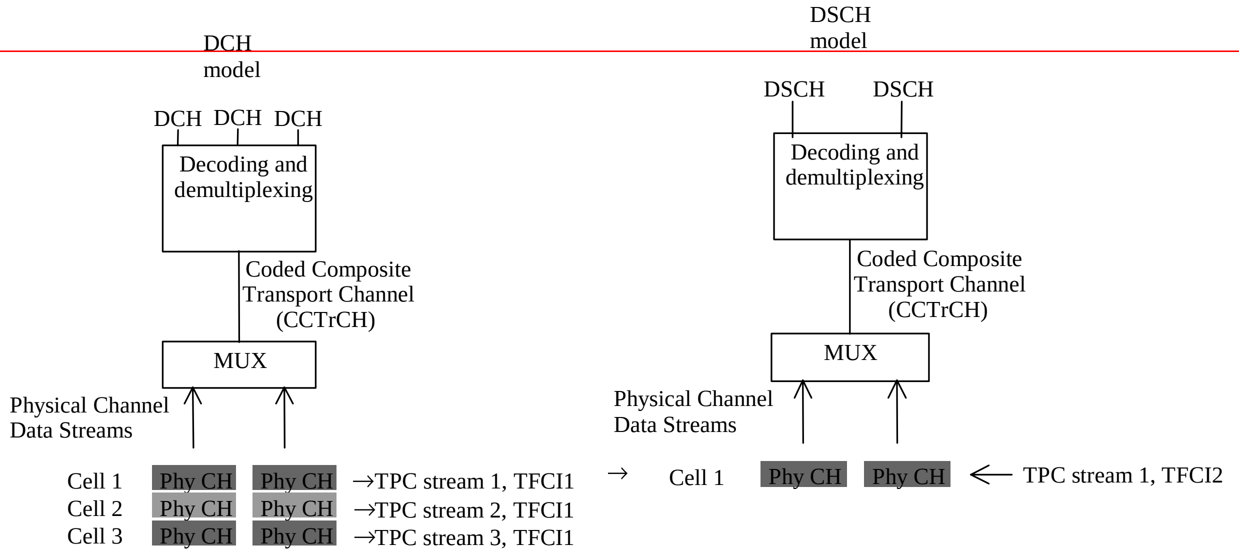
The CPCH, which is another common type transport channel, has a physical layer model as shown in figure2. There is always a single CPCH transport channel mapped to a PCPCH physical channel which implies a one-to-one correspondence between a CPCH TFI and the TFCI conveyed on PCPCH. There can only be one CPCH TrCH and no other TrCH in a CPCH CCTrCH. A CPCH transport channel belongs to a CPCH set which is identified by the application of a common, CPCH set-specific scrambling code for access preamble and collision detection, and multiple PCPCH physical channels. Each PCPCH shall employ a subset of the Transport Format Combinations implied by the Transport Format Set of the CPCH set. A UE can request access to CPCH transport channels of a CPCH set, which is assigned when the service is configured for CPCH transmission.

In FDD in case of a configured HS-DSCH one physical channel (HS-DPCCH) is configured for the reporting of HS-DSCH transport block acknowledgement / negative acknowledgement and channel quality indicator. In TDD in case of a configured HS-DSCH a shared physical channel (HS-SICH) is configured for the reporting of HS-DSCH transport block acknowledgement / negative acknowledgement, channel quality indicator and transmit power control symbols.

6.2 Downlink models

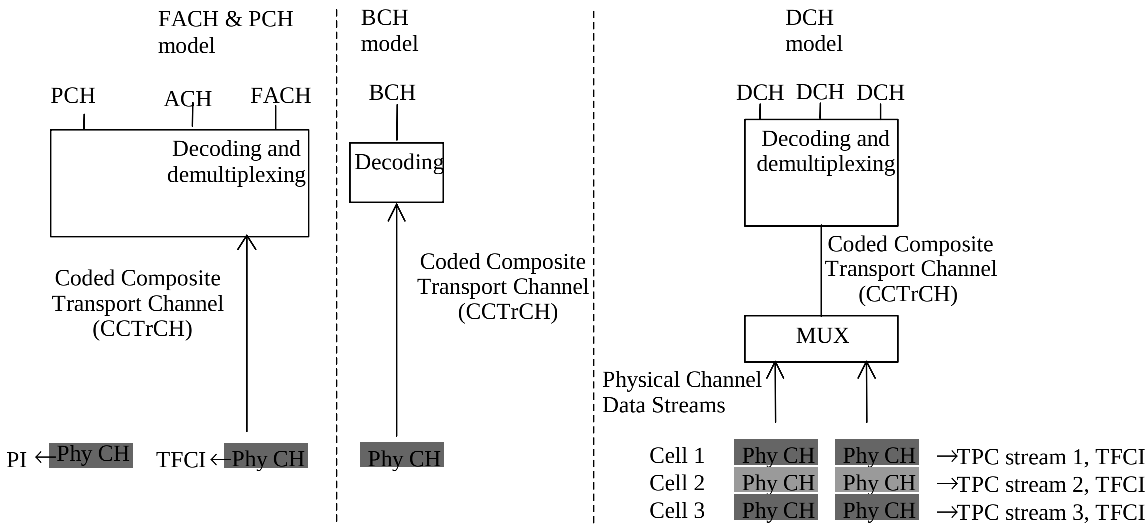
Figure 3 and figure 4 show the model of the UE's physical layer for the downlink in FDD and TDD mode, respectively. Note that there is a different model for each transport channel type.





Note (1) – TFCI1 indicates the DCH specific TFC and TFCI2 indicates the DSCH specific TFC and also the PDSCH channelisation code(s)

DCH associated with DSCH



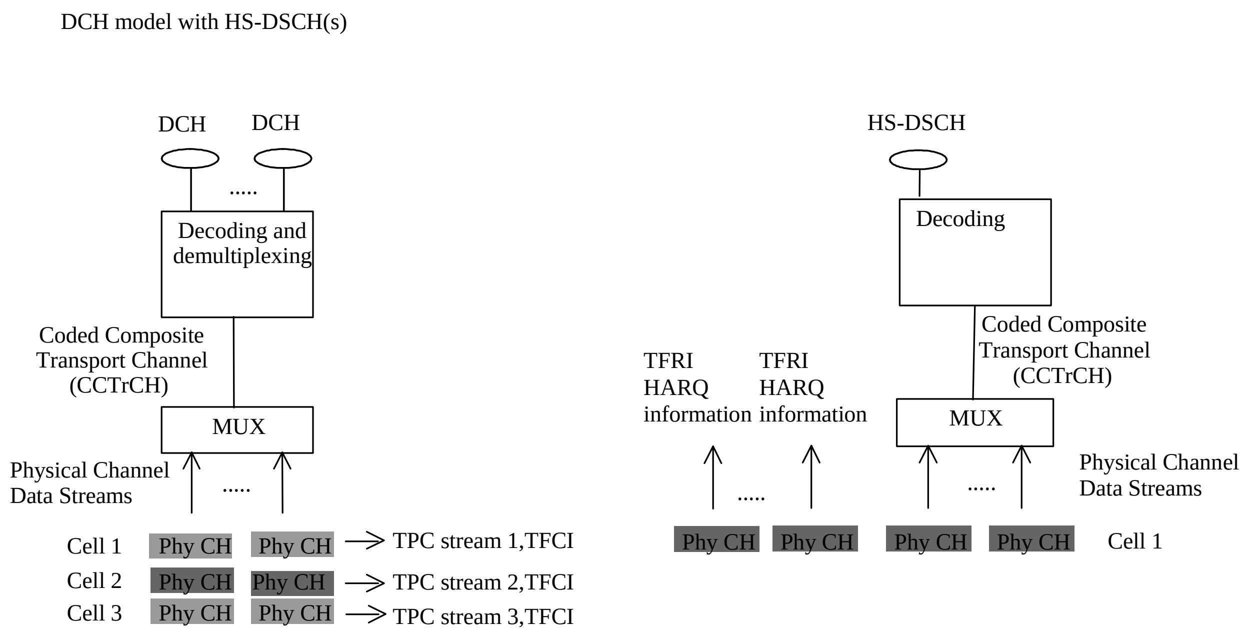
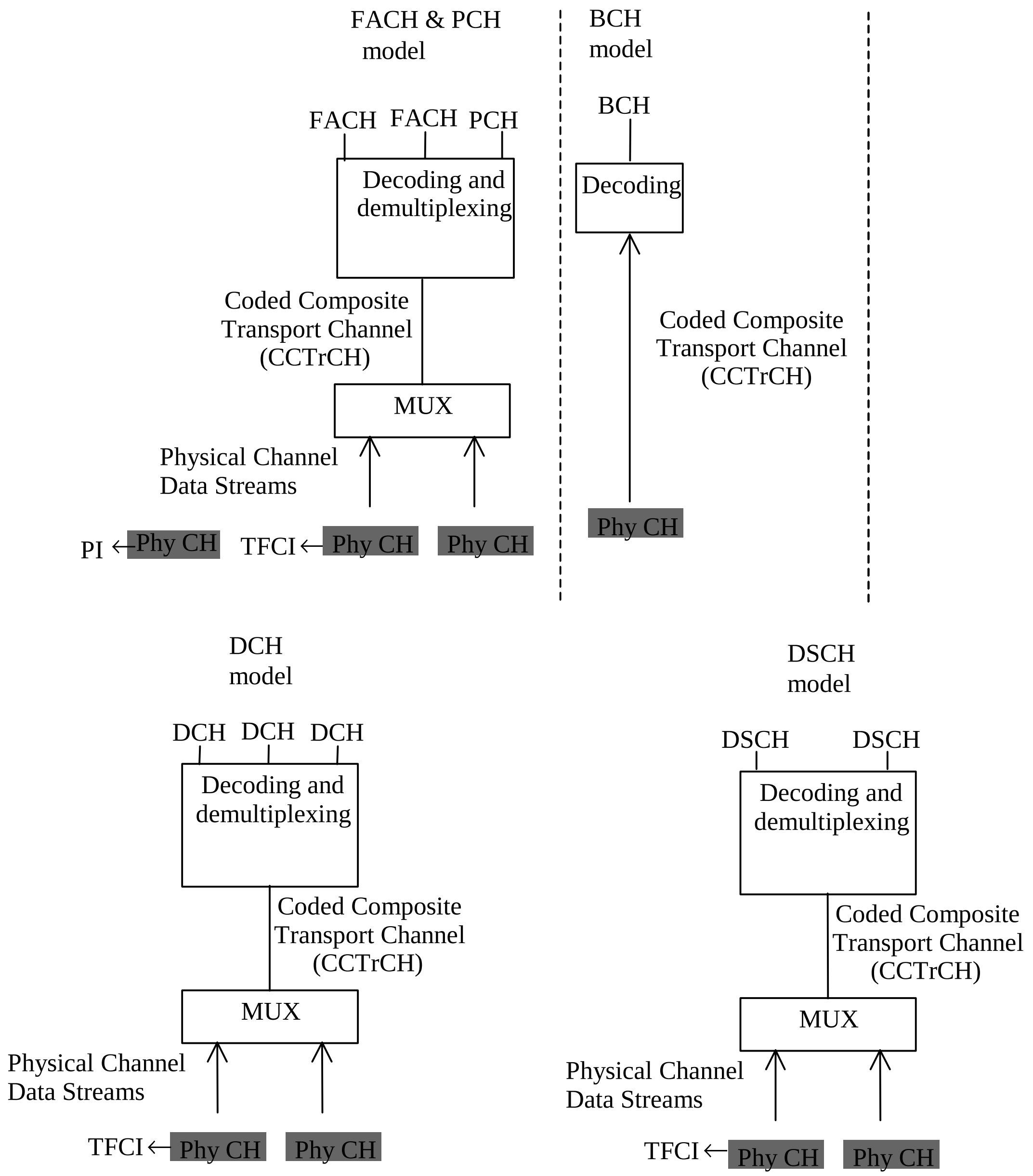


Figure 3: Model of the UE's physical layer - downlink FDD mode


FACH & PCH
model
FACH
FACH
PCH
Decoding and
demultiplexing
Coded Composite
Transport Channel
(CCTrCH)
MUX
Physical Channel
Data Streams
PI
Phy CH
TFCI
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Phy CH
BCH
model
BCH
Decoding
Coded Composite
Transport Channel
(CCTrCH)
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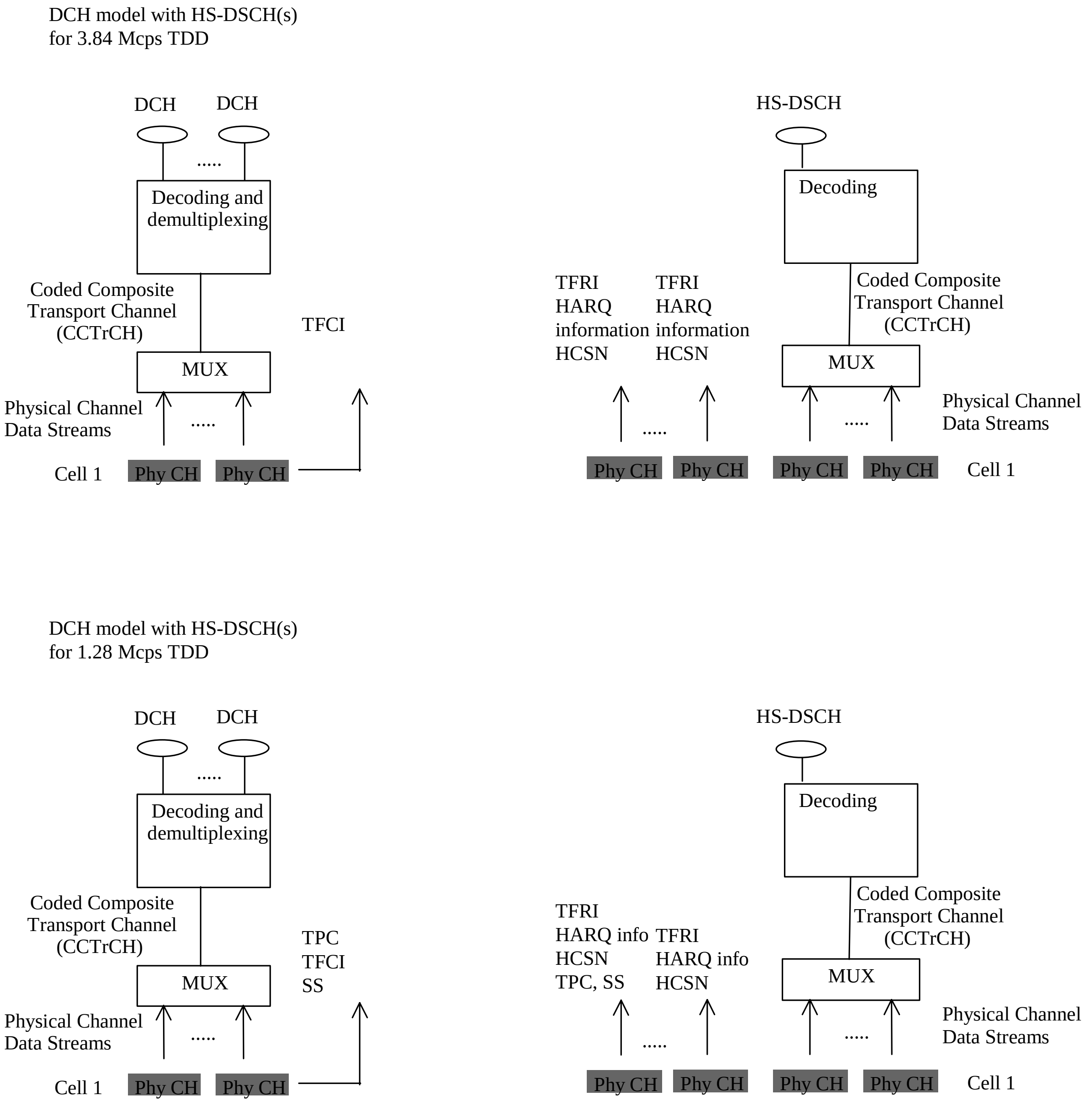


Figure 4: Model of the UE's physical layer – downlink TDD mode

For the DCH case, the mapping between DCHs and physical channel data streams works in the same way as for the uplink. Note however, that the number of DCHs, the coding and multiplexing etc. may be different in uplink and downlink.

In the FDD mode, the differences are mainly due to the soft and softer handover. Further, the pilot, TPC bits and TFCI are time multiplexed onto the same physical channel(s) as the DCHs. Further, the definition of physical channel data stream is somewhat different from the uplink. In TDD mode the TFCI is time multiplexed onto the same physical channel(s) as the DCHs. The exact locations and coding of the TFCI are signalled by higher layers.

Note that it is logically one and the same physical data stream in the active set of cells, even though physically there is one stream for each cell. The same processing and multiplexing is done in each cell. The only difference between the cells is the actual codes, and these codes correspond to the same spreading factor.

The physical channels carrying the same physical channel data stream are combined in the UE receiver, excluding the pilot, and in some cases the TPC bits. TPC bits received on certain physical channels may be combined provided that UTRAN has informed the UE that the TPC information on these channels is identical.

A PCH and one or several FACH can be encoded and multiplexed together forming a CCTrCH. Similarly as in the DCH model there is one TFCI for each CCTrCH for indication of the transport formats used on each PCH and FACH. The PCH is associated with a separate physical channel carrying page indicators (PIs) which are used to trigger UE reception of the physical channel that carries PCH. A FACH or a PCH can also be individually mapped onto a separate physical channel. The BCH is always mapped onto one physical channel without any multiplexing with other transport channels, and there can only be one BCH TrCH and no other TrCH in a BCH CCTrCH.

In the TDD mode a CCTrCh carrying PCH and one or several FACH can be multiplexed onto one or several physical channel data streams.

For each HS-DSCH TTI, each HS-SCCH carries HS-DSCH-related downlink signalling for one UE. The following information is carried on the HS-SCCH:

- Transport Format and Resource Indicator (TFRI);
- Hybrid-ARQ-related Information (HARQ information);
- UE Identity via a UE specific CRC;
- HS-SCCH Cyclic Sequence Number (HCSN) for TDD.

In addition, for the case of 1.28 Mcps TDD, the HS-SCCH also carries Transmit Power Control and Synchronisation Shift symbols.

7 Formats and configurations for L1 data transfer

7.1 General concepts about Transport Channels

Layer 2 is responsible for the mapping of data onto L1 via the L1/L2 interface that is formed by the transport channels. In order to describe how the mapping is performed and how it is controlled, some definitions and terms are required. The required definitions are given in the following subclauses. Note that the definitions are generic for all transport channel types, i.e. not only for DCHs.

All Transport Channels are defined as unidirectional (i.e. uplink or downlink). This means that a UE can have simultaneously (depending on the services and the state of the UE) one or several transport channels in the downlink, and one or more Transport Channel in the uplink.

7.1.1 Transport Block

This is the basic unit exchanged between L1 and MAC, for L1 processing.

Layer 1 adds a CRC for each Transport Block.

7.1.2 Transport Block Set

This is defined as a set of Transport Blocks, which are exchanged between L1 and MAC at the same time instance using the same transport channel.

In case of HS-DSCH the Transport Block Set consists of one Transport Block only.

7.1.3 Transport Block Size

This is defined as the number of bits in a Transport Block. The Transport Block Size is always fixed within a given Transport Block Set, i.e. all Transport Blocks within a Transport Block Set are equally sized.

7.1.4 Transport Block Set Size

This is defined as the number of bits in a Transport Block Set.

7.1.5 Transmission Time Interval

This is defined as the inter-arrival time of Transport Block Sets, and is equal to the periodicity at which a Transport Block Set is transferred by the physical layer on the radio interface. It is always a multiple of the minimum interleaving period (e.g. 10ms, the length of one Radio Frame). The MAC delivers one Transport Block Set to the physical layer every TTI.

Figure 6 shows an example where Transport Block Sets, at certain time instances, are exchanged between MAC and L1 via three parallel transport channels. Each Transport Block Set consists of a number of Transport Blocks. The Transmission Time Interval, i.e. the time between consecutive deliveries of data between MAC and L1, is also illustrated.

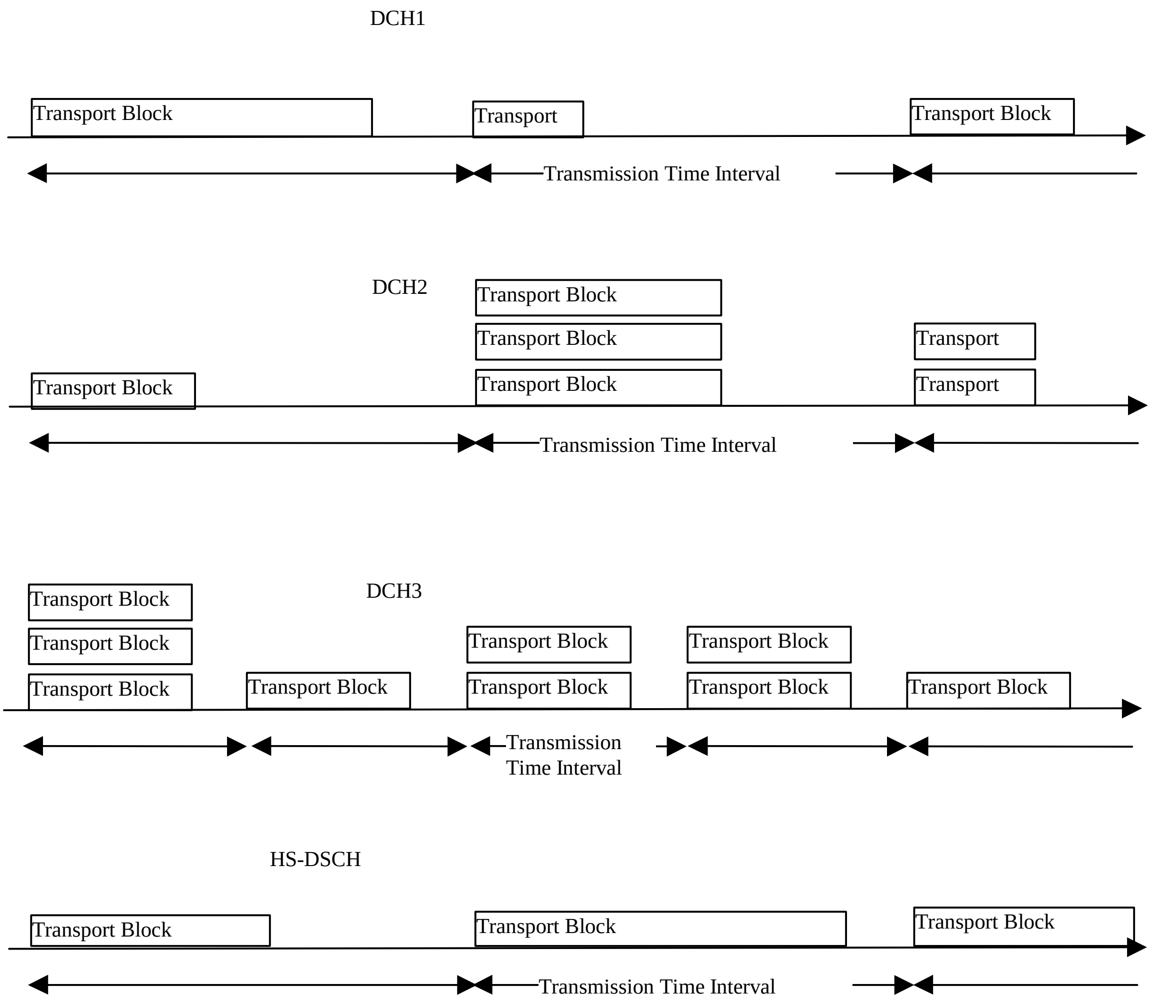


Figure 6: Exchange of data between MAC and L1

7.1.6 Transport Format

This subclause applies to transport channel types other than HS-DSCH.

This is defined as a format offered by L1 to MAC (and vice versa) for the delivery of a Transport Block Set during a Transmission Time Interval on a Transport Channel. The Transport Format constitutes of two parts – one *dynamic* part and one *semi-static* part.

Attributes of the dynamic part are:

- Transport Block Size;
- Transport Block Set Size;
- Transmission Time Interval (optional dynamic attribute for TDD only);

Attributes of the semi-static part are:

- Transmission Time Interval (mandatory for FDD, optional for the dynamic part of TDD NRT bearers);
- error protection scheme to apply:
  - type of error protection, turbo code, convolutional code or no channel coding (TDD only);
  - coding rate;
  - static rate matching parameter;
- size of CRC.

In the following example, the Transmission Time Interval is seen as a semi-static part.

EXAMPLE:
Dynamic part: {320 bits, 640 bits}, Semi-static part: {10ms, convolutional coding only, static rate matching parameter = 1}.

An empty Transport Format is defined as a Transport Format that has Block Set Size equal to zero.

For the two realisations of an empty Transport Format, see clause 11.

7.1.6a Transport Format for HS-DSCH

This is defined as a format offered by L1 to MAC (and vice versa) for the delivery of a transport block during a Transmission Time Interval on a Transport Channel. The Transport Format consists of three parts – one *dynamic* part, one *semi-static* part and one *static* part.

The Transport Format for HS-DSCH is always explicitly signalled. There is no support of blind transport format detection.

Attributes of the dynamic part are:

- Transport block size (same as Transport block set size);
- Redundancy version/Constellation;
- Modulation scheme.

Attributes of the semi-static part are:

- no semi-static attributes are defined.

Attributes of the static part are:

- Transmission time interval. The Transmission time interval is fixed to 2ms in FDD, 10ms in 3.84 Mcps TDD and 5ms in 1.28 Mcps TDD.
- error protection scheme to apply:
  - type of error protection is turbo coding;
  - coding rate is 1/3;
  - size of CRC is 24 bits.

7.1.7 Transport Format Set

This is defined as the set of Transport Formats associated to a Transport Channel.

The semi-static parts of all Transport Formats are the same within a Transport Format Set.

Effectively the Transport Block Size and Transport Block Set Size form the instantaneous bit rate on the Transport Channel. Variable bit rate on a Transport Channel may, depending on the type of service, which is mapped onto the transport channel, be achieved by changing between each Transmission Time Interval one of the following:

1. the Transport Block Set Size only (not applicable for HS-DSCH);
2. both the Transport Block Size and the Transport Block Set Size

   Example 1 for DCHs:

   - dynamic part: {20 bits, 20 bits}; {40 bits, 40 bits}; {80 bits, 80 bits}; {160 bits, 160 bits}.
   - Semi-static part: {10ms, Convolutional coding only, static rate matching parameter = 1}

   Example 2 for DCHs:

   - dynamic part: {320 bits, 320 bits}; {320 bits, 640 bits}; {320 bits, 1 280 bits}.
   - Semi-static part: {10ms, Convolutional coding only, static rate matching parameter = 2}.

   Example 3 for HS-DSCH:

   - dynamic part: {320 bits, 320 bits, Redundancy version 1, QPSK}; {640, 640, Redundancy version 1, QPSK}; {1280, 1280, Redundancy version 2, 16QAM}.
   - static part: See subclause 7.1.6a.

The first example may correspond to a Transport Channel carrying a speech service, requiring blocks delivered on a constant time basis. In the second example, which illustrates the situation where a non-real time service is carried by the Transport Channel, the number of blocks delivered per Transmission Time Interval varies between the different Transport Formats within the Transport Format Set. Referring to figure 6, the Transport Block Size is varied on DCH1 and DCH2. That is, a Transport Format Set where the dynamic part has a variable Transport Block Size has been assigned for DCH1. On DCH3 it is instead only the Transport Block Set Size that is varied. That is, the dynamic parts of the corresponding Transport Format Sets only include variable Transport Block Set Sizes.

7.1.8 Transport Format Combination

The layer 1 multiplexes one or several Transport Channels, and for each Transport Channel, there exists a list of transport formats (Transport Format Set) which are applicable. Nevertheless, at a given point of time, not all combinations may be submitted to layer 1 but only a subset, the Transport Format Combination. This is defined as an authorised combination of the combination of currently valid Transport Formats that can be submitted simultaneously to the layer 1 for transmission on a Coded Composite Transport Channel of a UE, i.e. containing one Transport Format from each Transport Channel.

EXAMPLE:

DCH1:
Dynamic part: {20 bits, 20 bits}, Semi-static part: {10ms, Convolutional coding only, static rate matching parameter = 2};

DCH2:
Dynamic part: {320 bits, 1 280 bits}, Semi-static part: {10ms, Convolutional coding only, static rate matching parameter = 3};

DCH3:
Dynamic part: {320 bits, 320 bits}, Semi-static part: {40ms, Turbo coding, static rate matching parameter = 2}.

An empty Transport Format Combination is defined as a Transport Format Combination that is only made up of empty Transport Formats.

7.1.9 Transport Format Combination Set

This is defined as a set of Transport Format Combinations on a Coded Composite Transport Channel.

EXAMPLE for DCHs:

- dynamic part:
    - combination 1: DCH1: {20 bits, 20 bits}, DCH2: {320 bits, 1280 bits}, DCH3: {320 bits, 320 bits};
    - combination 2: DCH1: {40 bits, 40 bits}, DCH2: {320 bits, 1280 bits}, DCH3: {320 bits, 320 bits};
    - combination 3: DCH1: {160 bits, 160 bits}, DCH2: {320 bits, 320 bits}, DCH3: {320 bits, 320 bits}
- semi-static part:
    - DCH1: {10ms, Convolutional coding only, static rate matching parameter = 1};
    - DCH2: {10ms, Convolutional coding only, static rate matching parameter = 1};
    - DCH3: {40ms, Turbo coding, static rate matching parameter = 2}.

The Transport Format Combination Set is what is given to MAC for control. However, the assignment of the Transport Format Combination Set is done by L3. When mapping data onto L1, MAC chooses between the different Transport Format Combinations given in the Transport Format Combination Set. Since it is only the dynamic part that differ between the Transport format Combinations, it is in fact only the dynamic part that MAC has any control over.

The semi-static part, together with the target value for the L1 closed loop power control, correspond to the service attributes:

- quality (e.g. BER);
- transfer delay.

These service attributes are then offered by L1. However, it is L3 that guarantees that the L1 services are fulfilled since it is in charge of controlling the L1 configuration, i.e. the setting of the semi-static part of the Transport Formats. Furthermore, L3 controls the target for the L1 closed loop power control through the outer loop power control (which actually is a quality control rather than a power control).

Note that a Transport Format Combination Set need not contain all possible Transport Format Combinations that can be formed by Transport Format Sets of the corresponding Transport Channels. It is only the allowed combinations that are included. Thereby a maximum total bit rate of all transport channels of a Code Composite Transport Channel can be set appropriately. That can be achieved by only allowing Transport Format Combinations for which the included Transport Formats (one for each Transport Channel) do not correspond to high bit rates simultaneously.

The selection of Transport Format Combinations can be seen as a fast part of the radio resource control. The dedication of these fast parts of the radio resource control to MAC, close to L1, means that the flexible variable rate scheme provided by L1 can be fully utilised. These parts of the radio resource control should be distinguished from the slower parts, which are handled by L3. Thereby the bit rate can be changed very fast, without any need for L3 signalling.

7.1.10 Transport Format Indicator (TFI)

The TFI is a label for a specific transport format within a transport format set. It is used in the inter-layer communication between MAC and L1 each time a transport block set is exchanged between the two layers on a transport channel.

When the DSCH is associated with a DCH, the TFI of the DSCH also indicates the physical channel (i.e. the channelisation code) of the DSCH that has to be listened to by the UE.

7.1.11 Transport Format Combination Indicator (TFCI)

This is a representation of the current Transport Format Combination.

There is a one-to-one correspondence between a certain value of the TFCI and a certain Transport Format Combination. The TFCI is used in order to inform the receiving side of the currently valid Transport Format Combination, and hence how to decode, de-multiplex and deliver the received data on the appropriate Transport Channels. The TFCI is not used for the HS-DSCH.

MAC indicates the TFI to Layer 1 at each delivery of Transport Block Sets on each Transport Channel. Layer 1 then builds the TFCI from the TFIs of all parallel transport channels of the UE , processes the Transport Blocks appropriately and appends the TFCI to the physical control signalling. Through the detection of the TFCI the receiving side is able to identify the Transport Format Combination. For FDD, in case of limited Transport Format Combination Sets the TFCI signalling may be omitted, instead relying on blind detection. Nevertheless, from the assigned Transport Format Combinations, the receiving side has all information it needs in order to decode the information and transfer it to MAC on the appropriate Transport Channels.

The multiplexing and exact rate matching patterns follow predefined rules and may therefore be derived (given the Transport Format Combinations) by transmitter and receiver without signalling over the radio interface.

When the meaning of the TFCI field needs to be reconfigured, two procedures can be used depending on the level of reconfiguration:

- **complete reconfiguration of TFCI:** in this procedure all TFCI values are reinitialised and new values are defined instead. The complete reconfiguration requires an explicit synchronisation between the UE and UTRAN regarding when the reconfiguration becomes valid.

- **incremental reconfiguration of TFCI:** in this procedures, a part of the TFCI values before and after the reconfiguration remain identical (note that this must be true for at least a TFCI that carry the signalling connection). This procedure supports addition, removal or redefinition of TFCI values. This procedure does not require an explicit execution time. This procedure may imply the loss of some user-plane data.

7.1.12 Rate matching

Two levels of rate matching are defined on the radio interface:

- a static rate matching per Transport Channel. The static rate matching is part of the semi-static attributes of the Transport Channel. Static rate matching is not applicable to HS-DSCH;

- a dynamic rate matching per CCTrCH. The dynamic rate matching adjusts the size of the physical layer data payload to the physical channel as requested by RRC.

The static rate matching and the dynamic rate matching to be applied by the physical layer are indicated by RRC to the physical layer.

In FDD, RRC is also responsible for configuring the physical layer on whether:

- Blind Rate Detection or TFCI is used;

- dynamic rate matching is applied or not on the downlink.

7.1.13 HARQ information

Hybrid ARQ is defined for HS-DSCH. With the help of the HARQ information the UE is enabled to identify the process being used for the transport block that is received on the HS-DSCH. The HARQ information also includes information that indicates whether a new data block is transmitted for the first time or a retransmission. Furthermore it is used to decode the received data correctly.

7.1.14 Transport Format and Resource Indication (TFRI)

The TFRI includes information about the dynamic part of the HS-DSCH transport format, including transport block set size and modulation scheme. The TFRI also includes information about the set of physical channels (channelisation codes) onto which HS-DSCH is mapped in the corresponding HS-DSCH TTI.

7.2 Types of Transport Channels

A general classification of transport channels is into two groups:

- common channels; and
- dedicated channels (where the UEs can be unambiguously identified by the physical channel, i.e. code and frequency).

Common transport channel types are:

1. Random Access Channel(s) (RACH) characterised by:
   - existence in uplink only;
   - limited data field;
   - collision risk;
   - open loop power control.
2. Forward Access Channel(s) (FACH) characterised by:
   - existence in downlink only;
   - possibility to use slow power control;
   - possibility to change rate fast (each 10ms); and
   - lack of inner loop power control.
3. Broadcast Channel (BCH) characterised by:
   - existence in downlink only;
   - low fixed bit rate; and
   - requirement to be broadcast in the entire coverage area of the cell.
4. Paging Channel (PCH) characterised by:
   - existence in downlink only;
   - association with a physical layer signal, the Page Indicator, to support efficient sleep mode procedures; and
   - requirement to be broadcast in the entire coverage area of the cell.
5. Downlink Shared Channel(s) (DSCH) characterised by:
   - used in TDD only;
   - existence in downlink only;
   - possibility to use beamforming;
   - possibility to use slow power control;
   - possibility to use inner loop power control, when associated with dedicated channel(s);
   - possibility to be broadcast in the entire cell;
   - always associated with another channel (DCH or FACH ~~(TDD)~~).
6. CPCH Channel characterised by:
   - existence in FDD only;
   - existence in uplink only;

- inner loop power control on the message part;
- possibility to change rate fast;
- collision detection;
- open loop power estimate for pre-amble power ramp-up.

7. Uplink Shared channel (USCH) characterised by:
   - used in TDD only;
   - existence in uplink only;
   - possibility to use beam forming;
   - possibility to use power control;
   - possibility to change rate fast;
   - possibility to use Uplink Synchronisation;
   - possibility to use Timing advance.
8. High Speed Downlink Shared Channel (HS-DSCH) characterised by:
   - existence in downlink only;
   - possibility to use beamforming;
   - possibility of applying link adaptation by varying the modulation, coding and transmit power:
   - possibility to be broadcast in the entire cell;
   - always associated with a DPCH and one or more shared physical control channel.

Dedicated transport channel type:

1. Dedicated Channel (DCH) characterised by:
   - existing in uplink or downlink;
   - possibility to use beam forming;
   - possibility to change rate fast (each 10ms);
   - inner loop power control;
   - possibility to use timing advance in uplink (TDD only);
   - possibility to use Uplink Synchronisation.

To each transport channel, there is an associated Transport Format (for transport channels with a fixed or slow changing rate) or an associated Transport Format Set (for transport channels with fast changing rate).

7.3 Compressed Mode

Compressed Mode is defined as the mechanism whereby certain idle periods are created in radio frames so that the UE can perform measurements during these periods (more details can be found in [3]).

Compressed Mode is obtained by layer 2 using transport channels provided by the layer 1 as follows:

- compressed mode is controlled by the RRC layer, which configures the layer 2 and the physical layer;
- the number of occurrences of compressed frames is controlled by RRC, and can be modified by RRC signalling;

- it is under the responsibility of the layer 2 if necessary and if possible to either buffer some layer 2 PDUs (typically at the RLC layer for NRT services) or to rate-adapt the data flow (similarly to GSM) so that there is no loss of data because of compressed mode. This will be service dependent and controlled by the RRC layer.

For measurements in compressed mode, a transmission gap pattern sequence is defined. A transmission gap pattern sequence consists of alternating transmission gap patterns 1 and 2, and each of these patterns in turn consists of one or two transmission gaps. The transmission gap pattern structure, position and repetition are defined with physical channel parameters described in [6]. In addition, the UTRAN configures compressed mode pattern sequences with the following parameters:

- **TGMP:** Transmission Gap pattern sequence Measurement Purpose: This parameter defines the purpose this transmission gap pattern sequence is intended for. The following values are used:
  - for TDD measurements, one compressed mode pattern sequence can be configured with purpose 'TDD measurement',
  - for FDD measurements, one compressed mode pattern sequence can be configured with purpose 'FDD measurement',
  - for GSM measurements, three simultaneous compressed mode pattern sequences can be configured with purposes 'GSM carrier RSSI measurement', 'Initial BSIC identification' and 'BSIC re-confirmation',
- **TGPSI:** Transmission Gap Pattern Sequence Identifier selects the compressed mode pattern sequence for which the parameters are to be set. The range of TGPSI is [1 to <MaxTGPS>].

The UE shall support a total number of simultaneous compressed mode pattern sequences, which is determined by the UE's capability to support each of the measurement types categorised by the TGMP. For example, a UE supporting FDD and GSM shall support four simultaneous compressed mode pattern sequences and a UE supporting FDD and TDD shall support two simultaneous compressed mode pattern sequences.

When using simultaneous pattern sequences, it is the responsibility of the NW to ensure that the compressed mode gaps do not overlap and are not scheduled to overlap the same frame. Gaps exceeding the maximum gap length shall not be processed by the UE and shall interpreted as a faulty message. If the UE detects overlapping gaps, it shall process the gap from the pattern sequence having the lowest TGPSI.

8 UE Simultaneous Physical Channels combinations

This clause describes the requirements from the UE to send and receive on multiple Transport Channels, which are mapped on different physical channels simultaneously depending on the service capabilities and requirements. The clause will describe the impacts on the support for multiple services (e.g. speech call and SMS-CB) depending on the UE capabilities.

8.1 FDD Uplink

The table describes the possible combinations of FDD physical channels that can be supported in the uplink on the same frequency by one UE simultaneously.

Table 1: FDD Uplink

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
1	PRACH	RACH	Mandatory	The PRACH physical channel includes the preambles and the message.
2	PCPCH consisting of one control and one data part during the message portion	CPCH	Depending on UE radio access capabilities	The PCPCH physical channel includes the preambles and the message. The maximum channel bit rate is dependent on UE radio access capabilities.
3	DPCCH+DPDCH	One or more DCH coded into a single CCTrCH	Mandatory	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
4	DPCCH+ more than one DPDCH	One or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
5	DPCCH+one or more DPDCH+ HS-DPCCH	One or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum bit rate are dependent on UE radio access capabilities. This combination is required in case HS-DSCH(s) are configured.

8.2 FDD Downlink

The table describes the possible combinations of FDD physical channels that can be supported in the downlink on the same frequency by one UE simultaneously.

Table 2: FDD Downlink

	Physical Channel Combination	Transport Channel Combination	Mandatory dependent on UE radio access capabilities	Comment
1	PCCPCH	BCH	Mandatory	
2	SCCPCH	One or more FACH Or PCH Or one or more FACH + PCH	Mandatory	The maximum channel bit rate that can be supported is dependent on the UE radio access capabilities. The PCH is included when the UE needs to receive paging on the SCCPCH. The reception of (one or more FACH + PCH) is to enable the reception of broadcast services on the CTCH, mapped to one of the FACH.
3	PCCPCH + SCCPCH	BCH + (one or more FACH or PCH or (one or more FACH + PCH))	Mandatory	Simultaneous reception of PCCPCH and SCCPCH is only needed at occurrences when the UE needs to read system information on BCH while being in CELL_FACH state, i.e. continuous reception of both PCCPCH and SCCPCH at the same time is not required. The requirement holds for PCCPCH and SCCPCH sent in different cells or in the same cell. The PCH is included when the UE needs to receive paging on the SCCPCH. The reception of (one or more FACH + PCH) is to enable the reception of broadcast services on the CTCH, mapped to one of the FACH.
4	SCCPCH + AICH	(One or more FACH or PCH or (one or more FACH + PCH))+ RACH in uplink Or (one or more FACH or PCH or (one or more FACH + PCH))+ CPCH in uplink	Mandatory	The maximum channel bit rate that can be supported is dependent on the UE radio access capabilities. The PCH is included when the UE needs to receive paging on the SCCPCH. The reception of (one or more FACH + PCH) is to enable the reception of broadcast services on the CTCH, mapped to one of the FACH. This physical channel combination facilitates the preamble portion of the CPCH in the uplink
5	SCCPCH + DPCCH	(One or more FACH or PCH or (one or more FACH + PCH))+ CPCH in uplink	Depending on UE radio access capabilities	This physical channel combination facilitates the message portion of the CPCH in the uplink The PCH is included when the UE needs to receive paging on the SCCPCH. The reception of (one or more FACH + PCH) is to enable the reception of broadcast services on the CTCH, mapped to one of the FACH.
6	More than one SCCPCH	More than one (one or more FACH or PCH or (one or more FACH + PCH))	Depending on UE radio access capabilities	The PCH is included when the UE needs to receive paging on the SCCPCH. The reception of (one or more FACH + PCH) is to enable the reception of broadcast services on the CTCH, mapped to one of the FACH.
7	PICH	N/A	Mandatory	
8	DPCCH + DPDCH	One or more DCH coded into a single CCTrCH	Mandatory	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.

	Physical Channel Combination	Transport Channel Combination	Mandatory dependent on UE radio access capabilities	Comment
9	DPCCH + more than one DPDCH	One or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
~~10~~	~~One or more PDSCH + DPCCH + one or more DPDCH~~	~~One or more DSCH coded into a single CCTrCH + one or more DCH coded into a single CCTrCH~~	~~Depending on UE radio access capabilities~~	~~The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.~~
11	SCCPCH + DPCCH + one or more DPDCH	One or more FACH + one or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination of physical channels is used for DRAC control of an uplink DCH and for receiving services such as cell broadcast or multicast whilst in connected mode. NOTE 1
~~12~~	~~SCCPCH + one or more PDSCH + DPCCH + one or more DPDCH~~	~~One or more FACH + one or more DSCH coded into a single CCTrCH + one or more DCH coded into a single CCTrCH~~	~~Depending on UE radio access capabilities~~	~~The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.~~ ~~This combination of physical channels is used for simultaneous DSCH and DRAC control of an uplink DCH. NOTE 1~~
13	One DPCCH + more than one DPDCH	More than one DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	
14	PCCPCH (neighbour cell) + DPCCH + one or more DPDCH ~~+ zero, one, or more PDSCH~~	BCH (neighbour cell) + one or more DCHs ~~+ zero, one or more DSCH~~	Mandatory	This combination is required by a UE in CELL_DCH state to be able to read the SFN of a neighbouring cell and support "SFN-CFN observed time difference" and "SFN-SFN observed time difference" measurements.
15	DPCCH + one or more DPDCH + one or more HS-SCCH + zero, one or more HS-PDSCH	One HS-DSCH coded into a single CCTrCH + one or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. NOTE 2
16	PCCPCH (neighbour cell) + DPCCH + one or more DPDCH + one or more HS-SCCH + zero, one or more HS-PDSCH	BCH (neighbour cell) + one or more DCHs + one HS-DSCH	Depending on UE radio access capabilities	This combination is required by a UE in CELL_DCH state to be able to read the SFN of a neighbouring cell and support "SFN-CFN observed time difference" and "SFN-SFN observed time difference" measurements while HS-DSCH(s) are configured. NOTE 2

NOTE 1: When both DRAC and CTCH are configured in one cell, the UTRAN should transmit DRAC info and CTCH info on the same S-CCPCH in order to minimize the number of S-CCPCH to be read by the UE. A UE which supports the simultaneous reception of S-CCPCH and DPCH, shall be capable of switching between different S-CCPCH in order to listen to DRAC info and CTCH info that are not scheduled in the same time intervals. If the UE is ordered to listen to CTCH and DRAC info on different S-CCPCH in the same time interval, it shall listen to DRAC info in priority.

NOTE 2: When one or more HS-PDSCHs are received, it is sufficient for the UE to monitor only one HS-SCCH.

8.3 TDD Uplink

8.3.1 3.84 Mcps TDD Uplink

The table addresses the possible combinations of 3.84 Mcps TDD physical channels that can be supported in the uplink by one UE simultaneously on the same frequency in any one 10ms frame. In 3.84 Mcps TDD a physical channel corresponds to one code, one timeslot and one frequency.

Table 3: 3.84 Mcps TDD Uplink

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
1	PRACH	RACH	Mandatory	
2	DPCH	One or more DCH coded into a single CCTrCH	Mandatory	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination is used as reference measurement channel.
3	One or more than one DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
4	PRACH + one or more DPCH	RACH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination may be used for shared channel operation only. At least the usage of two timeslots is required.
5	One or more PUSCH	One or more USCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination is used for shared channel operation.
6	PRACH + one or more PUSCH	RACH + One or more USCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination may be used for shared channel operation only. At least the usage of two timeslots is required.
7	One or more PUSCH + one or more DPCH	One or more USCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination may be used for shared channel operation.
8	PRACH + one or more PUSCH + one or more DPCH	RACH + one or more USCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination may be used for shared channel operation. At least the usage of two timeslots is required.
9	One or more DPCH + HS-SICH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	

8.3.2 1.28 Mcps TDD Uplink

The table addresses the possible combinations of 1.28 Mcps TDD physical channels that can be supported in the uplink by one UE simultaneously on the same frequency in the TDD 1.28 Mcps option in any one 5 ms subframe. In 1.28 Mcps TDD a physical channel corresponds to one code, one timeslot, one frequency.

Table 4: 1.28 Mcps TDD Uplink

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
1	UpPCH	N/A	Mandatory	UpPCH is used to establish the uplink synchronisation.
2	PRACH	RACH	Mandatory	
3	UpPCH + One DPCH	One or more DCH coded into a single CCTrCH	Mandatory	One DPCH is needed as reference measurement channel. UpPCH transmission to target cell in case of handover.
4	One DPCH	One or more DCH coded into a single CCTrCH	Mandatory	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities This combination is required for the reference measurement channel.
5	More than one DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities.
6	UpPCH+ one or more DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities. This configuration is required for UE that operate shared channels and dedicated channels simultaneously.
7	PRACH + one or more DPCHs	RACH + one or more DCH coded into one or more than one CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities. This configuration is required for UE that operate shared channels and dedicated channels simultaneously.
8	One or more PUSCH	One or more USCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This configuration is required for UE that operate shared channels.
9	UpPCH + one or more PUSCH	One or more USCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination may be used for shared channel operation only.
10	PRACH + one or more PUSCH	RACH + One or more USCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination may be used for shared channel operation only
11	One or more PUSCH + one or more DPCH	One or more USCH coded onto one or more CCTrCH + one or more DCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This configuration is required for UE that operate shared channels and dedicated channels simultaneously

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
12	UpPCH + one or more PUSCH + one or more DPCH	One or more USCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination may be used for shared channel operation.
13	PRACH + one or more PUSCH + one or more DPCH	RACH + one or more USCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination may be used for shared channel operation.
14	One or more DPCH + HS-SICH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	

8.4 TDD Downlink

8.4.1 3.84 Mcps TDD Downlink

The table describes the possible combinations of 3.84 Mcps TDD physical channels that can be supported in the downlink by one UE simultaneously on the same frequency in any one 10ms frame, where a 3.84 Mcps TDD physical channel corresponds to one code, one timeslot and one frequency.

Depending on UE radio capabilities UEs may be required to decode occasionally P-CCPCH of its own cell in the following Physical Channel Combinations to maintain open loop power control and/or acquire parameters for RACH access: 4, 6, 7, 8, 9, 10, 11, 12, 13.

Depending on UE radio capabilities UEs may be required to decode occasionally one P-CCPCH of neighbour cells in the following Physical Channel Combinations for handover: 6, 8, 11, 12, 13.

Table 5: 3.84 Mcps TDD Downlink

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
1	P-CCPCH + One S-CCPCH	BCH and PCH and/or one or more FACH	Mandatory	
2	P-CCPCH	BCH	Mandatory	
3	S-CCPCH	FACH or/and PCH	Mandatory	
4	More than one S-CCPCH	one or more FACH+ one or more PCH	Depending on UE capabilities	
5	PICH	N/A	Mandatory	
6	Three or more DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
7	One or two DPCH	One or more DCH coded into a single CCTrCH	Mandatory	This combination is used for reference measurement channel.
8	One or more S-CCPCH + one or more DPCH	PCH and/or one or more FACH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The number of DCHs and the maximum channel bit rate are dependent on the UE radio access capabilities. This combination is used for shared channel operation only.
9	One or more PDSCH	One or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination is used for shared channel operation.
10	One or more PDSCH + one or more S-CCPCH	PCH and/or one or more FACH + one or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination is used for shared channel operation.
11	One or more PDSCH + one or more DPCH	One or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination is used for shared channel operation.

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
12	One or more PDSCH + one or more S-CCPCH + one or more DPCH	PCH and/or one or more FACH + one or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination is used for shared channel operation.
13	One or more DPCH + zero, one or more HS-PDSCH + one or more HS-SCCH	One or more DCH coded into one or more CCTrCH + one or more HS-DSCH coded into one CCTrCH	Depending on UE radio access capabilities	
NOTE: Reference: [12].				

8.4.2 1.28 Mcps TDD Downlink

The table addresses the possible combinations of 1.28 Mcps TDD physical channels that can be supported in the downlink by one UE simultaneously on the same frequency in any one 5ms subframe. In 1.28 Mcps TDD a physical channel corresponds to one code, one timeslot, one frequency.

Depending on UE radio capabilities UEs may be required to decode occasionally P-CCPCH of its own cell in the following Physical Channel Combinations: 5, 11, 12, 13, 14, 15, 16, 17, 18.

To support handover it depends on UE capabilities if a UE can support the occasional decoding of neighbour cell P-CCPCH in the physical channel combinations 8, 9, 10, 11, 15,16, 17, 18.

Table 6: 1.28 Mcps TDD Downlink

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
1	FPACH	N/A	Mandatory	FPACH is used to answer the UE and to adjust the timing and synchronization shift of the UE
2	P-CCPCH	BCH	Mandatory	
3	S-CCPCH	FACH or/and PCH	Mandatory	
4	P-CCPCH +S-CCPCH	BCH + (FACH or/and PCH)	Mandatory	
5	More than one S-CCPCH	one or more FACH+ one or more PCH	Depending on UE capabilities	
6	PICH	N/A	Mandatory	
7	FPACH + P-CCPCH + none, one or more S-CCPCH	BCH + (none, one or more FACH+ none, one or more PCH)	Depending on UE capabilities	
8	2 DPCH	One or more DCH coded into a single CCTrCH	Mandatory	The maximum number of DCH and the maximum channel bit rate are dependent on UE radio access capabilities This channel is used as reference measurement channel
9	One or more DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities.

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
10	FPACH + one or more DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	FPACH is used to answer the UE and to adjust the timing and synchronization shift of the UE. The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities. This configuration is required for UE that operate shared channels and dedicated channels simultaneously.
11	One or more S-CCPCH + one or more DPCH	(One or more FACH or/and PCH) + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities. This configuration is required for UE that operate shared channels and dedicated channels simultaneously.
12	One or more PDSCH	One or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This configuration is required for UE that operate shared channels.
13	FPACH + one or more PDSCH	One or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This configuration is desirable but not essential for UE supporting shared channels.
14	One or more S-CCPCH +one or more PDSCH	(One or more FACH and/or PCH) + One or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This configuration is desirable but not essential for UE supporting shared channels.
15	One or more PDSCH + one or more DPCH	One or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	This configuration is required for UE that operate shared channels and dedicated channels simultaneously.
16	FPACH + one or more PDSCH + one or more DPCH	one or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities.	FPACH is used to answer the UE and to adjust the timing and synchronization shift of the UE. This configuration is desirable but not essential for UE supporting shared channels and dedicated channels simultaneously.
17	One or more S-CCPCH + one or more PDSCH + one or more DPCH	(One or more FACH and/or PCH) + one or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities.	This configuration is desirable but not essential for UE supporting shared channels and dedicated channels simultaneously.
18	One or more DPCH + zero, one or more HS-PDSCH + one or more HS-SCCH	One or more DCH coded into one or more CCTrCH + one or more HS-DSCH coded into one CCTrCH	Depending on UE radio access capabilities	

9 Measurements provided by the physical layer

One of the key services provided by the physical layer is the measurement of various quantities, which are used to trigger or perform a multitude of functions. Both the UE and the UTRAN are required to perform a variety of measurements. The standard will not specify the method to perform these measurements or stipulate that the list of measurements provided in this clause must all be performed. While some of the measurements are critical to the functioning of the network and are mandatory for delivering the basic functionality (e.g., handover measurements, power control measurements), others may be used by the network operators in optimising the network (e.g., radio environment).

Measurements may be made periodically and reported to the upper layers or may be event-triggered (e.g., primary CCPCH becomes better than the previous best primary CCPCH). Another reporting strategy may combine the event triggered and the periodical approach (e.g. falling of link quality below a certain threshold initiates periodical reporting). The measurements are tightly coupled with the service primitives in that the primitives' parameters may constitute some of the measurements.

The list and frequency of measurements, which the physical layer reports to higher layers, is described in this clause. The detailed definition of measurement control and abilities is contained in [6] for FDD and [11] for TDD. The measurement performance requirements together with accuracy, range and mapping is specified in [9] for TDD and in [10] for FDD.

The measurement quantities measured by the physical layer shall be such that the following principles are applied:

- for handover measurements, the decoding of parameters on the BCCH logical channel of monitored neighbouring cells, should not, in general, be needed for calculating the measurement result. If there is a need to adjust the measurement result with parameters broadcast on the PCCPCH, these parameters shall be provided by the UTRAN in inband measurement control messages. There may be some exceptions to this rule;

  EXAMPLE:
  It may be necessary to decode the SFN of the measured neighbouring cell for time difference measurements.

- in idle mode or in RRC connected mode using common Transport Channels, the UE shall be able to monitor cells for cell reselection, without being required to frequently decode parameters on the BCCH logical channel of the monitored neighbouring cells. The decoding frequency of these parameters, set by the cell reselection algorithm, should be such that UE standby times are not significantly decreased.

9.1 Model of physical layer measurements

This subclause describes a model for how the physical layer measurements are performed. This model applies both to the UE and Node B measurements. This model sets the requirement on the behaviour of the measurement elaboration and reporting performed by L1 as well as filtering controlled by higher layers. It is not meant to be a requirement for implementation as long as the performance requirements in [9] and [10] are fulfilled.

The measurement model for physical layer measurements is represented in the figure 7.

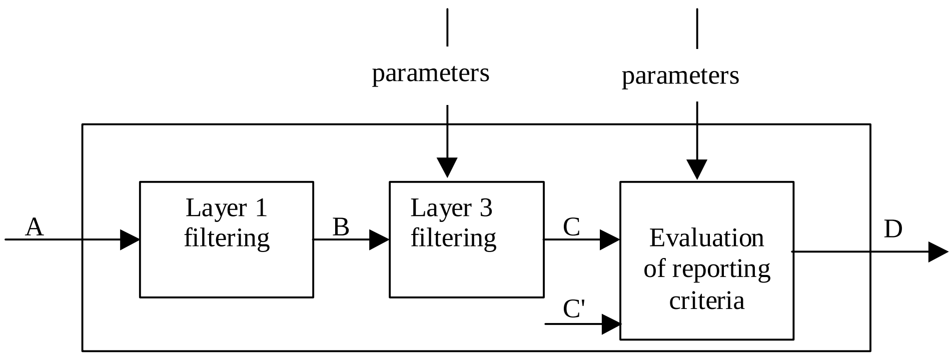


Figure 7: Measurement model

The model is described below:

- **A:** measurements (samples) internal to the physical layer in support to the measurements to be provided to higher layers;
- **Layer 1 filtering:** internal layer 1 filtering of the inputs measured at point A. Exact filtering is implementation dependant. How the measurements are actually executed in the physical layer by an implementation (inputs A and Layer 1 filtering) in not constrained by the standard i.e. the model does not state a specific sampling rate or even if the sampling is periodic or not. What the standard specifies in [9] and [10] is the performance objective and measurement period at point B in the model. The performance objectives for the physical layer measurements are specified in [9] and [10];
- **B:** A measurement reported by layer 1 after layer 1 filtering. The reporting rate at point B shall be sufficient to meet the performance objectives as defined in [9] and [10];
- **Layer 3 filtering:** Filtering performed on the measurements provided at point B. The behaviour of the Layer 3 filters are standardised and the configuration of the layer 3 filters is provided by RRC signalling (UE measurements) or NBAP signalling (Node B measurements). Each filtered result at point C shall correspond to a Layer 3 filtering performed using a reporting period equal to one measurement period at point B;
- **C:** A measurement after processing in the layer 3 filter. The reporting rate is identical to the reporting rate at point B and is therefore also measurement type specific. Although this is not shown in the figure, one measurement can be used by a multiplicity of evaluation of reporting criteria;
- **Evaluation of reporting criteria:** This checks whether actual measurement reporting is necessary at point D i.e. whether a message need to be sent to higher layers on the radio interface or Iub interface. The evaluation can be based on more than one flow of measurements at reference point C e.g. to compare between different measurements. This is illustrated by input C, C', etc. The UE shall evaluate the reporting criteria at least every time a new measurement result is reported at point C, C' etc. The reporting criteria are standardised and the configuration is provided by RRC signalling (UE measurements) or NBAP signalling (Node B measurements). Examples are periodic reporting and event based reporting. In case periodical reporting is in use and if the reporting interval is different from the filtering period defined by the layer 3 filter, the last measurement result filtered by the L3 filter shall be used as the value of the reported result. In case event triggered reporting is in use and the reporting criteria is fulfilled, the last measurement result filtered by the L3 filter shall be used as the value for reporting criteria evaluation and as the value of the reported result. This applies also for any additional measurements that shall be reported as a consequence of the event;
- **D:** a measurement report information (message) sent on the radio or Iub interface.

9.2 UE Measurements

For definitions of the measurements, see [6] and [11].

9.2.1 SFN-CFN observed time difference

This measure is mandatory for UE.

Measurement	SFN-CFN observed time difference
Source	L1 (UE)
Destination	RRC (RNC) for handover
Reporting Trigger	On-demand, Event-triggered
Description	Time difference between the SFN of the target neighbouring cell and the CFN in the UE.

9.2.2 Observed time difference to GSM cell

This measure is mandatory for UE capable of handover to GSM.

Measurement	Observed time difference to GSM cell
Source	L1 (UE)
Destination	RRC (RNC) for maintenance and handover to GSM
Reporting Trigger	On-demand, Event-triggered
Description	Time difference between a UTRA cell and a GSM cell.

9.2.3 CPICH E_c/N_0

This measure is mandatory for UE with FDD mode capability.

Measurement	CPICH Ec/No
Source	L1(UE)
Destination	RRC (UE, RNC)
Reporting Trigger	Periodic, on demand and event triggered
Description	The received energy per chip of the CPICH divided by the power density in the frequency band.

9.2.4 Void

9.2.5 CPICH RSCP

This measure is mandatory for UE with FDD mode capability.

Measurement	CPICH RSCP
Source	L1(UE)
Destination	RRC (UE, RNC)
Reporting Trigger	periodic or event triggered
Description	Received signal code power of the CPICH.

9.2.6 P-CCPCH RSCP

This measure is mandatory for UE with TDD mode capability.

Measurement	P-CCPCH RSCP
Source	L1(UE)
Destination	RRC (UE, RNC)
Reporting Trigger	periodic or event triggered
Description	Received signal code power of the P-CCPCH

9.2.7 Timeslot ISCP

This measure is mandatory for UE with TDD mode capability.

Measurement	Timeslot ISCP
Source	L1(UE)
Destination	RRC (UE, RNC)
Reporting Trigger	periodic or event triggered
Description	Interference Signal Code Power is the interference on the received signal in a specified timeslot.

9.2.8 Void

9.2.9 SIR

This measure is mandatory for UE with TDD mode capability.

Measurement	SIR
Source	L1(UE)
Destination	RRC (UE,RNC)
Reporting Trigger	Periodic, once every power control cycle , event triggered
Description	Signal to Interference Ratio

9.2.10 UTRA carrier RSSI

This measure is mandatory for UE.

Measurement	UTRA carrier RSSI
Source	L1(UE)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered, on demand
Description	Received Signal Strength Indicator, the wideband received power within the relevant channel bandwidth. For TDD this is measured in specified timeslots.

9.2.11 GSM carrier RSSI

This measure is mandatory for UE with GSM capability.

Measurement	GSM carrier RSSI
Source	L1(UE)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered, on demand
Description	Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth. Details are specified in the GSM specification 05.08

9.2.12 Transport channel BLER

This measure is mandatory for UE.

Measurement	Transport channel BLER (BLock Error Rate)
Source	L1(UE)
Destination	RRC (RNC,UE)
Reporting Trigger	Periodic, on demand
Description	Estimation of the transport channel block error rate (BLER).

9.2.13 UE transmitted power

This measure is mandatory for UE.

Measurement	UE transmitted power
Source	L1(UE)
Destination	RRC (UE,RNC)
Reporting Trigger	On-demand, periodic, Event-triggered
Description	Total transmitted power on one carrier. For TDD this is measured in specified timeslots.

9.2.14 UE Rx-Tx time difference

This measure is mandatory for UE with FDD mode capability.

Measurement	UE Rx-Tx time difference
Source	L1 (UE)
Destination	RRC (RNC)
Reporting Trigger	On-demand, periodic, event-triggered
Description	Time difference between the UE uplink DPCCH/DPDCH frame transmission and the first detected path (in time) of the downlink DPCH frame from the measured radio link. Type 1 and Type 2 are defined.

9.2.15 SFN-SFN Observed time difference

This measure is mandatory for UE.

Measurement	SFN-SFN observed time difference
Source	L1 (UE)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered
Description	Time difference between a specific reference UTRA cell and a target UTRA cell. Type 1 and Type 2 are defined.

9.2.16 UE GPS Timing of Cell Frames for UE positioning

This measure is mandatory for UE that has the capability to measure GPS reference time.

Measurement	UE GPS Timing of Cell Frames for UE positioning
Source	L1 (UE)
Destination	RRC (RNC-UE positioning)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	The timing between UTRA cell and GPS Time Of Week.

9.2.17 Timing Advance (T_{ADV}) for 1.28 Mcps TDD

This measure is mandatory for 1.28 Mcps TDD UE.

Measurement	Timing Advance (T_{ADV}) for 1.28 Mcps TDD
Source	L1 (UE)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	Difference between the uplink transmission of the UE and the downlink reception.

9.2.18 UE GPS code phase

This measure is mandatory for UE with UE-assisted GPS capability.

NOTE: The UE transmits the GPS code phase in the IE "Whole GPS Chips" and in the IE "Fractional GPS Chips" defined in [13].

Measurement	UE GPS code phase
Source	L1 (UE)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	The whole and fractional phase of the spreading code of the GPS satellite signal.

9.3 UTRAN Measurements

9.3.1 Received total wide band power

Measurement	Received total wide band power
Source	L1 (Node B)
Destination	RRC(RNC)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	The received wide band power including noise generated in the receiver, within the bandwidth defined by the pulse shaping filter. For TDD mode, this is measured in specified timeslots.

9.3.2 Transmitted carrier power

Measurement	Transmitted carrier power
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, periodic, Event-triggered
Description	Transmitted carrier power is the ratio between the total transmitted power on one DL carrier from one UTRAN access point, compared to the maximum power possible to use on that DL carrier at this moment of time. For TDD mode, this is measured in specified timeslots.

9.3.3 Transmitted code power

Measurement	Transmitted code power
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, periodic, Event-triggered
Description	Transmitted Code Power is the transmitted power on one carrier, one scrambling and one channelisation code. For TDD mode, this is measured in specified timeslots.

9.3.4 Void

9.3.5 Physical channel BER

Measurement	Physical channel BER
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered, periodic
Description	The Physical channel BER is an estimation of the average bit error rate (BER) on the DPCCH of a Radio Link Set. This measurement applies to FDD mode only.

9.3.6 Transport channel BER

Measurement	Transport channel BER
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered, periodic
Description	The transport channel BER is an estimation of the average bit error rate (BER) data part.

9.3.7 RX timing deviation

Measurement	RX timing deviation
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered
Description	The difference of the time of arrival of the UL transmissions in relation to the arrival time of a signal with zero propagation delay. This measurement is applicable for TDD mode.

9.3.8 Timeslot ISCP

Measurement	Timeslot ISCP
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	periodic or event triggered
Description	Interference on Signal Code Power, is the interference on the received signal in a specified timeslot. This measurement is applicable is applicable to TDD mode only.

9.3.9 RSCP

Measurement	RSCP
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	periodic or event triggered
Description	Received Signal Code Power is the received power on DPCH or PRACH, PUSCH or HS-SICH. This measurement is applicable for TDD mode only.

9.3.10 Round Trip Time

Measurement	Round Trip Time
Source	L1(Node B or LMU)
Destination	RRC (RNC-UE positioning)
Reporting Trigger	on demand, event triggered
Description	This is an estimate of the round trip time of signals between the Node B and the UE This measurement is applicable for FDD mode only.

9.3.11 Void

9.3.12 Acknowledged PRACH preambles

Measurement	Acknowledged PRACH preambles
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered, On demand
Description	This measurement indicates the number of positive acquisition indicators transmitted per access frame on each AICH. This measurement is applicable for FDD mode only.

9.3.13 Detected PCPCH access preambles

Measurement	Detected PCPCH Access preambles
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered, On demand
Description	This measurement indicates the total number of detected access preambles per access frame on the PCPCHs belonging to a CPCH set. This measurement is applicable for FDD mode only.

9.3.14 Acknowledged PCPCH access preambles

Measurement	Acknowledged PCPCH access preambles
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered, On demand
Description	This measurement indicates the total number of acknowledged PCPCH access preambles per access frame on the PCPCHs. where an access frame consists of fifteen access slots from access slot #0 to access slot #14. This measurement is applicable for FDD mode only.

9.3.15 SIR

Measurement	SIR
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered
Description	Signal to Interference Ratio.

9.3.16 PRACH/PCPCH Propagation Delay

Measurement	Propagation delay
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Event triggered, periodic
Description	The one-way propagation delay as measured during either PRACH or PCPCH access. This measurement is applicable for FDD mode only.

9.3.17 UTRAN GPS Timing of Cell Frames for UE positioning

Measurement	UTRAN GPS Timing of Cell Frames for UE positioning
Source	L1 (LMU)
Destination	RRC (RNC-UE positioning)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	This is the absolute time reference measurement in respect to GPS Time Of Week for the transmission of a particular frame.

9.3.18 SIR ERROR

Measurement	SIR ERROR
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered
Description	Signal to Interference Ratio Error This measurement is applicable for FDD cells only.

9.3.19 Received SYNC_UL Timing Deviation

Measurement	Received SYNC_UL Timing Deviation
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	Event triggered
Definition	'Received SYNC_UL Timing Deviation' is the time difference $UpPCH_{POS} = UpPTS_{Rxpath} - UpPTS_{TS}$ Where $UpPTS_{Rxpath}$: time of the reception in the Node B of the SYNC_UL to be used in the uplink synchronization process $UpPTS_{TS}$: time instance two symbols prior to the end of the DwPCH according to the Node B internal timing

9.3.20 Cell Sync Burst Timing

Measurement	Cell Sync Burst Timing
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered
Definition	Cell sync burst timing is the time of start (defined by the first detected path in time) of the cell sync burst of a neighbouring cell. Type 1 is used for the initial phase of Node B synchronization. Type 2 is used for the steady-state phase of Node B synchronization.

9.3.21 Cell Sync Burst SIR

Measurement	Cell Sync Burst SIR
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered
Definition	Signal to Interference Ratio for the cell sync burst, defined as: RSCP/Interference, where:

9.3.22 SFN-SFN Observed time difference

Measurement	SFN-SFN observed time difference
Source	L1 (LMU)
Destination	RRC (RNC-UE positioning)
Reporting Trigger	On-demand, Periodic, On Modification
Description	Measured time between reception of signal from a specific reference UTRA cell and from a neighbour UTRA cell.

9.3.23 Angle of Arrival (AOA) for 1.28 Mcps TDD

Measurement	Angle of Arrival (AOA) for 1.28Mcps TDD
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	event-triggered, on-demand
Description	AOA defines the estimated angle of a user with respect to a reference direction. The reference direction for this measurement shall be the North, positive in a counter-clockwise direction. The AOA is determined at the UTRAN access point antenna for an UL channel corresponding to this UE.

9.3.24 HS-SICH reception quality

Measurement	HS-SICH reception quality
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	The HS-SICH reception quality is defined via the the number of expected HS-SICH transmissions from a given UE and the number of unsuccessful HS-SICH receptions for this same UE in the Node B. For 1.28 Mcps TDD, only measurements made on HS-SICH transmissions that were transmitted using open loop power control are reported as part of this measurement. This measurement is applicable for TDD cells only.

9.3.25 Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission

Measurement	Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, periodic, Event-triggered
Description	Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission is the ratio between the total transmitted power of all codes not used for HS-PDSCH or HS-SCCH transmission on one DL carrier from one UTRAN access point, and the maximum transmission power possible to use on that DL carrier at this moment of time. For TDD mode, this is measured in specified timeslots.

10 Primitives of the physical layer

The Physical layer interacts with other entities as illustrated in figure 1. The interactions with the MAC layer and the RRC layer are shown in terms of primitives where the primitives represent the logical exchange of information and control between the physical layer and higher layers. They do not specify or constrain implementations. The (adjacent) layers connect to each other through Service Access Points (SAPs). Primitives, therefore, are the conveyers of the information exchange and control through SAPs.

Four types of primitives are used for the present document, as follows.

- **REQUEST (REQ):**
  - This type is used when a higher layer is requesting a service from a lower layer.
- **INDICATION (IND):**
  - This type is used by a lower layer providing a service to notify its higher layer of activities concerning that higher layer.
- **RESPONSE (RESP):**
  - This type is used by a higher layer providing the indicated service to respond to its lower layer that the activity has been completed.
- **CONFIRM (CNF):**
  - This type is used by a lower layer providing the requested service to confirm to the higher layer that the activity has been completed.

The primitives defined below are for local communications between MAC and L1, as well as RRC and L1 in the same protocol stack.

For the physical layer two sets of primitives are defined:

- **Primitives between layer 1 and 2:**

- PHY - Generic name - Type: Parameters.

- **Primitives between layer 1 and the RRC entity:**

  - CPHY - Generic name - Type: Parameters.

NOTE: This is a logical description of the primitives and does not cover addressing aspects (e.g. Transport Channel ID, Physical Channel ID, start frame number or disconnect frame number).

10.1 Generic names of primitives between layers 1 and 2

The primitives between layer 1 and layer 2 are shown in table 7.

Table 7: Primitives between layer 1 and 2

Generic Name	Parameter			
	REQ	IND	RESP	CNF
PHY-Access	Transport Format subset (1), ASC selected for Transport Block Set to be transmitted (5)	Not Defined	Not Defined	access information (1)
PHY-Data	TFI, Transport Block Set, CFN_{CELL}, TTI within CFN (6), Paging Indicators (2), ASC selected for that Transport Block Set (3), HS-DSCH information (6)	TFI, Transport Block Set, CRC check result, TD (4), HARQ process (6)	Not Defined	Not Defined
PHY-CPCH_Status	Transport Format subset (1)	Not Defined	Not Defined	Transport Format subset (1)
PHY-Status	Not Defined, HARQ status	Event value, Feedback information (6)	Not Defined	Not Defined
NOTE (1): FDD only. NOTE (2): PCH only NOTE (3): 3.84 Mcps TDD RACH only NOTE (4): optional, TDD only NOTE (5): FDD and 1.28 Mcps TDD RACH only NOTE (6): HS-DSCH only				

10.1.1 PHY-Access-REQ

The PHY-Access-REQ primitive is used to request access to either a RACH or a CPCH transport channel from the physical layer. A PHY-Access primitive is submitted once before the actual data for peer-to-peer communication is passed to the physical layer using the PHY-Data primitive. This primitive is used in FDD and 1.28 Mcps TDD only.

Parameters:

- Transport Format subset.

- ASC selected for Transport Block Set to be transmitted (RACH only)

10.1.2 PHY-Access-CNF

The PHY-Access-CNF primitive is used to confirm that physical layer synchronisation has been established and that the physical layer is ready for data transmission using the PHY-Data primitive. This primitive is used in FDD and 1.28 Mcps TDD only.

Parameters:

- access information.

10.1.3 PHY-Data-REQ

The PHY-Data primitives are used to request SDUs used for communications passed to and from the physical layer. One PHY-Data primitive is submitted every Transmission Time Interval for each Transport Channel.

Parameters:

- TFI;
- Transport Block Set;
- CFN_{CELL};
- TTI within CFN (HS-DSCH only);
- Page Indicators (PIs) (PCH only);
- HS-DSCH information (HS-DSCH information);
- ASC selected for that Transport Block Set (3.84 Mcps TDD RACH only).

10.1.4 PHY-Data-IND

The PHY-Data primitives are used to indicate SDUs used for Layer 2 passed to and from the physical layer. One PHY-Data primitive is submitted every Transmission Time Interval for each Transport Channel.

Parameters:

- TFI;
- Transport Block Set;
- CRC check result;
- TD (RX Timing Deviation measurement) (optional, TDD only);
- Process Id (HS-DSCH).

10.1.5 PHY-CPCH_Status-REQ

The PHY-CPCH_Status-REQ primitive is used by MAC to request CPCH status information that is broadcast on CSICH. The parameter Transport Format subset allows to restrict the CPCH status information request to a limited number of CPCH channels of the given CPCH set. This primitive is used in FDD only.

Parameters:

- Transport Format subset.

10.1.6 PHY-CPCH_Status-CNF

The PHY-CPCH_Status-CNF primitive is used by L1 to indicate CPCH status information that is broadcast on CSICH. Status information is represented in terms of a Transport format subset that is permitted to be employed by the UE. This primitive is used in FDD only.

Parameters:

- Transport Format subset

10.1.7 PHY-Status-IND

The PHY-Status-IND primitive can be used by the layer 1 to notify higher layers of an event that has occurred.

Parameters:

- Feedback information (HS-DSCH only);
- Event value:
  - CPCH Emergency stop was completed;
  - CPCH Start of Message Indicator was received;
  - CPCH Start of Message Indicator was not received;
  - L1 hardware failure has occurred.
  - CPCH End of Transmission was received

10.2 Generic names of primitives between layers 1 and 3

The status primitives between layer 1 and 3 are shown in table 8.

Table 8: Status primitives between layer 1 and 3

Generic Name	Parameter			
	REQ	IND	RESP	CNF
CPHY-Sync	Not Defined	CCTrCH ID (1)	Not Defined	Not Defined
CPHY-Out-of-Sync	Not Defined	CCTrCH ID (1)	Not Defined	Not Defined
CPHY-Measurement	transmission power threshold, measurement parameters	measurement parameters	Not Defined	Not Defined
CPHY-Error	Not Defined	error code	Not Defined	Not Defined
CPHY-CPCH-EOT	Not Defined	No Parameter (2)	Not Defined	Not Defined
NOTE (1): TDD only. NOTE (2): FDD only				

10.2.1 STATUS PRIMITIVES

10.2.1.1 CPHY-Sync-IND

This primitive is used for L1 to indicate to RRC that synchronisation of a certain physical channel has been done in the receiver. In FDD synchronisation is based on reception of the DPCCH, and in TDD synchronisation is based on Special Burst, TB reception, and burst quality estimation.

Parameters:

- CCTrCH ID (TDD only).

10.2.1.2 CPHY-Out-of-Sync-IND

Primitive sent from L1 to RRC indicating that synchronisation of a previously configured connection has been lost in the receiver. In FDD synchronisation is based on reception of the DPCCH, and in TDD synchronisation is based on Special Burst, TB reception, and burst quality estimation.

Parameters:

- CCTrCH ID (TDD only).

10.2.1.3 CPHY-Measurement-REQ

The Request primitive is used for RRC to configure L1 measurements.

Parameters:

- transmission power threshold;

- refer to clause 9 for measurement parameters.

10.2.1.4 CPHY-Measurement-IND

The Indication primitive is used to report the measurement results.

Parameters:

- refer to clause 9 for measurement parameters.

10.2.1.5 CPHY-Error-IND

The CPHY-Error primitive is used to indicate to the management entity that an error has occurred as a result of a physical layer fault.

Parameters:

- error code.

10.2.1.6 CPHY-CPCH-EOT-IND

The CPHY-CPCH-EOT-IND primitive is used by L1 to indicate RRC of an end of CPCH transmission event has occurred. This primitive is used in FDD only.

Parameters:

- No Parameter.

10.2.2 CONTROL PRIMITIVES

The control primitives between layer 1 and 3 are shown in table 9.

Table 9: Control primitives between layer 1 and 3

Generic Name	Parameter			
	REQ	IND	RESP	CNF
CPHY-TrCH-Config	transport channel description	Not Defined	Not Defined	No Parameter
CPHY-TrCH-Release	No Parameter	Not Defined	Not Defined	No Parameter
CPHY-RL-Setup	physical channel description	Not Defined	Not Defined	No Parameter
CPHY-RL-Release	No Parameter	Not Defined	Not Defined	No Parameter
CPHY-RL-Modify	physical channel description	Not Defined	Not Defined	No Parameter
CPHY-Commit	activation time	Not Defined	Not Defined	Not Defined
CPHY-CPCH-Estop	No Parameter (1)	No Parameter (1)	No Parameter (1)	No Parameter (1)
CPHY-Out-of-Sync-Config	Out of Sync detection parameters	Not Defined	Not Defined	No Parameter
NOTE (1): FDD only.				

10.2.2.1 CPHY-TrCH-Config-REQ

This primitive is used for setting up and configuring a transport channel, and also to modify an existing transport channel.

Parameters:

- transport channel description.

10.2.2.2 CPHY-TrCH-Config-CNF

This primitive is used for confirming the setting up and configuring a transport channel, and also modifying an existing transport channel.

Parameters:

- No Parameter.

10.2.2.3 CPHY-TrCH-Release-REQ

This primitive is used for releasing a transport channel.

Parameters:

- No Parameter.

10.2.2.4 CPHY-TrCH-Release-CNF

This primitive is used for confirming the releasing a transport channel.

Parameters:

- No Parameter.

10.2.2.5 CPHY-RL-Setup-REQ

The Request primitive is sent from RRC to L1 for establishment of a Radio link to a certain UE.

Parameters:

- physical channel description.

10.2.2.6 CPHY-RL-Setup-CNF

The Confirm primitive is returned from L1 to RRC when the Radio link is established. In case L1 is unable to execute the request, this is indicated in the confirm primitive.

Parameters:

- No Parameter.

10.2.2.7 CPHY-RL-Release-REQ

The Request primitive is sent from RRC to L1 for release of a Radio link to a certain UE.

Parameters:

- No Parameter.

10.2.2.8 CPHY-RL-Release-CNF

The Confirm primitive is returned from L1 to RRC when the radio link is released.

Parameters:

- No Parameter.

10.2.2.9 CPHY- RL-Modify-REQ

The Request primitive is sent from RRC to L1 for modification of a Radio link to a certain UE.

Parameters:

- physical channel description.

10.2.2.10 CPHY-RL-Modify-CNF

The Confirm primitive is returned from L1 to RRC when the radio link is modified. In case L1 is unable to execute the request, this is indicated in the confirm primitive.

Parameters:

- No Parameter.

10.2.2.11 CPHY-Commit-REQ

This primitive is sent from RRC to L1 to synchronise UE and NW for the physical channel modification.

Parameters:

- activation time.

10.2.2.12 CPHY-CPCH-Estop-IND

The CPHY-CPCH-Estop-IND primitive is used by L1 to notify RRC of a CPCH emergency stop message has been received. This primitive is used in FDD only.

Parameters:

- No Parameter.

10.2.2.13 CPHY-CPCH-Estop-RESP

This primitive is sent from UE RRC to L1 for emergency stop of the CPCH transmission. After receiving this primitive, UE L1 stopping its transmission on the related CPCH. This primitive is used in FDD only.

Parameters:

- No Parameter.

10.2.2.14 CPHY-CPCH-Estop-REQ

This primitive is sent from RRC to L1 for CPCH Emergency Stop. This primitive is sent for triggering of a CPCH emergency stop. After receiving this primitive, Node B L1 sends CPCH Estop Command to UE. This CPCH Estop Command is all 1 bits pattern in the CCC field of DL DPCCH for CPCH. This primitive is used in FDD only.

Parameters:

- No Parameter.

10.2.2.15 CPHY-CPCH-Estop-CNF

This primitive is sent from Node B L1 to RRC for confirming the emergency stop of the CPCH. This primitive is used in FDD only.

Parameters:

- No Parameter.

10.2.2.16 CPHY-Out-of-Sync-Config-REQ

This primitive is sent from RRC to Node B L1 to reconfigure the parameters to detect "in sync" and "out of sync" conditions of uplink physical channel transmission.

Parameters:

- Out of Sync detection parameters

10.2.2.17 CPHY-Out-of-Sync-Config-CNF

This primitive is sent from Node B L1 to RRC for confirming the Reconfiguration of the Out-of-Sync parameters on Node B L1.

Parameters:

- No Parameter.

10.3 Parameter definition

10.3.1 Error code

- Hardware failure.

10.3.2 Event value

- Maximum transmission power has been reached.
- Allowable transmission power has been reached.
- Average transmission power is below allowable transmission power.
- Loss of DL DPCCH.
- Completion of CPCH Emergency stop.
- CPCH Start of Message Indicator was received.
- CPCH Start of Message Indicator was not received.
- Maximum number of frames for CPCH transmission has been reached.
- End of Frame for CPCH transmission has been received.

10.3.3 Access Information

- Ready for RACH data transmission (in case of FDD mode: when Ack on AICH has been received, in case of 1.28 Mcps TDD: when Ack on FPACH has been received);
- timeout, no response on AICH (FDD only) or AP-AICH (FDD only) or FPACH (1.28 Mcps TDD only) has been received while maximum number of access preamble transmissions (FDD only) /synchronisation attempts (1.28 Mcps TDD only) has been performed.

The following values of this parameter apply to FDD only:

- NACK on AICH or AP-AICH has been received;
- ready for CPCH data transmission (CD or CD/CA information received on CD/CA-ICH);
- mismatch of CD/CA-ICH signatures;
- no response on CD/CA-ICH received;
- timeout, no CD/CA-ICH received.

10.3.4 Transport Format Subset

- A subset of the Transport Format set of a Transport Channel.

10.3.5 Physical channel description

10.3.5.1 Primary SCH

- Tx diversity mode.

10.3.5.2 Secondary SCH

- Tx diversity mode.

10.3.5.3 Primary CCPCH

- Frequency info.
- DL scrambling code.
- Tx diversity mode.
- Timeslot (TDD only).
- Burst type (3.84 Mcps TDD only).
- Offset (TDD only).
- Repetition period (TDD only).
- Repetition length (TDD only).

10.3.5.4 Secondary CCPCH

- DL scrambling code.
- Channelisation code.
- Tx diversity mode.
- Timeslot (TDD only).
- Burst type (3.84 Mcps TDD only).
- Midamble shift (TDD only).
- Offset (TDD only).
- Repetition period (TDD only).
- Repetition length (TDD only).
- TFCI presence (TDD only).

10.3.5.5 PRACH

- Access Slot (FDD only).
- Preamble scrambling code (FDD only).
- Available preamble signatures (FDD only).
- Spreading factor for data part.
- Power control info:
  - UL target SIR;
  - primary CCPCH DL TX Power;

  - UL interference;
  - power offset (Power ramping) (FDD only).
- Access Service Class Information (PRACH Partitioning):
  - Available signatures for each ASC (FDD only).
  - Available Channelisation codes for each ASC (TDD only).
  - Available Subchannels for each ASC.
- AICH transmission timing parameter (FDD only).
- Timeslots (TDD only).
- Available Channelisation Codes (TDD only)
- Spreading Factor (TDD only).
- Midamble Type (TDD only).

10.3.5.6 Uplink DPDCH+DPCCH

- UL scrambling code.
- DPCCH slot structure (N_{pilot}, N_{TPC}, N_{TFCI}, N_{FBI}).
- Transmission Time offset value.

10.3.5.7 Uplink DPCH

- Timing Advance (TDD only).
- DPCH channelisation code (TDD only).
- Burst Type (3.84 Mcps TDD only).
- DPCH midamble shift (TDD only).
- Timeslot (TDD only).
- Offset (TDD only).
- Repetition Period (TDD only).
- Repetition length (TDD only).
- TFCI presence (TDD only).

10.3.5.8 Downlink DPCH

- Transmission Time offset value.
- DL scrambling code:
  - DL Channelisation code.
- Tx diversity mode:
  - FB mode (FDD only).
- Slot structure ($N_{pilot,}$ N_{TPC}, N_{TFCI}, $N_{FBI,}$, N_{data1}, N_{data2}) (FDD only).
- Special slot structure only for CPCH ($N_{pilot,}$ N_{TPC}, N_{TFCI}, N_{CCC}) (FDD only)
- Burst Type (3.84 Mcps TDD only).

- DPCH midamble shift (TDD only).
- Timeslot (TDD only).
- Offset (TDD only).
- Repetition period (TDD only).
- Repetition length (TDD only).
- TFCI presence (TDD only).

10.3.5.9 PCPCH (Physical Common Packet Channel)

- CPCH Set ID to which this PCPCH belongs.
- Parameters related to the AP preamble:
  - Access Preamble (AP) scrambling code;
  - available AP signatures/subchannels for access request;
- Parameters related to the CD preamble:
  - CD preamble scrambling code;
  - available CD signatures/subchannels;
- Parameters related to PCPCH message part:
  - PCPCH scrambling code;
  - PCPCH Channelisation code;
  - data rate (spreading factor);
  - N_frames_max: Maximum length of CPCH message in radio frames.

10.3.5.10 PICH

- Scrambling code.
- Channelisation code.
- Timeslot (TDD only).
- Burst Type (3.84 Mcps TDD only).
- Midamble shift (TDD only).
- Offset (TDD only).
- Repetition period (TDD only).
- Repetition length (TDD only).

10.3.5.11 AICH

- Scrambling code.
- Channelisation code.
- Tx diversity mode.

NOTE: The value for the parameters needs to be consistent with the corresponding PRACH.

10.3.5.12 AP-AICH

- CPCH Set ID.
- Scrambling code.
- Channelisation code.
- Tx diversity mode.

10.3.5.13 CD-ICH

- CPCH Set ID.
- Scrambling code.
- Channelisation code.
- Tx diversity mode.

NOTE: This physical channel is used in conjunction with PCPCH when UE Channel Selection is active.

10.3.5.14 CD/CA-ICH

- CPCH Set ID.
- Scrambling code.
- Channelisation code.
- Tx diversity mode.

NOTE: This physical channel is used in conjunction with PCPCH when Channel Assignment is active.

10.3.5.15 CSICH

- CPCH Set ID.
- Scrambling code.
- Channelisation code.
- Tx diversity mode.

NOTE: The values for the parameters need to be consistent with the AP-AICH that is time-multiplexed with this CSICH.

10.3.5.16 PDSCH (TDD only)

- Scrambling code.
- Channelisation code.
- Tx diversity mode:
  ~~- FB mode (FDD only).~~
- DL channelisation code (TDD only).
- Burst Type (3.84 Mcps TDD only).
- PDSCH Midamble shift (TDD only).
- Timeslot (TDD only).
- Offset (TDD only).

- Repetition period (TDD only).
- Repetition length (TDD only).
- TFCI presence (TDD only).

10.3.5.17 PUSCH

- PUSCH channelisation code.
- Burst Type (3.84 Mcps TDD only).
- PUSCH midamble shift (TDD only).
- Timeslot (TDD only).
- Offset (TDD only).
- Repetition period (TDD only).
- Repetition length (TDD only).
- TFCI presence (TDD only).
- Timing Advance (TDD only).

10.3.5.18 DwPCH (1.28 Mcps TDD only)

- Tx diversity mode.
- SYNC_DL code ID.

10.3.5.19 UpPCH (1.28 Mcps TDD only)

- SYNC_UL code ID.

10.3.5.20 FPACH (1.28 Mcps TDD only)

- Scrambling code
- Channelisation code
- Timeslot
- Midamble shift
- Tx diversity mode.

10.3.5.21 PNBSCH (Physical Node B Synchronisation channel)

- Node B - Node B over the air communication.
- Only for TDD cells.
- Repetition period.
- **C**oncatenated periodically **E**xtended **C**omplementary sequences.

10.3.5.22 HS-SCCH

- Scrambling code.
- Channelisation code.

- Timeslot (TDD only).
- Burst type (3.84 Mcps TDD only).

10.3.5.23 HS-SICH (TDD only)

- Channelisation code.
- Burst Type 1 (3.84 Mcps TDD only).
- Midamble shift.
- Timeslot.

10.3.6 Feedback information

- Quality indication.
- HARQ Status.

10.3.7 HARQ process

- Process Id.

10.3.8 HS-DSCH information

- Modulation scheme.
- Channelisation code.
- Timeslot (TDD only).
- Redundancy version/Constellation.
- Process Id.
- HS-SCCH Cyclic Sequence Number (HCSN) for TDD.

10.3.9 HARQ status

- HARQ acknowledgement (acknowledgement or negative acknowledgement).

3GPP TSG-RAN Working Group 2 #47 **Tdoc ⌘ R2-051607**
Athens, Greece, 9 – 13 May 2005

CR-Form-v7

CHANGE REQUEST

⌘	**25.302**	**CR**	**0158**	⌘ **rev**	**-**	⌘	Current version:	**6.3.0** ⌘

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

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

Title:	⌘	Feature Clean-up: Removal of DSCH (FDD)		
Source:	⌘	RAN WG2		
Work item code:	⌘	TEI5	***Date:*** ⌘	10/05/2005
Category:	⌘	**C** *Use* <u>*one*</u> *of the following categories:* ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	***Release:*** ⌘	REL-6 *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)* *Rel-6 (Release 6)*

Reason for change:	⌘	Removal of DSCH for FDD
Summary of change:	⌘	Removal of DSCH for FDD
Consequences if not approved:	⌘	DSCH for FDD mode will remain specified

Clauses affected:	⌘	6.2, 7.2, 8.2, 10.3.5.16,				
		Y	**N**			
Other specs	⌘	**X**		Other core specifications	⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
affected:		**X**		Test specifications		34.108, 34.123
				O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

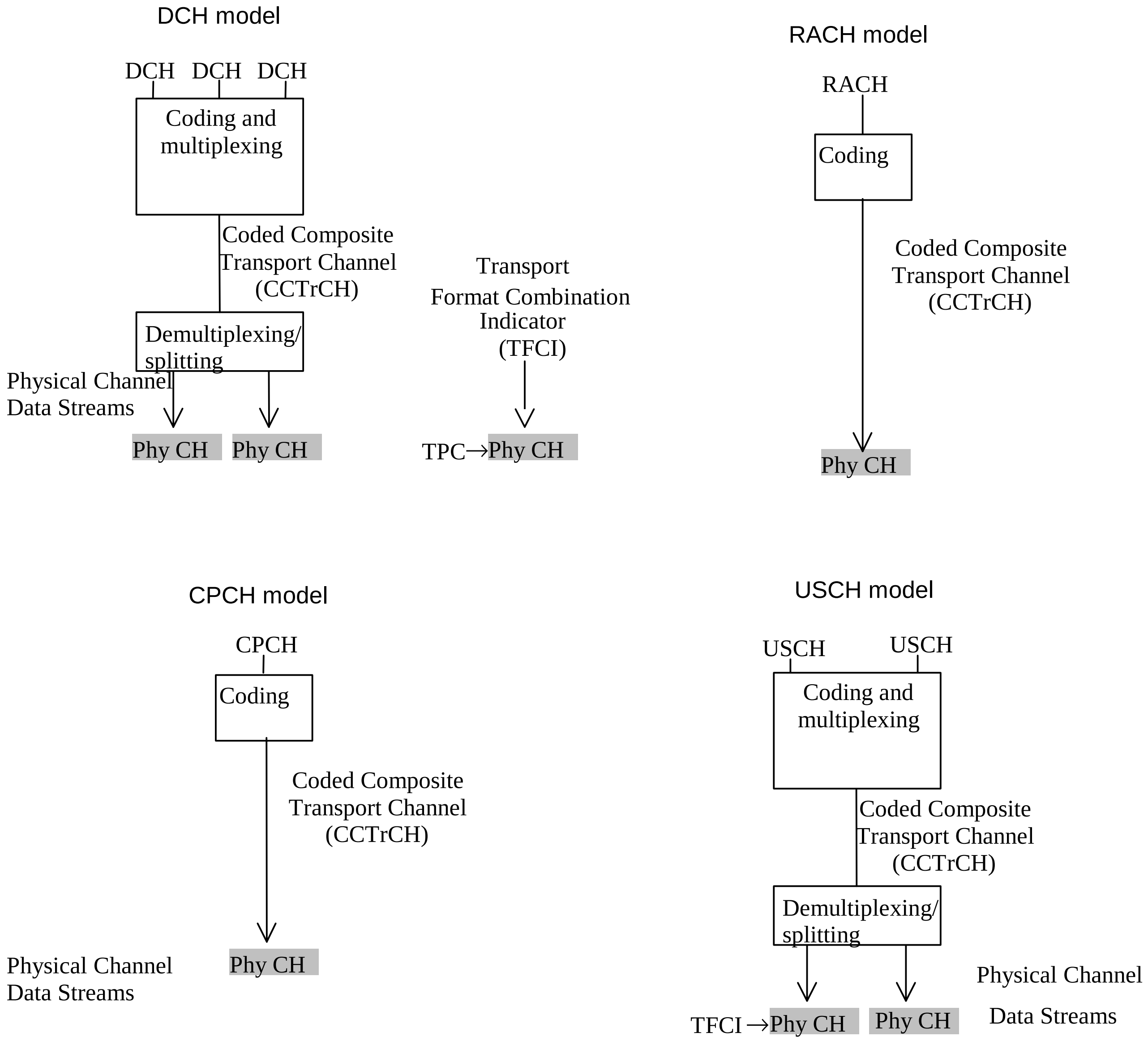
downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

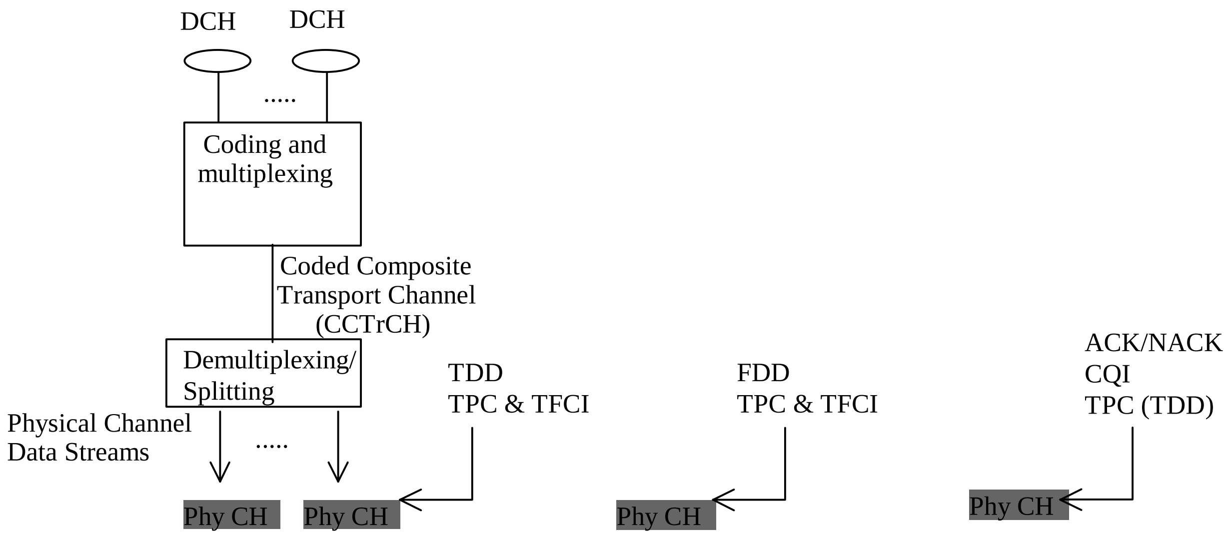
6 Model of physical layer of the UE

6.1 Uplink models

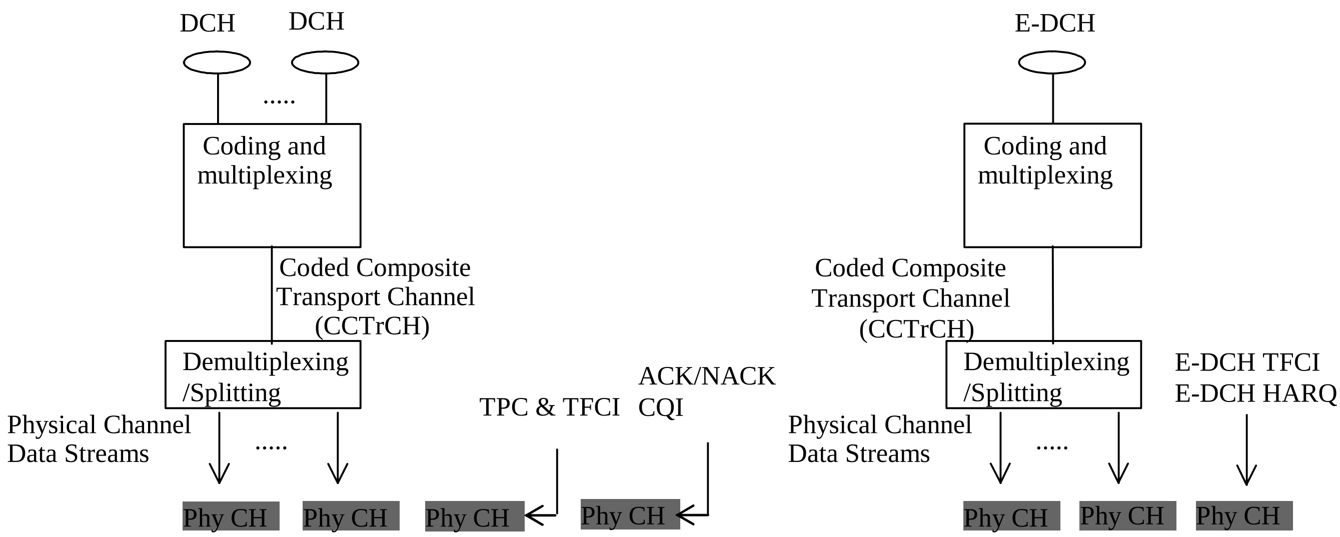
Figure 2 shows models of the UE's physical layer in the uplink for both FDD and TDD mode. It shows the models for DCH, E-DCH, RACH, CPCH (the latter three used in FDD mode only) and USCH (TDD only). Some restriction exist for the use of different types of transport channel at the same time, these restrictions are described in the clause "UE Simultaneous Physical Channel combinations". More details can be found in [3] and [4].



DCH model with HS-DSCH support



DCH and E-DCH model with HS-DSCH support



NOTE 1: CPCH is for FDD only.

NOTE 2: USCH is for TDD only.

NOTE 3: E-DCH is for FDD only.

Figure 2: Model of the UE's physical layer - uplink

The DCH model shows that one or several DCHs can be processed and multiplexed together by the same coding and multiplexing unit. The detailed functions of the coding and multiplexing unit are not defined in the present document but in [3] and [4]. The single output data stream from the coding and multiplexing unit is denoted *Coded Composite Transport Channel (CCTrCH)*.

The bits on a CCTrCH Data Stream can be mapped on the same Physical Channel and should have the same C/I requirement.

On the downlink, multiple CCTrCH can be used simultaneously with one UE. In the case of FDD, only one fast power control loop is necessary for these different CCtrCH, but the different CCtrCH can have different C/I requirements to provide different QoS on the mapped Transport Channels. In the case of TDD, different power control loops can be applied for different CCTrCH. One physical channel can only have bits coming from the same CCTrCH.

On the uplink and in the case of FDD, when E-DCH is not configured, only one CCTrCH can be used simultaneously. On the uplink and in the case of TDD, multiple CCTrCH can be used simultaneously.

On the uplink and in case of FDD, two CCTrCHs are used simultaneously when the E-DCH Transport Channel is configured.

When multiple CCTrCH are used by one UE, one or several TFCI can be used, but each CCTrCH has only zero or one corresponding TFCI. In the case of FDD, these different words are mapped on the same DPCCH. In the case of TDD, these different TFCIs can be mapped on different DPCH.

The data stream of the CCTrCH is fed to a data demultiplexing/splitting unit that demultiplexes/splits the CCTrCH's data stream onto one or several *Physical Channel Data Streams*.

The current configuration of the coding and multiplexing unit is either signalled to, or optionally blindly detected by, the network for each 10 ms frame. If the configuration is signalled, it is represented by the *Transport Format Combination Indicator (TFCI)* bits. Note that the TFCI signalling only consists of pointing out the current transport format combination within the already configured transport format combination set. In the uplink there is only one TFCI representing the current transport formats on all DCHs of one CCTrCH simultaneously. In FDD mode, the physical channel data stream carrying the TFCI is mapped onto the physical channel carrying the power control bits and the pilot. In TDD mode the TFCI is time multiplexed onto the same physical channel(s) as the DCHs. The exact locations and coding of the TFCI are signalled by higher layers.

The DCH and USCH have the possibility to perform Timing Advance in TDD mode.

The model for the RACH case shows that RACH is a common type transport channel in the uplink. RACHs are always mapped one-to-one onto physical channels (PRACHs), i.e. there is no physical layer multiplexing of RACHs, and there can only be one RACH TrCH and no other TrCH in a RACH CCTrCH. Service multiplexing is handled by the MAC layer. In one cell several RACHs/PRACHs may be configured. If more than one PRACH is configured in a cell, the UE performs PRACH selection as specified in [4].

In FDD, the RACHs mapped to the PRACHs may all employ the same Transport Format and Transport Format Combination Sets, respectively. It is however also possible that individual RACH Transport Format Sets are applied on each available RACH/PRACH.

In TDD, there is no TFCI transmitted in the burst, and therefore each RACH is configured with a single transport format within its TFS. The RACHs mapped to the PRACHs may all employ the same Transport Format. It is however also possible that individual RACH Transport Formats are applied on each available RACH/PRACH combination.

The available pairs of RACH and PRACHs and their parameters are indicated in system information. In FDD mode, the various PRACHs are distinguished either by employing different preamble scrambling codes, or by using a common scrambling code but distinct (non-overlapping) partitions of available signatures and available subchannels. In TDD mode, the various PRACHs are distinguished either by employing different timeslots, or by using a common timeslot but distinct (non-overlapping) partitions of available channelisation codes and available subchannels. Examples of RACH/PRACH configurations are given in [6].

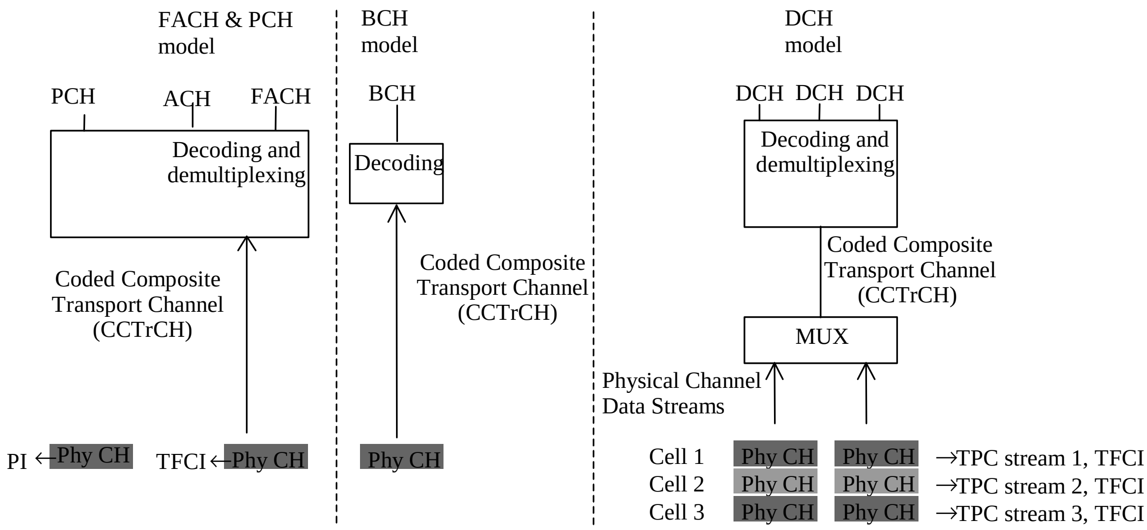
The CPCH, which is another common type transport channel, has a physical layer model as shown in figure2. There is always a single CPCH transport channel mapped to a PCPCH physical channel which implies a one-to-one correspondence between a CPCH TFI and the TFCI conveyed on PCPCH. There can only be one CPCH TrCH and no other TrCH in a CPCH CCTrCH. A CPCH transport channel belongs to a CPCH set which is identified by the application of a common, CPCH set-specific scrambling code for access preamble and collision detection, and multiple PCPCH physical channels. Each PCPCH shall employ a subset of the Transport Format Combinations implied by the Transport Format Set of the CPCH set. A UE can request access to CPCH transport channels of a CPCH set, which is assigned when the service is configured for CPCH transmission.

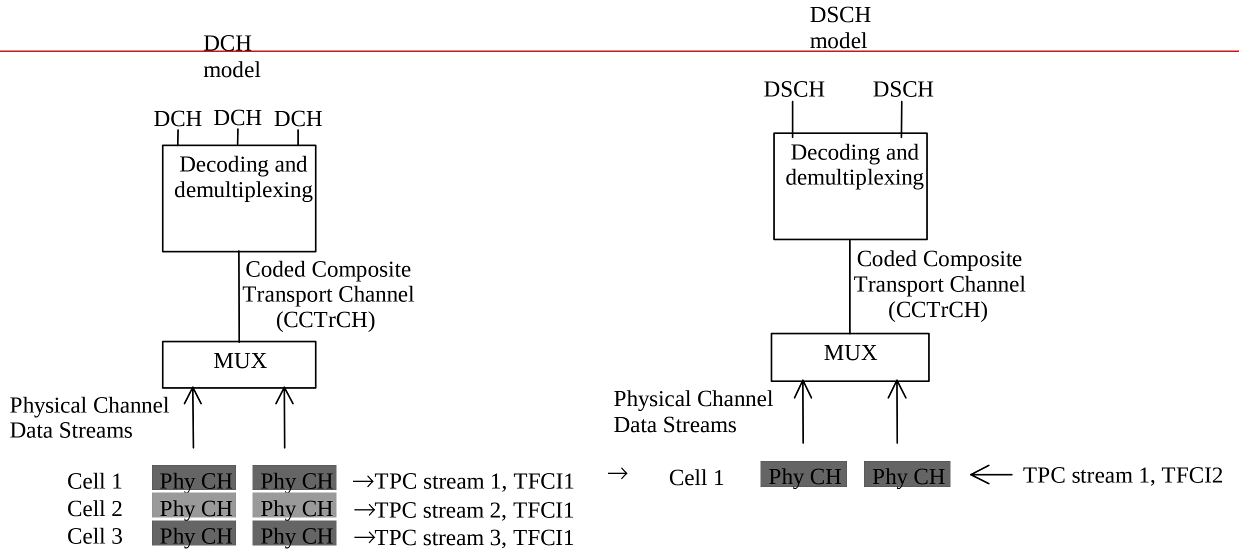
In FDD in case of a configured HS-DSCH one physical channel (HS-DPCCH) is configured for the reporting of HS-DSCH transport block acknowledgement / negative acknowledgement and channel quality indicator. In TDD in case of a configured HS-DSCH a shared physical channel (HS-SICH) is configured for the reporting of HS-DSCH transport block acknowledgement / negative acknowledgement, channel quality indicator and transmit power control symbols.

The E-DCH is applicable to the FDD mode only. There can only be one E-DCH TrCH and no other TrCH in a E-DCH CCTrCH. The E-DCH CCTrCH is carried on E-DPDCH(s) physical channel(s). E-DCH TFCI and E-DCH HARQ information are carried on a E-DPCCH physical channel. It is FFS whether some E-DCH scheduling information is also carried by the physical layer.

6.2 Downlink models

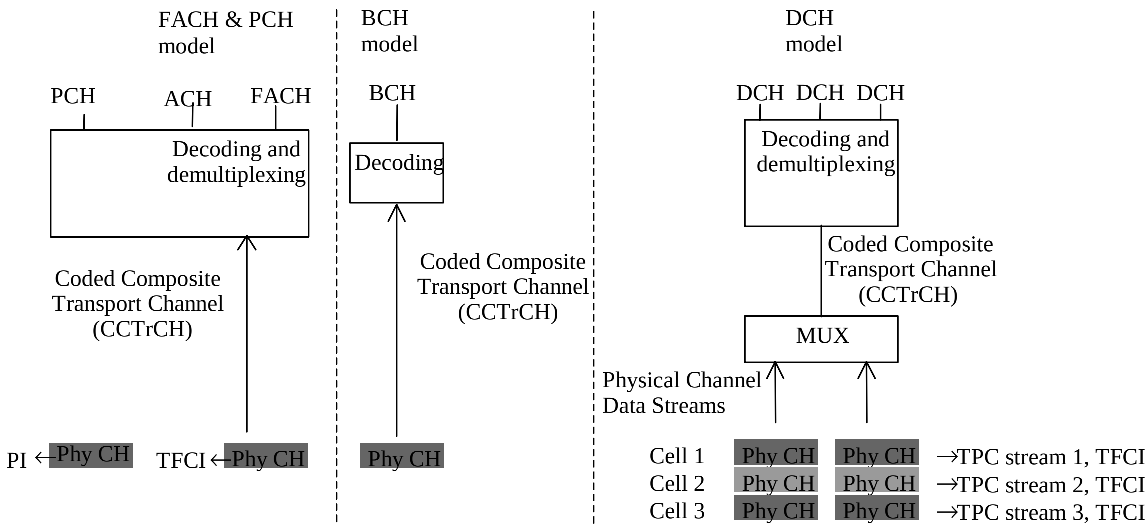
Figure 3 and figure 4 show the model of the UE's physical layer for the downlink in FDD and TDD mode, respectively. Note that there is a different model for each transport channel type.



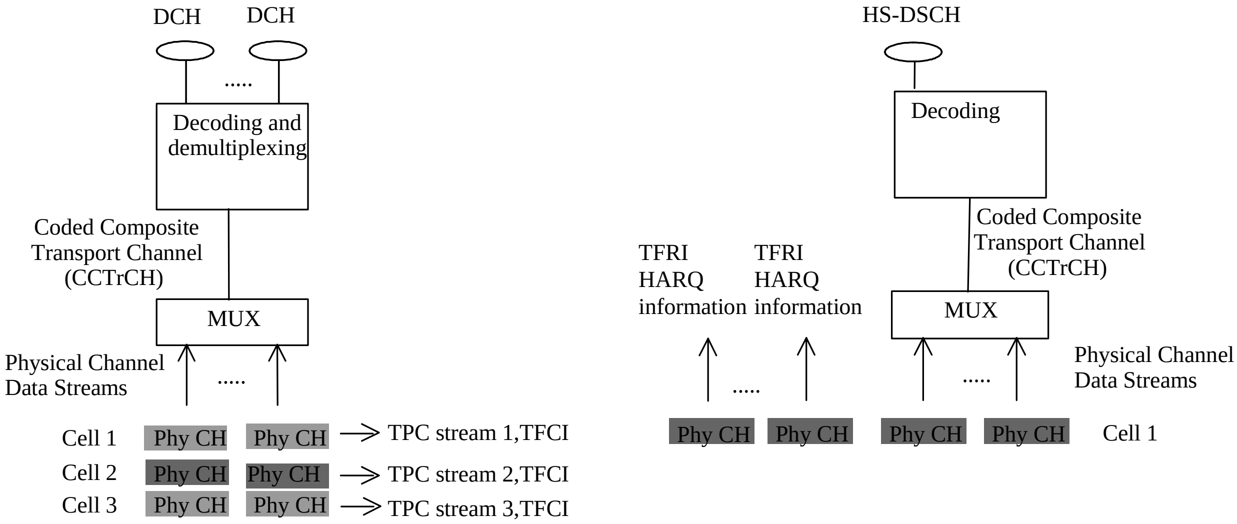


DCH associated with DSCH

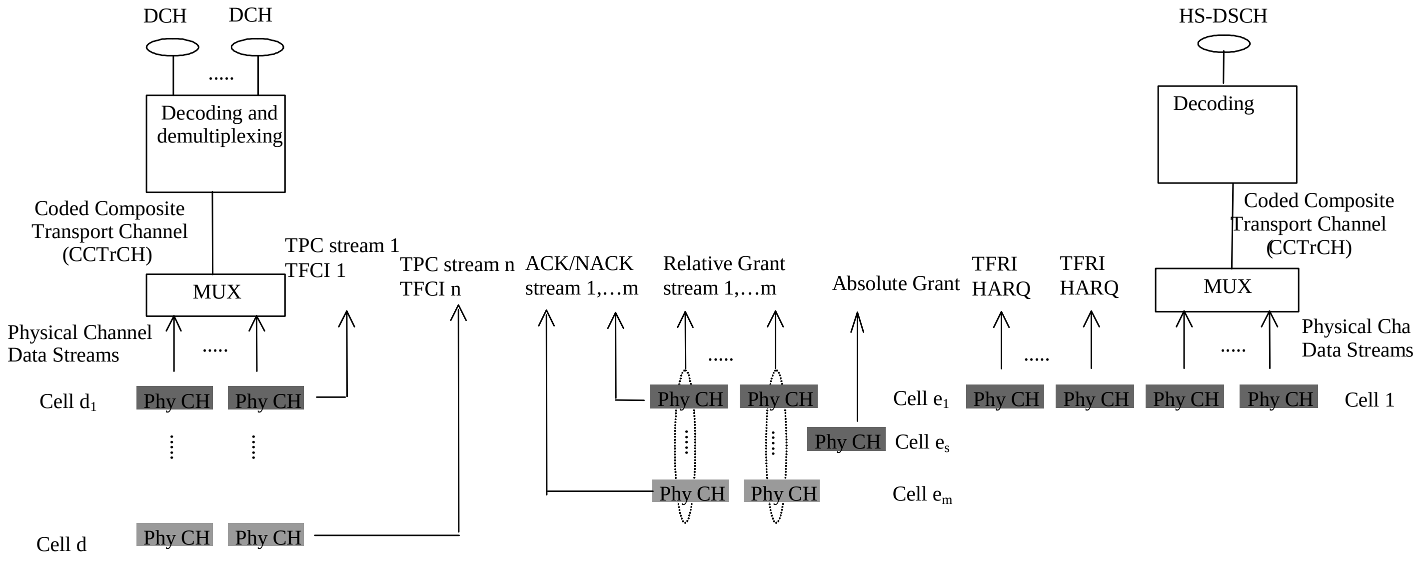
Note (1) – TFCI1 indicates the DCH specific TFC and TFCI2 indicates the DSCH specific TFC and also the PDSCH channelisation code(s)



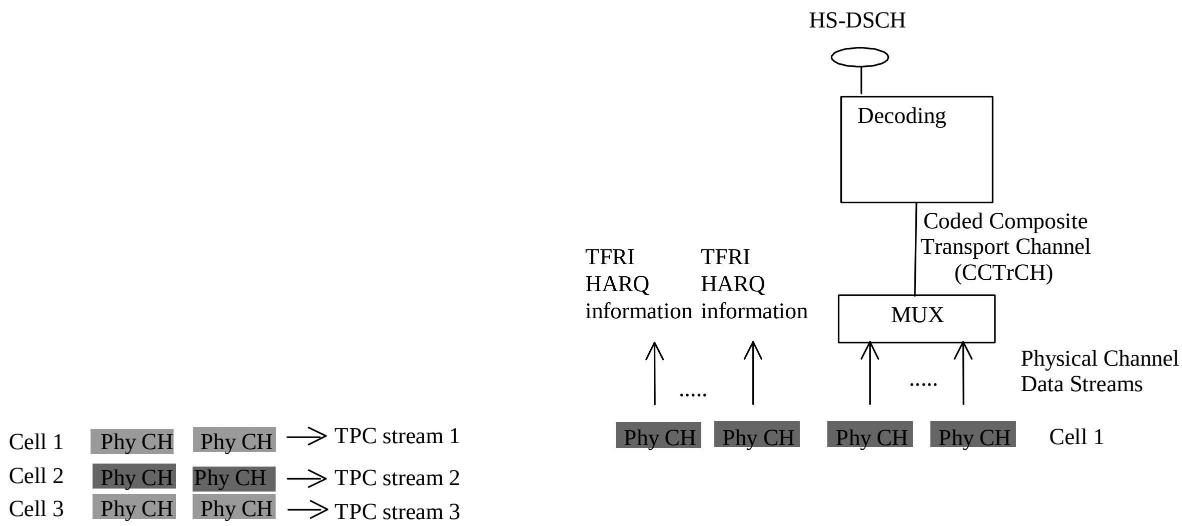
DCH model with HS-DSCH(s)



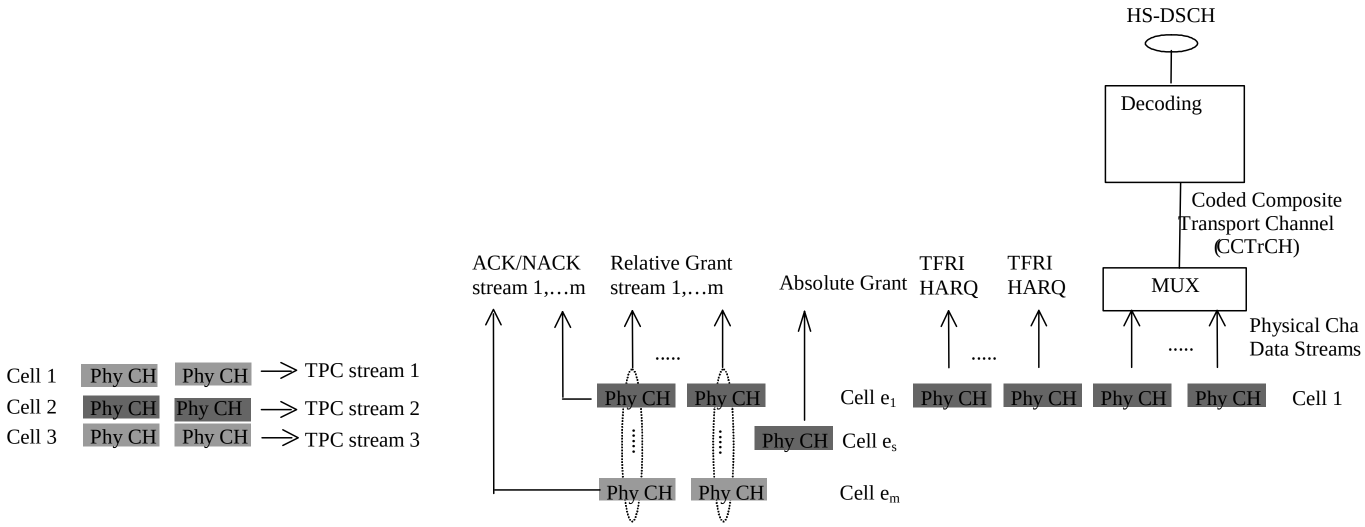
DCH and HS-DSCH model with E-DCH support



HS-DSCH(s) with F-DPCH model



HS-DSCH with F-DPCH model and E-DCH support



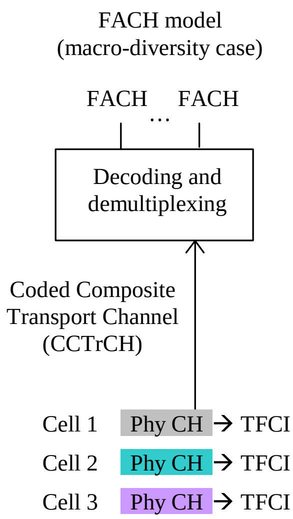
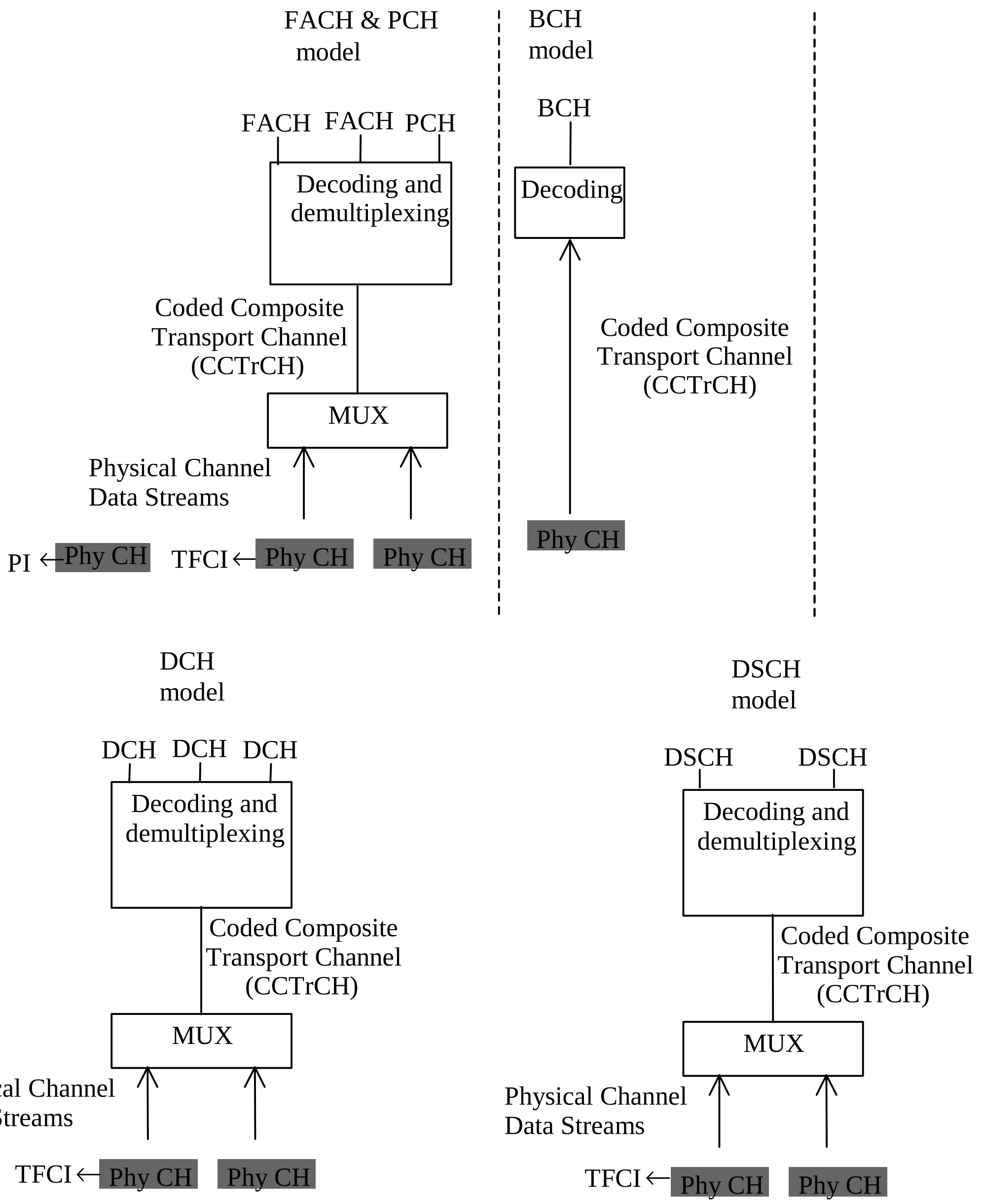
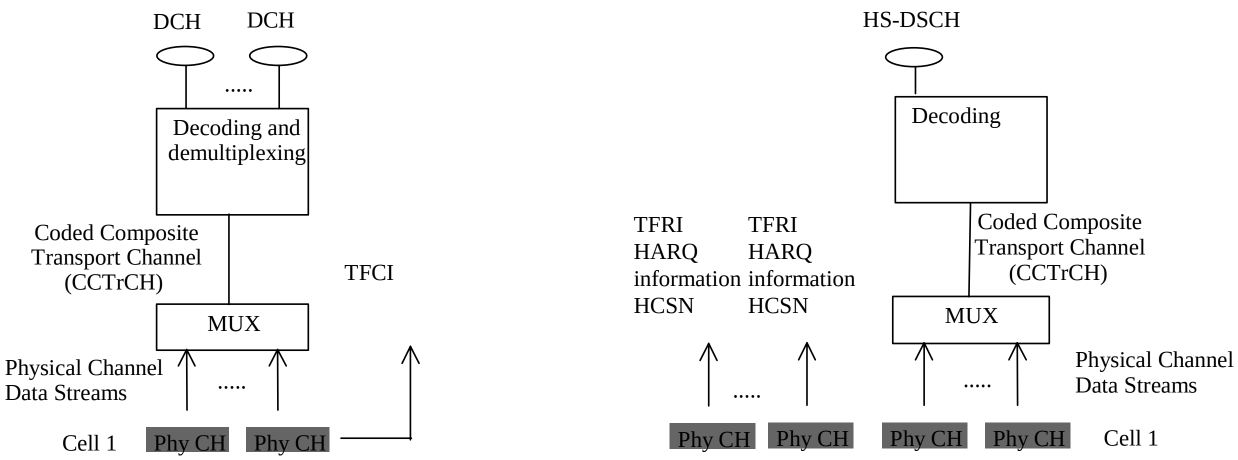


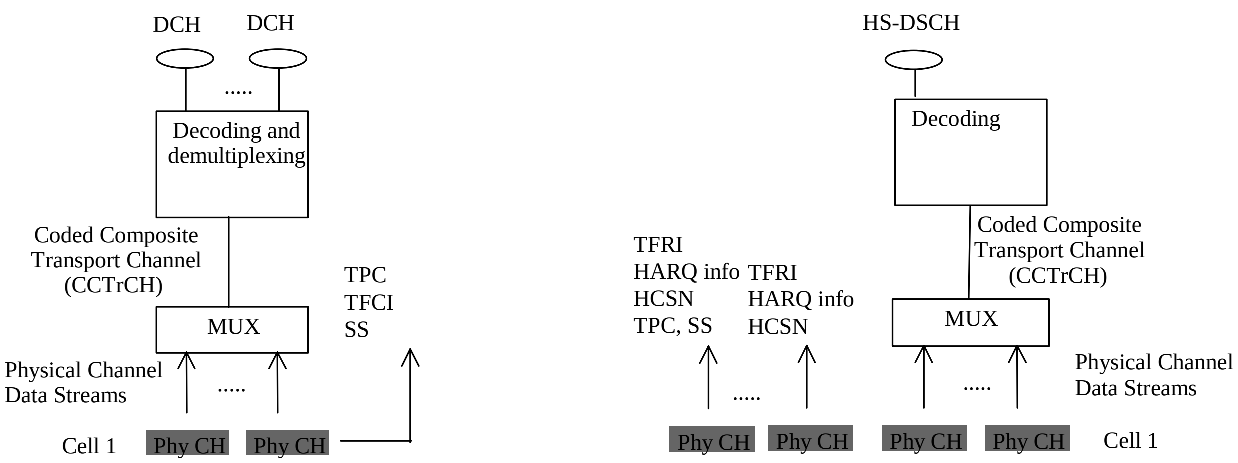
Figure 3: Model of the UE's physical layer - downlink FDD mode


FACH & PCH model
FACH FACH PCH
Decoding and demultiplexing
Coded Composite Transport Channel (CCTrCH)
MUX
Physical Channel Data Streams
PI
Phy CH
TFCI
Phy CH
Phy CH
BCH model
BCH
Decoding
Coded Composite Transport Channel (CCTrCH)
Phy CH
DCH model
DCH DCH DCH
Decoding and demultiplexing
Coded Composite Transport Channel (CCTrCH)
MUX
Physical Channel Data Streams
TFCI
Phy CH
Phy CH
DSCH model
DSCH DSCH
Decoding and demultiplexing
Coded Composite Transport Channel (CCTrCH)
MUX
Physical Channel Data Streams
TFCI
Phy CH
Phy CH

DCH model with HS-DSCH(s)
for 3.84 Mcps TDD



DCH model with HS-DSCH(s)
for 1.28 Mcps TDD



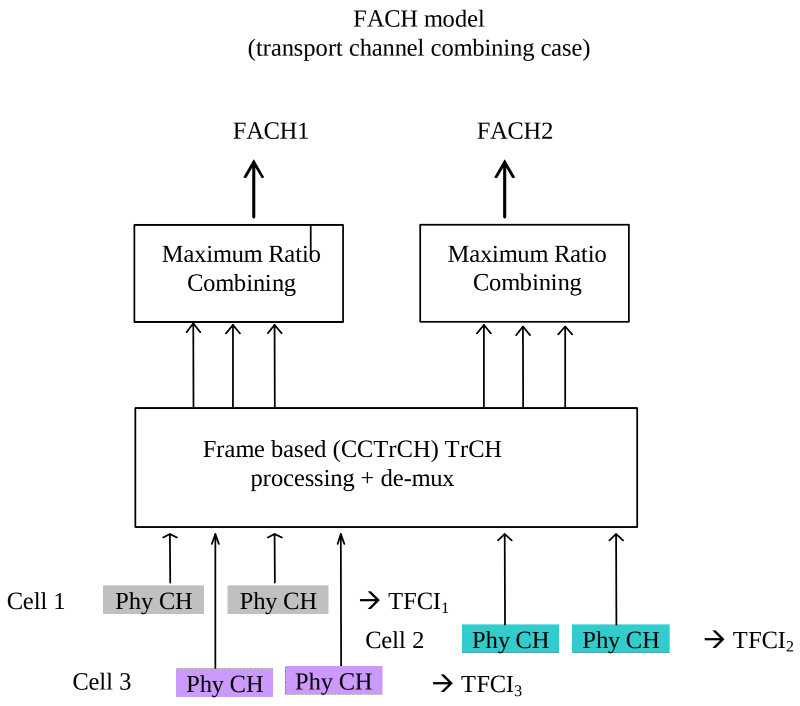


Figure 4: Model of the UE's physical layer – downlink TDD mode

For the DCH case, the mapping between DCHs and physical channel data streams works in the same way as for the uplink. Note however, that the number of DCHs, the coding and multiplexing etc. may be different in uplink and downlink.

In the FDD mode, the differences are mainly due to the soft and softer handover. Further, the pilot, TPC bits and TFCI are time multiplexed onto the same physical channel(s) as the DCHs, in case of HS-DSCH(s) without a DCH in the DL TPC bits are carried onto F-DPCH(s). Further, the definition of physical channel data stream is somewhat different from the uplink. In TDD mode the TFCI is time multiplexed onto the same physical channel(s) as the DCHs. The exact locations and coding of the TFCI are signalled by higher layers.

Note that it is logically one and the same physical data stream in the active set of cells, even though physically there is one stream for each cell. The same processing and multiplexing is done in each cell. The only difference between the cells is the actual codes, and these codes correspond to the same spreading factor.

The physical channels carrying the same physical channel data stream are combined in the UE receiver, excluding the pilot, and in some cases the TPC bits. TPC bits received on certain physical channels may be combined provided that UTRAN has informed the UE that the TPC information on these channels is identical.

A PCH and one or several FACH can be encoded and multiplexed together forming a CCTrCH. Similarly as in the DCH model there is one TFCI for each CCTrCH for indication of the transport formats used on each PCH and FACH. The PCH is associated with a separate physical channel carrying page indicators (PIs) which are used to trigger UE reception of the physical channel that carries PCH. A FACH or a PCH can also be individually mapped onto a separate physical channel. The BCH is always mapped onto one physical channel without any multiplexing with other transport channels, and there can only be one BCH TrCH and no other TrCH in a BCH CCTrCH.

For point-to-multipoint transmission [14], FACH can be distributed on a set of physical layer combinable CCTrCHs, i.e., for macro-diversity combining: soft combining (FDD and TDD) or transport channel combining (TDD only). The physical layer combinable CCTrCHs shall have the same TFC during the TTIs in which soft combining can be used. The physical layer combinable CCTrCHs need not have the same TFC during the TTIs in which transport channel combining can be used. The possibility of performing macro-diversity combining (either soft combining or transport channel combining) shall be signalled to the UE.

In the TDD mode a CCTrCh carrying PCH and one or several FACH can be multiplexed onto one or several physical channel data streams.

For each HS-DSCH TTI, each HS-SCCH carries HS-DSCH-related downlink signalling for one UE. The following information is carried on the HS-SCCH:

- Transport Format and Resource Indicator (TFRI);
- Hybrid-ARQ-related Information (HARQ information);
- UE Identity via a UE specific CRC;
- HS-SCCH Cyclic Sequence Number (HCSN) for TDD.

In addition, for the case of 1.28 Mcps TDD, the HS-SCCH also carries Transmit Power Control and Synchronisation Shift symbols.

In FDD mode, the E-DCH active set can be identical or a subset of the DCH active set.

The E-DCH ACK/NACKs are transmitted by each cell of the E-DCH active set on a physical channel called E-HICH. The E-HICHs of the cells belonging to the same RLS (same MAC-e entity i.e. same Node B) shall have the same content and be combined by the UE. The set of cells transmitting identical ACK/NACK information is the same as the set of cells sending identical TPC bits (excluding the cells which are not in the E-DCH active set).

The E-DCH Absolute Grant is transmitted by a single cell, the Serving E-DCH cell (Cell e_s on figure 4) on a physical channel called E-AGCH. The relationship between the Serving E-DCH cell and the HS-DSCH Serving cell is FFS.

The E-DCH Relative Grants are transmitted by each cell of the E-DCH active set on a physical channel called E-RGCH. The E-RGCHs of the cells belonging to the same RLS shall have the same content and be combined by the UE. There is one Serving E-DCH RLS (containing the Serving E-DCH cell) and optionally one or several Non-serving E-DCH RLS.

7 Formats and configurations for L1 data transfer

7.1 General concepts about Transport Channels

Layer 2 is responsible for the mapping of data onto L1 via the L1/L2 interface that is formed by the transport channels. In order to describe how the mapping is performed and how it is controlled, some definitions and terms are required. The required definitions are given in the following subclauses. Note that the definitions are generic for all transport channel types, i.e. not only for DCHs.

All Transport Channels are defined as unidirectional (i.e. uplink or downlink). This means that a UE can have simultaneously (depending on the services and the state of the UE) one or several transport channels in the downlink, and one or more Transport Channel in the uplink.

7.1.1 Transport Block

This is the basic unit exchanged between L1 and MAC, for L1 processing.

Layer 1 adds a CRC for each Transport Block.

7.1.2 Transport Block Set

This is defined as a set of Transport Blocks, which are exchanged between L1 and MAC at the same time instance using the same transport channel.

In case of HS-DSCH and E-DCH the Transport Block Set consists of one Transport Block only.

7.1.3 Transport Block Size

This is defined as the number of bits in a Transport Block. The Transport Block Size is always fixed within a given Transport Block Set, i.e. all Transport Blocks within a Transport Block Set are equally sized.

7.1.4 Transport Block Set Size

This is defined as the number of bits in a Transport Block Set.

7.1.5 Transmission Time Interval

This is defined as the inter-arrival time of Transport Block Sets, and is equal to the periodicity at which a Transport Block Set is transferred by the physical layer on the radio interface. It is always a multiple of the minimum interleaving period (e.g. 10ms, the length of one Radio Frame). The MAC delivers one Transport Block Set to the physical layer every TTI.

Figure 6 shows an example where Transport Block Sets, at certain time instances, are exchanged between MAC and L1 via three parallel transport channels. Each Transport Block Set consists of a number of Transport Blocks. The Transmission Time Interval, i.e. the time between consecutive deliveries of data between MAC and L1, is also illustrated.

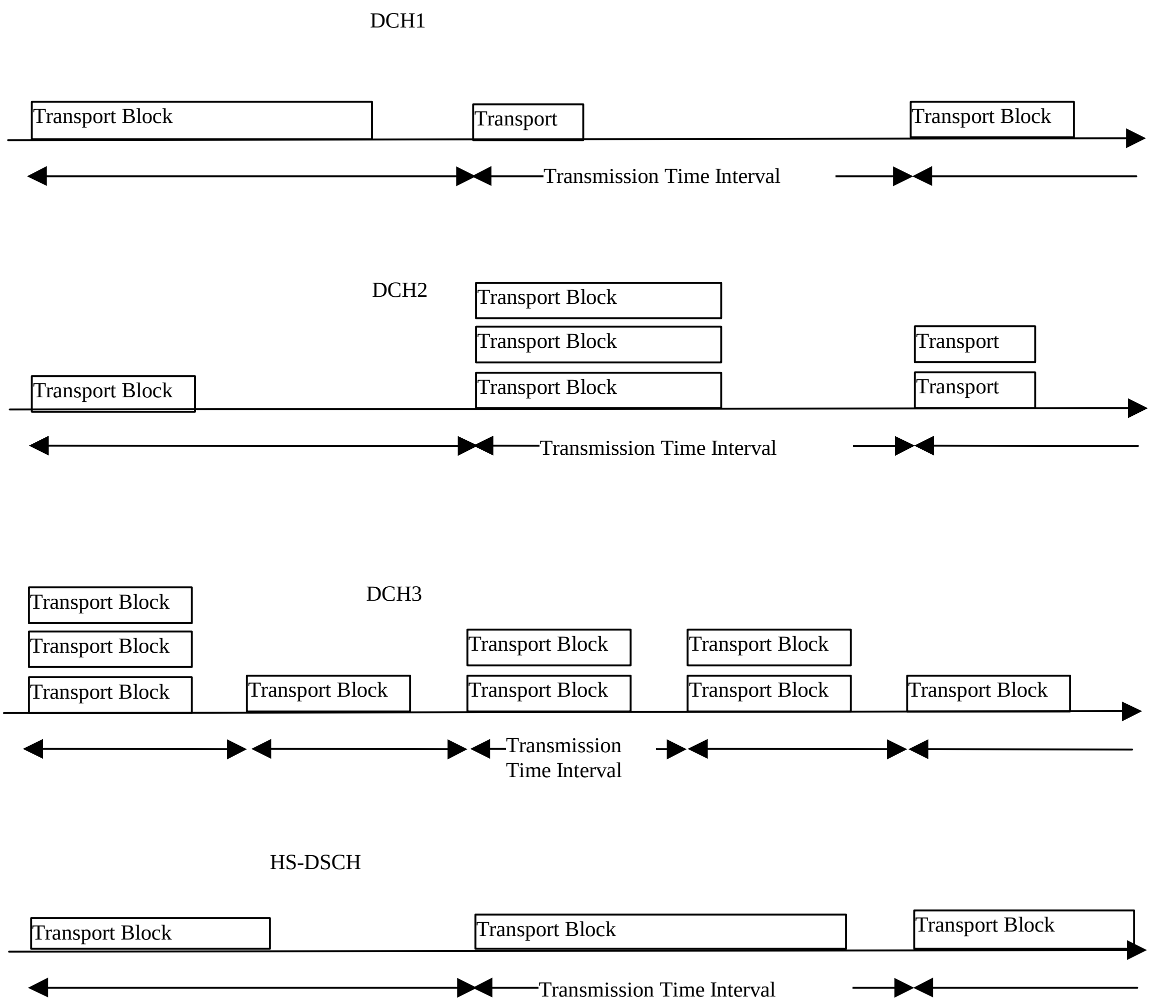


Figure 6: Exchange of data between MAC and L1

7.1.6 Transport Format

This subclause applies to transport channel types other than HS-DSCH and E-DCH.

This is defined as a format offered by L1 to MAC (and vice versa) for the delivery of a Transport Block Set during a Transmission Time Interval on a Transport Channel. The Transport Format constitutes of two parts – one *dynamic* part and one *semi-static* part.

Attributes of the dynamic part are:

- Transport Block Size;
- Transport Block Set Size;
- Transmission Time Interval (optional dynamic attribute for TDD only);

Attributes of the semi-static part are:

- Transmission Time Interval (mandatory for FDD, optional for the dynamic part of TDD NRT bearers);
- error protection scheme to apply:
  - type of error protection, turbo code, convolutional code or no channel coding (TDD only);
  - coding rate;
  - static rate matching parameter;
- size of CRC.

In the following example, the Transmission Time Interval is seen as a semi-static part.

> EXAMPLE:
> Dynamic part: {320 bits, 640 bits}, Semi-static part: {10ms, convolutional coding only, static rate matching parameter = 1}.

An empty Transport Format is defined as a Transport Format that has Block Set Size equal to zero.

For the two realisations of an empty Transport Format, see clause 11.

7.1.6a Transport Format for HS-DSCH

This is defined as a format offered by L1 to MAC (and vice versa) for the delivery of a transport block during a Transmission Time Interval on a Transport Channel. The Transport Format consists of three parts – one *dynamic* part, one *semi-static* part and one *static* part.

The Transport Format for HS-DSCH is always explicitly signalled. There is no support of blind transport format detection.

Attributes of the dynamic part are:

- Transport block size (same as Transport block set size);
- Redundancy version/Constellation;
- Modulation scheme.

Attributes of the semi-static part are:

- no semi-static attributes are defined.

Attributes of the static part are:

- Transmission time interval. The Transmission time interval is fixed to 2ms in FDD, 10ms in 3.84 Mcps TDD and 5ms in 1.28 Mcps TDD.
- error protection scheme to apply:

- type of error protection is turbo coding;
- coding rate is 1/3;
- size of CRC is 24 bits.

7.1.7 Transport Format for E-DCH

This subclause is only applicable to FDD mode.

This is defined as a format offered by L1 to MAC (and vice versa) for the delivery of a transport block during a Transmission Time Interval on a Transport Channel. The Transport Format consists of three parts – one *dynamic* part, one *semi-static* part and one *static* part.

The Transport Format for E-DCH is always explicitly signalled. There is no support of blind transport format detection.

Attributes of the dynamic part are:

- Transport block size (same as Transport block set size);
- Redundancy version;

Attributes of the semi-static part are:

- Transmission Time Interval. Both Transmission time interval of 2ms and 10 ms are supported;

Attributes of the static part are:

- error protection scheme to apply:
    - type of error protection is turbo coding;
    - coding rate is 1/3;
    - size of CRC is 24 bits.7.1.

7 Transport Format Set

This is defined as the set of Transport Formats associated to a Transport Channel.

The semi-static parts of all Transport Formats are the same within a Transport Format Set.

Effectively the Transport Block Size and Transport Block Set Size form the instantaneous bit rate on the Transport Channel. Variable bit rate on a Transport Channel may, depending on the type of service, which is mapped onto the transport channel, be achieved by changing between each Transmission Time Interval one of the following:

1. the Transport Block Set Size only (not applicable for HS-DSCH and E-DCH);
2. both the Transport Block Size and the Transport Block Set Size

    Example 1 for DCHs:

    - dynamic part: {20 bits, 20 bits}; {40 bits, 40 bits}; {80 bits, 80 bits}; {160 bits, 160 bits}.
    - Semi-static part: {10ms, Convolutional coding only, static rate matching parameter = 1}

    Example 2 for DCHs:

    - dynamic part: {320 bits, 320 bits}; {320 bits, 640 bits}; {320 bits, 1 280 bits}.
    - Semi-static part: {10ms, Convolutional coding only, static rate matching parameter = 2}.

    Example 3 for HS-DSCH:

    - dynamic part: {320 bits, 320 bits, Redundancy version 1, QPSK}; {640, 640, Redundancy version 1, QPSK}; {1280, 1280, Redundancy version 2, 16QAM}.

- static part: See subclause 7.1.6a.

Example 4 for E-DCH:

- dynamic part: {320 bits, 320 bits, Redundancy version 0}; {320 bits, 320 bits, Redundancy version 1}; {640, 640, Redundancy version 0 }; {640, 640, Redundancy version 1 };

- Semi-static part: {10ms}.

- static part: See subclause 7.1.7.

The first example may correspond to a Transport Channel carrying a speech service, requiring blocks delivered on a constant time basis. In the second example, which illustrates the situation where a non-real time service is carried by the Transport Channel, the number of blocks delivered per Transmission Time Interval varies between the different Transport Formats within the Transport Format Set. Referring to figure 6, the Transport Block Size is varied on DCH1 and DCH2. That is, a Transport Format Set where the dynamic part has a variable Transport Block Size has been assigned for DCH1. On DCH3 it is instead only the Transport Block Set Size that is varied. That is, the dynamic parts of the corresponding Transport Format Sets only include variable Transport Block Set Sizes.

7.1.8 Transport Format Combination

The layer 1 multiplexes one or several Transport Channels, and for each Transport Channel, there exists a list of transport formats (Transport Format Set) which are applicable. Nevertheless, at a given point of time, not all combinations may be submitted to layer 1 but only a subset, the Transport Format Combination. This is defined as an authorised combination of the combination of currently valid Transport Formats that can be submitted simultaneously to the layer 1 for transmission on a Coded Composite Transport Channel of a UE, i.e. containing one Transport Format from each Transport Channel.

EXAMPLE:

DCH1:
Dynamic part: {20 bits, 20 bits}, Semi-static part: {10ms, Convolutional coding only, static rate matching parameter = 2};

DCH2:
Dynamic part: {320 bits, 1 280 bits}, Semi-static part: {10ms, Convolutional coding only, static rate matching parameter = 3};

DCH3:
Dynamic part: {320 bits, 320 bits}, Semi-static part: {40ms, Turbo coding, static rate matching parameter = 2}.

An empty Transport Format Combination is defined as a Transport Format Combination that is only made up of empty Transport Formats.

7.1.9 Transport Format Combination Set

This is defined as a set of Transport Format Combinations on a Coded Composite Transport Channel.

EXAMPLE for DCHs:

- dynamic part:
    - combination 1: DCH1: {20 bits, 20 bits}, DCH2: {320 bits, 1280 bits}, DCH3: {320 bits, 320 bits};
    - combination 2: DCH1: {40 bits, 40 bits}, DCH2: {320 bits, 1280 bits}, DCH3: {320 bits, 320 bits};
    - combination 3: DCH1: {160 bits, 160 bits}, DCH2: {320 bits, 320 bits}, DCH3: {320 bits, 320 bits}
- semi-static part:
    - DCH1: {10ms, Convolutional coding only, static rate matching parameter = 1};
    - DCH2: {10ms, Convolutional coding only, static rate matching parameter = 1};
    - DCH3: {40ms, Turbo coding, static rate matching parameter = 2}.

The Transport Format Combination Set is what is given to MAC for control. However, the assignment of the Transport Format Combination Set is done by L3. When mapping data onto L1, MAC chooses between the different Transport Format Combinations given in the Transport Format Combination Set. Since it is only the dynamic part that differ between the Transport format Combinations, it is in fact only the dynamic part that MAC has any control over.

The semi-static part, together with the target value for the L1 closed loop power control, correspond to the service attributes:

- quality (e.g. BER);
- transfer delay.

These service attributes are then offered by L1. However, it is L3 that guarantees that the L1 services are fulfilled since it is in charge of controlling the L1 configuration, i.e. the setting of the semi-static part of the Transport Formats. Furthermore, L3 controls the target for the L1 closed loop power control through the outer loop power control (which actually is a quality control rather than a power control).

Note that a Transport Format Combination Set need not contain all possible Transport Format Combinations that can be formed by Transport Format Sets of the corresponding Transport Channels. It is only the allowed combinations that are included. Thereby a maximum total bit rate of all transport channels of a Code Composite Transport Channel can be set appropriately. That can be achieved by only allowing Transport Format Combinations for which the included Transport Formats (one for each Transport Channel) do not correspond to high bit rates simultaneously.

The selection of Transport Format Combinations can be seen as a fast part of the radio resource control. The dedication of these fast parts of the radio resource control to MAC, close to L1, means that the flexible variable rate scheme provided by L1 can be fully utilised. These parts of the radio resource control should be distinguished from the slower parts, which are handled by L3. Thereby the bit rate can be changed very fast, without any need for L3 signalling.

7.1.10 Transport Format Indicator (TFI)

The TFI is a label for a specific transport format within a transport format set. It is used in the inter-layer communication between MAC and L1 each time a transport block set is exchanged between the two layers on a transport channel.

When the DSCH is associated with a DCH, the TFI of the DSCH also indicates the physical channel (i.e. the channelisation code) of the DSCH that has to be listened to by the UE.

7.1.11 Transport Format Combination Indicator (TFCI)

This is a representation of the current Transport Format Combination.

There is a one-to-one correspondence between a certain value of the TFCI and a certain Transport Format Combination. The TFCI is used in order to inform the receiving side of the currently valid Transport Format Combination, and hence how to decode, de-multiplex and deliver the received data on the appropriate Transport Channels. The TFCI is not used for the HS-DSCH and E-DCH.

MAC indicates the TFI to Layer 1 at each delivery of Transport Block Sets on each Transport Channel. Layer 1 then builds the TFCI from the TFIs of all parallel transport channels of the UE , processes the Transport Blocks appropriately and appends the TFCI to the physical control signalling. Through the detection of the TFCI the receiving side is able to identify the Transport Format Combination. For FDD, in case of limited Transport Format Combination Sets the TFCI signalling may be omitted, instead relying on blind detection. Nevertheless, from the assigned Transport Format Combinations, the receiving side has all information it needs in order to decode the information and transfer it to MAC on the appropriate Transport Channels.

The multiplexing and exact rate matching patterns follow predefined rules and may therefore be derived (given the Transport Format Combinations) by transmitter and receiver without signalling over the radio interface.

When the meaning of the TFCI field needs to be reconfigured, two procedures can be used depending on the level of reconfiguration:

- **complete reconfiguration of TFCI:** in this procedure all TFCI values are reinitialised and new values are defined instead. The complete reconfiguration requires an explicit synchronisation between the UE and UTRAN regarding when the reconfiguration becomes valid.

- **incremental reconfiguration of TFCI:** in this procedures, a part of the TFCI values before and after the reconfiguration remain identical (note that this must be true for at least a TFCI that carry the signalling connection). This procedure supports addition, removal or redefinition of TFCI values. This procedure does not require an explicit execution time. This procedure may imply the loss of some user-plane data.

7.1.12 Rate matching

Two levels of rate matching are defined on the radio interface:

- a static rate matching per Transport Channel. The static rate matching is part of the semi-static attributes of the Transport Channel. Static rate matching is not applicable to HS-DSCH;

- a dynamic rate matching per CCTrCH. The dynamic rate matching adjusts the size of the physical layer data payload to the physical channel as requested by RRC.

The static rate matching and the dynamic rate matching to be applied by the physical layer are indicated by RRC to the physical layer.

In FDD, RRC is also responsible for configuring the physical layer on whether:

- Blind Rate Detection or TFCI is used;

- dynamic rate matching is applied or not on the downlink.

7.1.13 HARQ information

Hybrid ARQ is defined for HS-DSCH and E-DCH. For HS-DSCH with the help of the HARQ information the UE is enabled to identify the process being used for the transport block that is received on the HS-DSCH For E-DCH the HARQ process is derived in an implicit way. For both HS-DSCH and E-DCH the HARQ information also includes information that indicates whether a new data block is transmitted for the first time or a retransmission. Furthermore it is used to decode the received data correctly.The redundancy version is either explicitly indicated as part of the HARQ information (for the HS-DSCH) or is derived from the retransmission indicator (RSN) and the CFN (FFS) (for the E-DCH).

7.1.14 Transport Format and Resource Indication (TFRI)

The TFRI includes information about the dynamic part of the HS-DSCH transport format, including transport block set size and modulation scheme. The TFRI also includes information about the set of physical channels (channelisation codes) onto which HS-DSCH is mapped in the corresponding HS-DSCH TTI.

7.1.15 E-DCH Transport Format Combination Indication (E-TFCI)

The E-TFCI includes information about the transport block set size.

7.2 Types of Transport Channels

A general classification of transport channels is into two groups:

- common channels; and

- dedicated channels (where the UEs can be unambiguously identified by the physical channel, i.e. code and frequency).

Common transport channel types are:

1. Random Access Channel(s) (RACH) characterised by:

    - existence in uplink only;

    - limited data field;

    - collision risk;

- open loop power control.

2. Forward Access Channel(s) (FACH) characterised by:
   - existence in downlink only;
   - possibility to use slow power control;
   - possibility to change rate fast (each 10ms); and
   - lack of inner loop power control.
3. Broadcast Channel (BCH) characterised by:
   - existence in downlink only;
   - low fixed bit rate; and
   - requirement to be broadcast in the entire coverage area of the cell.
4. Paging Channel (PCH) characterised by:
   - existence in downlink only;
   - association with a physical layer signal, the Page Indicator, to support efficient sleep mode procedures; and
   - requirement to be broadcast in the entire coverage area of the cell.
5. Downlink Shared Channel(s) (DSCH) characterised by:
   - used in TDD only;
   - existence in downlink only;
   - possibility to use beamforming;
   - possibility to use slow power control;
   - possibility to use inner loop power control, when associated with dedicated channel(s);
   - possibility to be broadcast in the entire cell;
   - always associated with another channel (DCH or FACH ~~(TDD)~~).
6. CPCH Channel characterised by:
   - existence in FDD only;
   - existence in uplink only;
   - inner loop power control on the message part;
   - possibility to change rate fast;
   - collision detection;
   - open loop power estimate for pre-amble power ramp-up.
7. Uplink Shared channel (USCH) characterised by:
   - used in TDD only;
   - existence in uplink only;
   - possibility to use beam forming;
   - possibility to use power control;
   - possibility to change rate fast;

- possibility to use Uplink Synchronisation;
- possibility to use Timing advance.

8. High Speed Downlink Shared Channel (HS-DSCH) characterised by:
   - existence in downlink only;
   - possibility to use beamforming;
   - possibility of applying HARQ;
   - possibility of applying link adaptation by varying the modulation, coding and transmit power:
   - possibility to be broadcast in the entire cell;
   - always associated with a DPCH and one or more shared physical control channel.

Dedicated transport channel type:

1. Dedicated Channel (DCH) characterised by:
   - existing in uplink or downlink;
   - possibility to use beam forming;
   - possibility to change rate fast (each 10ms);
   - inner loop power control;
   - possibility to use timing advance in uplink (TDD only);
   - possibility to use Uplink Synchronisation.
2. Dedicated Channel (E-DCH) characterised by:
   - existing in uplink only;
   - possibility to change rate fast (each TTI);
   - inner loop power control;
   - possibility of applying HARQ;
   - possibility of applying link adaptation by varying the coding and transmit power;
   - always associated with a DPCCH and one or more physical control channel.

To each transport channel, there is an associated Transport Format (for transport channels with a fixed or slow changing rate) or an associated Transport Format Set (for transport channels with fast changing rate).

7.3 Compressed Mode

Compressed Mode is defined as the mechanism whereby certain idle periods are created in radio frames so that the UE can perform measurements during these periods (more details can be found in [3]).

Compressed Mode is obtained by layer 2 using transport channels provided by the layer 1 as follows:

- compressed mode is controlled by the RRC layer, which configures the layer 2 and the physical layer;
- the number of occurrences of compressed frames is controlled by RRC, and can be modified by RRC signalling;
- it is under the responsibility of the layer 2 if necessary and if possible to either buffer some layer 2 PDUs (typically at the RLC layer for NRT services) or to rate-adapt the data flow (similarly to GSM) so that there is no loss of data because of compressed mode. This will be service dependent and controlled by the RRC layer.

For measurements in compressed mode, a transmission gap pattern sequence is defined. A transmission gap pattern sequence consists of alternating transmission gap patterns 1 and 2, and each of these patterns in turn consists of one or two transmission gaps. The transmission gap pattern structure, position and repetition are defined with physical channel parameters described in [6]. In addition, the UTRAN configures compressed mode pattern sequences with the following parameters:

- **TGMP:** Transmission Gap pattern sequence Measurement Purpose: This parameter defines the purpose this transmission gap pattern sequence is intended for. The following values are used:
  - for TDD measurements, one compressed mode pattern sequence can be configured with purpose 'TDD measurement',
  - for FDD measurements, one compressed mode pattern sequence can be configured with purpose 'FDD measurement',
  - for GSM measurements, three simultaneous compressed mode pattern sequences can be configured with purposes 'GSM carrier RSSI measurement', 'Initial BSIC identification' and 'BSIC re-confirmation',
- **TGPSI:** Transmission Gap Pattern Sequence Identifier selects the compressed mode pattern sequence for which the parameters are to be set. The range of TGPSI is [1 to <MaxTGPS>].

The UE shall support a total number of simultaneous compressed mode pattern sequences, which is determined by the UE's capability to support each of the measurement types categorised by the TGMP. For example, a UE supporting FDD and GSM shall support four simultaneous compressed mode pattern sequences and a UE supporting FDD and TDD shall support two simultaneous compressed mode pattern sequences.

When using simultaneous pattern sequences, it is the responsibility of the NW to ensure that the compressed mode gaps do not overlap and are not scheduled to overlap the same frame. Gaps exceeding the maximum gap length shall not be processed by the UE and shall interpreted as a faulty message. If the UE detects overlapping gaps, it shall process the gap from the pattern sequence having the lowest TGPSI.

8 UE Simultaneous Physical Channels combinations

This clause describes the requirements from the UE to send and receive on multiple Transport Channels, which are mapped on different physical channels simultaneously depending on the service capabilities and requirements. The clause will describe the impacts on the support for multiple services (e.g. speech call and SMS-CB) depending on the UE capabilities.

8.1 FDD Uplink

The table describes the possible combinations of FDD physical channels that can be supported in the uplink on the same frequency by one UE simultaneously.

Table 1: FDD Uplink

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
1	PRACH	RACH	Mandatory	The PRACH physical channel includes the preambles and the message.
2	PCPCH consisting of one control and one data part during the message portion	CPCH	Depending on UE radio access capabilities	The PCPCH physical channel includes the preambles and the message. The maximum channel bit rate is dependent on UE radio access capabilities.
3	DPCCH+DPDCH	One or more DCH coded into a single CCTrCH	Mandatory	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
4	DPCCH+ more than one DPDCH	One or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
5	DPCCH+one or more DPDCH+ HS-DPCCH	One or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum bit rate are dependent on UE radio access capabilities. In this combination HS-DSCH(s) are configured in downlink.
6	DPCCH+one or more DPDCH+E-DPCCH+one or more E-DPDCH	One or more DCH coded into a single CCTrCH + One E-DCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
7	DPCCH+one or more DPDCH+ HS-DPCCH+E-DPCCH+ one or more E-DPDCH	One or more DCH coded into a single CCTrCH + One E-DCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum bit rate are dependent on UE radio access capabilities. In this combination HS-DSCH(s) are configured in downlink.
8	DPCCH+HS-DPCCH+E-DPCCH+ one or more E-DPDCH (This combinaision is FFS)	One E-DCH	Depending on UE radio access capabilities	The maximum bit rate are dependent on UE radio access capabilities. In this combination HS-DSCH(s) are configured in downlink.

8.2 FDD Downlink

The table describes the possible combinations of FDD physical channels that can be supported in the downlink on the same frequency by one UE simultaneously.

Table 2: FDD Downlink

	Physical Channel Combination	Transport Channel Combination	Mandatory dependent on UE radio access capabilities	Comment
1	PCCPCH	BCH	Mandatory	
2	SCCPCH	One or more FACH Or PCH Or one or more FACH + PCH	Mandatory	The maximum channel bit rate that can be supported is dependent on the UE radio access capabilities. The PCH is included when the UE needs to receive paging on the SCCPCH. The reception of (one or more FACH + PCH) is to enable the reception of broadcast services on the CTCH, mapped to one of the FACH.
3	PCCPCH + SCCPCH	BCH + (one or more FACH or PCH or (one or more FACH + PCH))	Mandatory	Simultaneous reception of PCCPCH and SCCPCH is only needed at occurrences when the UE needs to read system information on BCH while being in CELL_FACH state, i.e. continuous reception of both PCCPCH and SCCPCH at the same time is not required. The requirement holds for PCCPCH and SCCPCH sent in different cells or in the same cell. The PCH is included when the UE needs to receive paging on the SCCPCH. The reception of (one or more FACH + PCH) is to enable the reception of broadcast services on the CTCH, mapped to one of the FACH.
4	SCCPCH + AICH	(One or more FACH or PCH or (one or more FACH + PCH))+ RACH in uplink Or (one or more FACH or PCH or (one or more FACH + PCH))+ CPCH in uplink	Mandatory	The maximum channel bit rate that can be supported is dependent on the UE radio access capabilities. The PCH is included when the UE needs to receive paging on the SCCPCH. The reception of (one or more FACH + PCH) is to enable the reception of broadcast services on the CTCH, mapped to one of the FACH. This physical channel combination facilitates the preamble portion of the CPCH in the uplink
5	SCCPCH + DPCCH	(One or more FACH or PCH or (one or more FACH + PCH))+ CPCH in uplink	Depending on UE radio access capabilities	This physical channel combination facilitates the message portion of the CPCH in the uplink The PCH is included when the UE needs to receive paging on the SCCPCH. The reception of (one or more FACH + PCH) is to enable the reception of broadcast services on the CTCH, mapped to one of the FACH.

	Physical Channel Combination	Transport Channel Combination	Mandatory dependent on UE radio access capabilities	Comment
6	More than one SCCPCH	More than one (one or more FACH or PCH or (one or more FACH + PCH))	Depending on UE radio access capabilities	The PCH is included when the UE needs to receive paging on the SCCPCH. The reception of (one or more FACH + PCH) is to enable the reception of broadcast services on the CTCH, mapped to one of the FACH. One or more FACHs are used to enable the reception of MBMS (i.e., MCCH, MSCH and MTCH). The maximum number of SCCPCHs and the maximum bit rate depend on the UE implementation. The combination includes the case where one or more MBMS FACHs are transmitted on the same SCCPCH as used for non-MBMS FACH or PCH.
7	PICH	N/A	Mandatory	
8	DPCCH + DPDCH	One or more DCH coded into a single CCTrCH	Mandatory	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
9	DPCCH + more than one DPDCH	One or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
~~10~~	~~One or more PDSCH + DPCCH + one or more DPDCH~~	~~One or more DSCH coded into a single CCTrCH + one or more DCH coded into a single CCTrCH~~	~~Depending on UE radio access capabilities~~	~~The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.~~
11	SCCPCH + DPCCH + one or more DPDCH	One or more FACH + one or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination of physical channels is used for DRAC control of an uplink DCH and for receiving services such as cell broadcast or multicast whilst in connected mode. NOTE 1
~~12~~	~~SCCPCH + one or more PDSCH + DPCCH + one or more DPDCH~~	~~One or more FACH + one or more DSCH coded into a single CCTrCH + one or more DCH coded into a single CCTrCH~~	~~Depending on UE radio access capabilities~~	~~The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.~~ ~~This combination of physical channels is used for simultaneous DSCH and DRAC control of an uplink DCH. NOTE 1~~
13	One DPCCH + more than one DPDCH	More than one DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	
14	PCCPCH (neighbour cell) + DPCCH + one or more DPDCH ~~+ zero, one, or more PDSCH~~	BCH (neighbour cell) + one or more DCHs ~~+ zero, one or more DSCH~~	Mandatory	This combination is required by a UE in CELL_DCH state to be able to read the SFN of a neighbouring cell and support "SFN-CFN observed time difference" and "SFN-SFN observed time difference" measurements.
15	DPCCH + one or more DPDCH + one or more HS-SCCH + zero, one or more HS-PDSCH	One HS-DSCH coded into a single CCTrCH + one or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. NOTE 2

	Physical Channel Combination	Transport Channel Combination	Mandatory dependent on UE radio access capabilities	Comment
16	PCCPCH (neighbour cell) + DPCCH + one or more DPDCH + one or more HS-SCCH + zero, one or more HS-PDSCH	BCH (neighbour cell) + one or more DCHs + one HS-DSCH	Depending on UE radio access capabilities	This combination is required by a UE in CELL_DCH state to be able to read the SFN of a neighbouring cell and support "SFN-CFN observed time difference" and "SFN-SFN observed time difference" measurements while HS-DSCH(s) are configured. NOTE 2
17	DPCCH + one or more DPDCH + one or more E-HICH + one E-AGCH + one or more E-RGCH	One or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. In this combination E-DCH is configured in uplink.
18	DPCCH + one or more DPDCH + one or more HS-SCCH + zero, one or more HS-PDSCH+ one or more E-HICH + one E-AGCH + one or more E-RGCH	One HS-DSCH coded into a single CCTrCH + one or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. In this combination E-DCH is configured in uplink. NOTE 2
19	PCCPCH (neighbour cell) + DPCCH + one or more DPDCH + one or more HS-SCCH + zero, one or more HS-PDSCH + one or more E-HICH + E-AGCH + one or more E-RGCH	BCH (neighbour cell) + one or more DCHs + one HS-DSCH	Depending on UE radio access capabilities	This combination is required by a UE in CELL_DCH state to be able to read the SFN of a neighbouring cell and support "SFN-CFN observed time difference" and "SFN-SFN observed time difference" measurements while HS-DSCH(s) are configured. In this combination E-DCH is configured in uplink. NOTE 2
20	F-DPCH + one or more HS-SCCH + zero, one or more HS-PDSCH	One HS-DSCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum channel bit rate are dependent on UE radio access capabilities. NOTE 2
21	PCCPCH (neighbour cell) + F-DPCH + one or more HS-SCCH + zero, one or more HS-PDSCH	BCH (neighbour cell) + one HS-DSCH	Depending on UE radio access capabilities	This combination is required by a UE in CELL_DCH state to be able to read the SFN of a neighbouring cell and support "SFN-CFN observed time difference" and "SFN-SFN observed time difference" measurements while HS-DSCH(s) are configured. NOTE 2
22	F-DPCH + one or more HS-SCCH + zero, one or more HS-PDSCH+ one or more E-HICH + one E-AGCH + one or more E-RGCH	One HS-DSCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum channel bit rate are dependent on UE radio access capabilities. In this combination E-DCH is configured in uplink. NOTE 2

	Physical Channel Combination	Transport Channel Combination	Mandatory dependent on UE radio access capabilities	Comment
23	PCCPCH (neighbour cell) + F-DPCH + one or more HS-SCCH + zero, one or more HS-PDSCH+ one or more E-HICH + one E-AGCH + one or more E-RGCH	BCH (neighbour cell) + one HS-DSCH	Depending on UE radio access capabilities	This combination is required by a UE in CELL_DCH state to be able to read the SFN of a neighbouring cell and support "SFN-CFN observed time difference" and "SFN-SFN observed time difference" measurements while HS-DSCH(s) are configured. In this combination E-DCH is configured in uplink. NOTE 2
24	MICH	N/A	Depending on UE radio access capabilities	
25	MICH + PICH	N/A	Depending on UE radio access capabilities	
26	MICH + one SCCPCH	More than one (one or more FACH or PCH or (one or more FACH + PCH))	Depending on UE radio access capabilities	Allowing MBMS notification indication during reception of non-MBMS FACH or PCH.
27	PICH + one or more SCCPCH	One or more FACH	Depending on UE radio access capabilities	The maximum number of SCCPCHs and the maximum bit rate depend on the UE implementation.
NOTE 1: When both DRAC and CTCH are configured in one cell, the UTRAN should transmit DRAC info and CTCH info on the same S-CCPCH in order to minimize the number of S-CCPCH to be read by the UE. A UE, which supports the simultaneous reception of S-CCPCH and DPCH, shall be capable of switching between different S-CCPCH in order to listen to DRAC info and CTCH info that are not scheduled in the same time intervals. If the UE is ordered to listen to CTCH and DRAC info on different S-CCPCH in the same time interval, it shall listen to DRAC info in priority.				
NOTE 2: When one or more HS-PDSCHs are received, it is sufficient for the UE to monitor only one HS-SCCH.				

8.3 TDD Uplink

8.3.1 3.84 Mcps TDD Uplink

The table addresses the possible combinations of 3.84 Mcps TDD physical channels that can be supported in the uplink by one UE simultaneously on the same frequency in any one 10ms frame. In 3.84 Mcps TDD a physical channel corresponds to one code, one timeslot and one frequency.

Table 3: 3.84 Mcps TDD Uplink

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
1	PRACH	RACH	Mandatory	
2	DPCH	One or more DCH coded into a single CCTrCH	Mandatory	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination is used as reference measurement channel.
3	One or more than one DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
4	PRACH + one or more DPCH	RACH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination may be used for shared channel operation only. At least the usage of two timeslots is required.
5	One or more PUSCH	One or more USCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination is used for shared channel operation.
6	PRACH + one or more PUSCH	RACH + One or more USCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination may be used for shared channel operation only. At least the usage of two timeslots is required.
7	One or more PUSCH + one or more DPCH	One or more USCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination may be used for shared channel operation.
8	PRACH + one or more PUSCH + one or more DPCH	RACH + one or more USCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination may be used for shared channel operation. At least the usage of two timeslots is required.
9	One or more DPCH + HS-SICH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	

8.3.2 1.28 Mcps TDD Uplink

The table addresses the possible combinations of 1.28 Mcps TDD physical channels that can be supported in the uplink by one UE simultaneously on the same frequency in the TDD 1.28 Mcps option in any one 5 ms subframe. In 1.28 Mcps TDD a physical channel corresponds to one code, one timeslot, one frequency.

Table 4: 1.28 Mcps TDD Uplink

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
1	UpPCH	N/A	Mandatory	UpPCH is used to establish the uplink synchronisation.
2	PRACH	RACH	Mandatory	
3	UpPCH + One DPCH	One or more DCH coded into a single CCTrCH	Mandatory	One DPCH is needed as reference measurement channel. UpPCH transmission to target cell in case of handover.
4	One DPCH	One or more DCH coded into a single CCTrCH	Mandatory	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities This combination is required for the reference measurement channel.
5	More than one DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities.
6	UpPCH+ one or more DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities. This configuration is required for UE that operate shared channels and dedicated channels simultaneously.
7	PRACH + one or more DPCHs	RACH + one or more DCH coded into one or more than one CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities. This configuration is required for UE that operate shared channels and dedicated channels simultaneously.
8	One or more PUSCH	One or more USCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This configuration is required for UE that operate shared channels.
9	UpPCH + one or more PUSCH	One or more USCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination may be used for shared channel operation only.
10	PRACH + one or more PUSCH	RACH + One or more USCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination may be used for shared channel operation only
11	One or more PUSCH + one or more DPCH	One or more USCH coded onto one or more CCTrCH + one or more DCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This configuration is required for UE that operate shared channels and dedicated channels simultaneously

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
12	UpPCH + one or more PUSCH + one or more DPCH	One or more USCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination may be used for shared channel operation.
13	PRACH + one or more PUSCH + one or more DPCH	RACH + one or more USCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination may be used for shared channel operation.
14	One or more DPCH + HS-SICH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	

8.4 TDD Downlink

8.4.1 3.84 Mcps TDD Downlink

The table describes the possible combinations of 3.84 Mcps TDD physical channels that can be supported in the downlink by one UE simultaneously on the same frequency in any one 10ms frame, where a 3.84 Mcps TDD physical channel corresponds to one code, one timeslot and one frequency.

Depending on UE radio capabilities UEs may be required to decode occasionally P-CCPCH of its own cell in the following Physical Channel Combinations to maintain open loop power control and/or acquire parameters for RACH access: 4, 6, 7, 8, 9, 10, 11, 12, 13.

Depending on UE radio capabilities UEs may be required to decode occasionally one P-CCPCH of neighbour cells in the following Physical Channel Combinations for handover: 6, 8, 11, 12, 13.

Table 5: 3.84 Mcps TDD Downlink

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
1	P-CCPCH + One S-CCPCH	BCH and PCH and/or one or more FACH	Mandatory	
2	P-CCPCH	BCH	Mandatory	
3	S-CCPCH	FACH or/and PCH	Mandatory	
4	More than one S-CCPCH	one or more FACH+ one or more PCH	Depending on UE capabilities	One or more FACHs are used to enable the reception of MBMS (i.e., MCCH, MSCH and MTCH). The maximum number of SCCPCHs and the maximum bit rate depend on the UE implementation. The combination includes the case where one or more MBMS FACHs are transmitted on the same SCCPCH as used for non-MBMS FACH or PCH.
5	PICH	N/A	Mandatory	
6	Three or more DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities.
7	One or two DPCH	One or more DCH coded into a single CCTrCH	Mandatory	This combination is used for reference measurement channel.
8	One or more S-CCPCH + one or more DPCH	PCH and/or one or more FACH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The number of DCHs and the maximum channel bit rate are dependent on the UE radio access capabilities. This combination is used for shared channel operation only.
9	One or more PDSCH	One or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination is used for shared channel operation.
10	One or more PDSCH + one or more S-CCPCH	PCH and/or one or more FACH + one or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This combination is used for shared channel operation.

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
11	One or more PDSCH + one or more DPCH	One or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination is used for shared channel operation.
12	One or more PDSCH + one or more S-CCPCH + one or more DPCH	PCH and/or one or more FACH + one or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. This combination is used for shared channel operation.
13	Zero, one or more DPCH + zero, one or more HS-PDSCH + one or more HS-SCCH	Zero, one or more DCH coded into one or more CCTrCH + one or more HS-DSCH coded into one CCTrCH	Depending on UE radio access capabilities	
14	MICH	N/A	Depending on UE radio access capabilities	
15	MICH + PICH	N/A	Depending on UE radio access capabilities	
16	MICH + one or more SCCPCH	One or more FACH + one or more PCH + (NOTE 2)	Depending on UE radio access capabilities	Allowing MBMS notification indication during reception of non-MBMS FACH or PCH.
17	PICH + one or more SCCPCH	One or more FACH + (NOTE 2)	Depending on UE radio access capabilities	The maximum number of SCCPCHs and the maximum bit rate depend on the UE implementation.
18	MICH + PICH + one or more SCCPCH	One or more FACH + (NOTE 2)	Depending on UE radio access capabilities	The maximum number of SCCPCHs and the maximum bit rate depend on the UE implementation.
NOTE 1: Reference: [12].				
NOTE 2: + (zero, one or more DCH coded onto one or more CCTrCh) + (zero, one or more DSCH coded onto one or more CCTrCH) + (zero, one or more HS-DSCH coded onto one or more CCTrCH).				

8.4.2 1.28 Mcps TDD Downlink

The table addresses the possible combinations of 1.28 Mcps TDD physical channels that can be supported in the downlink by one UE simultaneously on the same frequency in any one 5ms subframe. In 1.28 Mcps TDD a physical channel corresponds to one code, one timeslot, one frequency.

Depending on UE radio capabilities UEs may be required to decode occasionally P-CCPCH of its own cell in the following Physical Channel Combinations: 5, 11, 12, 13, 14, 15, 16, 17, 18.

To support handover it depends on UE capabilities if a UE can support the occasional decoding of neighbour cell P-CCPCH in the physical channel combinations 8, 9, 10, 11, 15,16, 17, 18.

Table 6: 1.28 Mcps TDD Downlink

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
1	FPACH	N/A	Mandatory	FPACH is used to answer the UE and to adjust the timing and synchronization shift of the UE
2	P-CCPCH	BCH	Mandatory	
3	S-CCPCH	FACH or/and PCH	Mandatory	
4	P-CCPCH +S-CCPCH	BCH + (FACH or/and PCH)	Mandatory	
5	More than one S-CCPCH	one or more FACH+ one or more PCH	Depending on UE capabilities	One or more FACHs are used to enable the reception of MBMS (i.e., MCCH, MSCH and MTCH). The maximum number of SCCPCHs and the maximum bit rate depend on the UE implementation. The combination includes the case where one or more MBMS FACHs are transmitted on the same SCCPCH as used for non-MBMS FACH or PCH.
6	PICH	N/A	Mandatory	
7	FPACH + P-CCPCH + none, one or more S-CCPCH	BCH + (none, one or more FACH+ none, one or more PCH)	Depending on UE capabilities	
8	2 DPCH	One or more DCH coded into a single CCTrCH	Mandatory	The maximum number of DCH and the maximum channel bit rate are dependent on UE radio access capabilities This channel is used as reference measurement channel
9	One or more DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities.
10	FPACH + one or more DPCH	One or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	FPACH is used to answer the UE and to adjust the timing and synchronization shift of the UE. The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities. This configuration is required for UE that operate shared channels and dedicated channels simultaneously.
11	One or more S-CCPCH + one or more DPCH	(One or more FACH or/and PCH) + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs, the maximum number of CCTrCH and the maximum channel bit rate are dependent on UE radio access capabilities. This configuration is required for UE that operate shared channels and dedicated channels simultaneously.
12	One or more PDSCH	One or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This configuration is required for UE that operate shared channels.
13	FPACH + one or more PDSCH	One or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This configuration is desirable but not essential for UE supporting shared channels.

	Physical Channel Combination	Transport Channel Combination	Mandatory or dependent on UE radio access capabilities	Comment
14	One or more S-CCPCH +one or more PDSCH	(One or more FACH and/or PCH) + One or more DSCH coded onto one or more CCTrCH	Depending on UE radio access capabilities	This configuration is desirable but not essential for UE supporting shared channels.
15	One or more PDSCH + one or more DPCH	One or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities	This configuration is required for UE that operate shared channels and dedicated channels simultaneously.
16	FPACH + one or more PDSCH + one or more DPCH	one or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities.	FPACH is used to answer the UE and to adjust the timing and synchronization shift of the UE. This configuration is desirable but not essential for UE supporting shared channels and dedicated channels simultaneously.
17	One or more S-CCPCH + one or more PDSCH + one or more DPCH	(One or more FACH and/or PCH) + one or more DSCH coded onto one or more CCTrCH + one or more DCH coded into one or more CCTrCH	Depending on UE radio access capabilities.	This configuration is desirable but not essential for UE supporting shared channels and dedicated channels simultaneously.
18	One or more DPCH + zero, one or more HS-PDSCH + one or more HS-SCCH	One or more DCH coded into one or more CCTrCH + one or more HS-DSCH coded into one CCTrCH	Depending on UE radio access capabilities	
19	MICH	N/A	Depending on UE radio access capabilities	
20	MICH + PICH	N/A	Depending on UE radio access capabilities	
21	MICH + one or more SCCPCH	One or more FACH + one or more PCH + (NOTE 1)	Depending on UE radio access capabilities	Allowing MBMS notification indication during reception of non-MBMS FACH or PCH.
22	PICH + one or more SCCPCH	One or more FACH + (NOTE 1)	Depending on UE radio access capabilities	The maximum number of SCCPCHs and the maximum bit rate depend on the UE implementation.
23	MICH + PICH + one or more SCCPCH	One or more FACH + (NOTE 1)	Depending on UE radio access capabilities	The maximum number of SCCPCHs and the maximum bit rate depend on the UE implementation.
NOTE 1: + (zero, one or more DCH coded onto one or more CCTrCh) + (zero, one or more DSCH coded onto one or more CCTrCH) + (zero, one or more HS-DSCH coded onto one or more CCTrCH).				

9 Measurements provided by the physical layer

One of the key services provided by the physical layer is the measurement of various quantities, which are used to trigger or perform a multitude of functions. Both the UE and the UTRAN are required to perform a variety of measurements. The standard will not specify the method to perform these measurements or stipulate that the list of measurements provided in this clause must all be performed. While some of the measurements are critical to the functioning of the network and are mandatory for delivering the basic functionality (e.g., handover measurements, power control measurements), others may be used by the network operators in optimising the network (e.g., radio environment).

Measurements may be made periodically and reported to the upper layers or may be event-triggered (e.g., primary CCPCH becomes better than the previous best primary CCPCH). Another reporting strategy may combine the event triggered and the periodical approach (e.g. falling of link quality below a certain threshold initiates periodical reporting). The measurements are tightly coupled with the service primitives in that the primitives' parameters may constitute some of the measurements.

The list and frequency of measurements, which the physical layer reports to higher layers, is described in this clause. The detailed definition of measurement control and abilities is contained in [6] for FDD and [11] for TDD. The measurement performance requirements together with accuracy, range and mapping is specified in [9] for TDD and in [10] for FDD.

The measurement quantities measured by the physical layer shall be such that the following principles are applied:

- for handover measurements, the decoding of parameters on the BCCH logical channel of monitored neighbouring cells, should not, in general, be needed for calculating the measurement result. If there is a need to adjust the measurement result with parameters broadcast on the PCCPCH, these parameters shall be provided by the UTRAN in inband measurement control messages. There may be some exceptions to this rule;

  EXAMPLE:
  It may be necessary to decode the SFN of the measured neighbouring cell for time difference measurements.

- in idle mode or in RRC connected mode using common Transport Channels, the UE shall be able to monitor cells for cell reselection, without being required to frequently decode parameters on the BCCH logical channel of the monitored neighbouring cells. The decoding frequency of these parameters, set by the cell reselection algorithm, should be such that UE standby times are not significantly decreased.

9.1 Model of physical layer measurements

This subclause describes a model for how the physical layer measurements are performed. This model applies both to the UE and Node B measurements. This model sets the requirement on the behaviour of the measurement elaboration and reporting performed by L1 as well as filtering controlled by higher layers. It is not meant to be a requirement for implementation as long as the performance requirements in [9] and [10] are fulfilled.

The measurement model for physical layer measurements is represented in the figure 7.

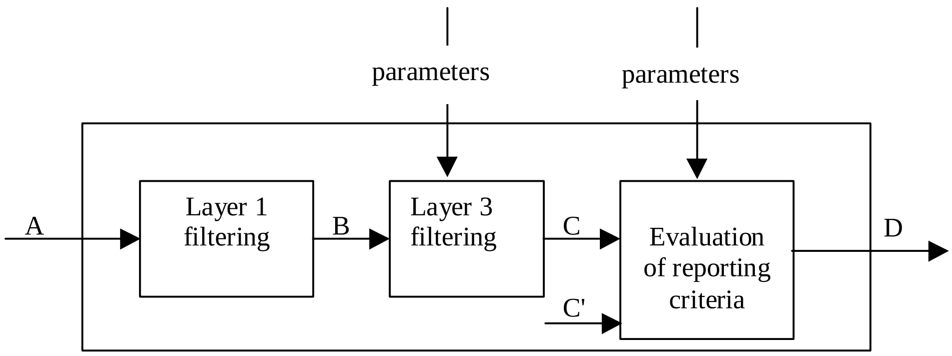


Figure 7: Measurement model

The model is described below:

- **A:** measurements (samples) internal to the physical layer in support to the measurements to be provided to higher layers;

- **Layer 1 filtering:** internal layer 1 filtering of the inputs measured at point A. Exact filtering is implementation dependant. How the measurements are actually executed in the physical layer by an implementation (inputs A and Layer 1 filtering) in not constrained by the standard i.e. the model does not state a specific sampling rate or even if the sampling is periodic or not. What the standard specifies in [9] and [10] is the performance objective and measurement period at point B in the model. The performance objectives for the physical layer measurements are specified in [9] and [10];

- **B:** A measurement reported by layer 1 after layer 1 filtering. The reporting rate at point B shall be sufficient to meet the performance objectives as defined in [9] and [10];

- **Layer 3 filtering:** Filtering performed on the measurements provided at point B. The behaviour of the Layer 3 filters are standardised and the configuration of the layer 3 filters is provided by RRC signalling (UE measurements) or NBAP signalling (Node B measurements). Each filtered result at point C shall correspond to a Layer 3 filtering performed using a reporting period equal to one measurement period at point B;

- **C:** A measurement after processing in the layer 3 filter. The reporting rate is identical to the reporting rate at point B and is therefore also measurement type specific. Although this is not shown in the figure, one measurement can be used by a multiplicity of evaluation of reporting criteria;

- **Evaluation of reporting criteria:** This checks whether actual measurement reporting is necessary at point D i.e. whether a message need to be sent to higher layers on the radio interface or Iub interface. The evaluation can be based on more than one flow of measurements at reference point C e.g. to compare between different measurements. This is illustrated by input C, C', etc. The UE shall evaluate the reporting criteria at least every time a new measurement result is reported at point C, C' etc. The reporting criteria are standardised and the configuration is provided by RRC signalling (UE measurements) or NBAP signalling (Node B measurements). Examples are periodic reporting and event based reporting. In case periodical reporting is in use and if the reporting interval is different from the filtering period defined by the layer 3 filter, the last measurement result filtered by the L3 filter shall be used as the value of the reported result. In case event triggered reporting is in use and the reporting criteria is fulfilled, the last measurement result filtered by the L3 filter shall be used as the value for reporting criteria evaluation and as the value of the reported result. This applies also for any additional measurements that shall be reported as a consequence of the event;

- **D:** a measurement report information (message) sent on the radio or Iub interface.

9.2 UE Measurements

For definitions of the measurements, see [6] and [11].

The impact of the introduction of E-DCH on the UE measurements is FFS.

9.2.1 SFN-CFN observed time difference

This measure is mandatory for UE.

Measurement	SFN-CFN observed time difference
Source	L1 (UE)
Destination	RRC (RNC) for handover
Reporting Trigger	On-demand, Event-triggered
Description	Time difference between the SFN of the target neighbouring cell and the CFN in the UE.

9.2.2 Observed time difference to GSM cell

This measure is mandatory for UE capable of handover to GSM.

Measurement	Observed time difference to GSM cell
Source	L1 (UE)
Destination	RRC (RNC) for maintenance and handover to GSM
Reporting Trigger	On-demand, Event-triggered
Description	Time difference between a UTRA cell and a GSM cell.

9.2.3 CPICH E_c/N_0

This measure is mandatory for UE with FDD mode capability.

Measurement	CPICH Ec/No
Source	L1(UE)
Destination	RRC (UE, RNC)
Reporting Trigger	Periodic, on demand and event triggered
Description	The received energy per chip of the CPICH divided by the power density in the frequency band.

9.2.4 Void

9.2.5 CPICH RSCP

This measure is mandatory for UE with FDD mode capability.

Measurement	CPICH RSCP
Source	L1(UE)
Destination	RRC (UE, RNC)
Reporting Trigger	periodic or event triggered
Description	Received signal code power of the CPICH.

9.2.6 P-CCPCH RSCP

This measure is mandatory for UE with TDD mode capability.

Measurement	P-CCPCH RSCP
Source	L1(UE)
Destination	RRC (UE, RNC)
Reporting Trigger	periodic or event triggered
Description	Received signal code power of the P-CCPCH

9.2.7 Timeslot ISCP

This measure is mandatory for UE with TDD mode capability.

Measurement	Timeslot ISCP
Source	L1(UE)
Destination	RRC (UE, RNC)
Reporting Trigger	periodic or event triggered
Description	Interference Signal Code Power is the interference on the received signal in a specified timeslot.

9.2.8 Void

9.2.9 SIR

This measure is mandatory for UE with TDD mode capability.

Measurement	SIR
Source	L1(UE)
Destination	RRC (UE,RNC)
Reporting Trigger	Periodic, once every power control cycle , event triggered
Description	Signal to Interference Ratio

9.2.10 UTRA carrier RSSI

This measure is mandatory for UE.

Measurement	UTRA carrier RSSI
Source	L1(UE)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered, on demand
Description	Received Signal Strength Indicator, the wideband received power within the relevant channel bandwidth. For TDD this is measured in specified timeslots.

9.2.11 GSM carrier RSSI

This measure is mandatory for UE with GSM capability.

Measurement	GSM carrier RSSI
Source	L1(UE)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered, on demand
Description	Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth. Details are specified in the GSM specification 05.08

9.2.12 Transport channel BLER

This measure is mandatory for UE.

Measurement	Transport channel BLER (BLock Error Rate)
Source	L1(UE)
Destination	RRC (RNC,UE)
Reporting Trigger	Periodic, on demand
Description	Estimation of the transport channel block error rate (BLER).

9.2.13 UE transmitted power

This measure is mandatory for UE.

Measurement	UE transmitted power
Source	L1(UE)
Destination	RRC (UE,RNC)
Reporting Trigger	On-demand, periodic, Event-triggered
Description	Total transmitted power on one carrier. For TDD this is measured in specified timeslots.

9.2.14 UE Rx-Tx time difference

This measure is mandatory for UE with FDD mode capability.

Measurement	UE Rx-Tx time difference
Source	L1 (UE)
Destination	RRC (RNC)
Reporting Trigger	On-demand, periodic, event-triggered
Description	Time difference between the UE uplink DPCCH/DPDCH frame transmission and the first detected path (in time) of the downlink DPCH or F-DPCH frame from the measured radio link. Type 1 and Type 2 are defined.

9.2.15 SFN-SFN Observed time difference

This measure is mandatory for UE.

Measurement	SFN-SFN observed time difference
Source	L1 (UE)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered
Description	Time difference between a specific reference UTRA cell and a target UTRA cell. Type 1 and Type 2 are defined.

9.2.16 UE GPS Timing of Cell Frames for UE positioning

This measure is mandatory for UE that has the capability to measure GPS reference time.

Measurement	UE GPS Timing of Cell Frames for UE positioning
Source	L1 (UE)
Destination	RRC (RNC-UE positioning)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	The timing between UTRA cell and GPS Time Of Week.

9.2.17 Timing Advance (T_{ADV}) for 1.28 Mcps TDD

This measure is mandatory for 1.28 Mcps TDD UE.

Measurement	Timing Advance (T_{ADV}) for 1.28 Mcps TDD
Source	L1 (UE)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	Difference between the uplink transmission of the UE and the downlink reception.

9.2.18 UE GPS code phase

This measure is mandatory for UE with UE-assisted GPS capability.

NOTE: The UE transmits the GPS code phase in the IE "Whole GPS Chips" and in the IE "Fractional GPS Chips" defined in [13].

Measurement	UE GPS code phase
Source	L1 (UE)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	The whole and fractional phase of the spreading code of the GPS satellite signal.

9.3 UTRAN Measurements

The impact of the introduction of E-DCH on the UTRAN measurements is FFS.

9.3.1 Received total wide band power

Measurement	Received total wide band power
Source	L1 (Node B)
Destination	RRC(RNC)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	The received wide band power including noise generated in the receiver, within the bandwidth defined by the pulse shaping filter. For TDD mode, this is measured in specified timeslots.

9.3.2 Transmitted carrier power

Measurement	Transmitted carrier power
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, periodic, Event-triggered
Description	Transmitted carrier power is the ratio between the total transmitted power on one DL carrier from one UTRAN access point, compared to the maximum power possible to use on that DL carrier at this moment of time. For TDD mode, this is measured in specified timeslots.

9.3.3 Transmitted code power

Measurement	Transmitted code power
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, periodic, Event-triggered
Description	Transmitted Code Power is the transmitted power on one carrier, one scrambling and one channelisation code. For TDD mode, this is measured in specified timeslots.

9.3.4 Void

9.3.5 Physical channel BER

Measurement	Physical channel BER
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered, periodic
Description	The Physical channel BER is an estimation of the average bit error rate (BER) on the DPCCH of a Radio Link Set. This measurement applies to FDD mode only.

9.3.6 Transport channel BER

Measurement	Transport channel BER
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered, periodic
Description	The transport channel BER is an estimation of the average bit error rate (BER) data part.

9.3.7 RX timing deviation

Measurement	RX timing deviation
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered
Description	The difference of the time of arrival of the UL transmissions in relation to the arrival time of a signal with zero propagation delay. This measurement is applicable for TDD mode.

9.3.8 Timeslot ISCP

Measurement	Timeslot ISCP
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	periodic or event triggered
Description	Interference on Signal Code Power, is the interference on the received signal in a specified timeslot. This measurement is applicable is applicable to TDD mode only.

9.3.9 RSCP

Measurement	RSCP
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	periodic or event triggered
Description	Received Signal Code Power is the received power on DPCH or PRACH, PUSCH or HS-SICH. This measurement is applicable for TDD mode only.

9.3.10 Round Trip Time

Measurement	Round Trip Time
Source	L1(Node B or LMU)
Destination	RRC (RNC-UE positioning)
Reporting Trigger	on demand, event triggered
Description	This is an estimate of the round trip time of signals between the Node B and the UE This measurement is applicable for FDD mode only.

9.3.11 Void

9.3.12 Acknowledged PRACH preambles

Measurement	Acknowledged PRACH preambles
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered, On demand
Description	This measurement indicates the number of positive acquisition indicators transmitted per access frame on each AICH. This measurement is applicable for FDD mode only.

9.3.13 Detected PCPCH access preambles

Measurement	Detected PCPCH Access preambles
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered, On demand
Description	This measurement indicates the total number of detected access preambles per access frame on the PCPCHs belonging to a CPCH set. This measurement is applicable for FDD mode only.

9.3.14 Acknowledged PCPCH access preambles

Measurement	Acknowledged PCPCH access preambles
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered, On demand
Description	This measurement indicates the total number of acknowledged PCPCH access preambles per access frame on the PCPCHs. where an access frame consists of fifteen access slots from access slot #0 to access slot #14. This measurement is applicable for FDD mode only.

9.3.15 SIR

Measurement	SIR
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered
Description	Signal to Interference Ratio.

9.3.16 PRACH/PCPCH Propagation Delay

Measurement	Propagation delay
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Event triggered, periodic
Description	The one-way propagation delay as measured during either PRACH or PCPCH access. This measurement is applicable for FDD mode only.

9.3.17 UTRAN GPS Timing of Cell Frames for UE positioning

Measurement	UTRAN GPS Timing of Cell Frames for UE positioning
Source	L1 (LMU)
Destination	RRC (RNC-UE positioning)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	This is the absolute time reference measurement in respect to GPS Time Of Week for the transmission of a particular frame.

9.3.18 SIR ERROR

Measurement	SIR ERROR
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered
Description	Signal to Interference Ratio Error This measurement is applicable for FDD cells only.

9.3.19 Received SYNC_UL Timing Deviation

Measurement	Received SYNC_UL Timing Deviation
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	Event triggered
Definition	'Received SYNC_UL Timing Deviation' is the time difference $UpPCH_{POS} = UpPTS_{Rxpath} - UpPTS_{TS}$ Where $UpPTS_{Rxpath}$: time of the reception in the Node B of the SYNC_UL to be used in the uplink synchronization process $UpPTS_{TS}$: time instance two symbols prior to the end of the DwPCH according to the Node B internal timing

9.3.20 Cell Sync Burst Timing

Measurement	Cell Sync Burst Timing
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered
Definition	Cell sync burst timing is the time of start (defined by the first detected path in time) of the cell sync burst of a neighbouring cell. Type 1 is used for the initial phase of Node B synchronization. Type 2 is used for the steady-state phase of Node B synchronization.

9.3.21 Cell Sync Burst SIR

Measurement	Cell Sync Burst SIR
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	Periodic, event triggered
Definition	Signal to Interference Ratio for the cell sync burst, defined as: RSCP/Interference, where:

9.3.22 SFN-SFN Observed time difference

Measurement	SFN-SFN observed time difference
Source	L1 (LMU)
Destination	RRC (RNC-UE positioning)
Reporting Trigger	On-demand, Periodic, On Modification
Description	Measured time between reception of signal from a specific reference UTRA cell and from a neighbour UTRA cell.

9.3.23 Angle of Arrival (AOA) for 1.28 Mcps TDD

Measurement	Angle of Arrival (AOA) for 1.28Mcps TDD
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	Event-triggered, on-demand
Description	AOA defines the estimated angle of a user with respect to a reference direction. The reference direction for this measurement shall be the North, positive in a counter-clockwise direction. The AOA is determined at the UTRAN access point antenna for an UL channel corresponding to this UE.

9.3.24 HS-SICH reception quality

Measurement	HS-SICH reception quality
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	The HS-SICH reception quality is defined via the the number of expected HS-SICH transmissions from a given UE and the number of unsuccessful HS-SICH receptions for this same UE in the Node B. For 1.28 Mcps TDD, only measurements made on HS-SICH transmissions that were transmitted using open loop power control are reported as part of this measurement. This measurement is applicable for TDD cells only.

9.3.25 Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission

Measurement	Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, periodic, Event-triggered
Description	Transmitted carrier power of all codes not used for HS-PDSCH or HS-SCCH transmission is the ratio between the total transmitted power of all codes not used for HS-PDSCH or HS-SCCH transmission on one DL carrier from one UTRAN access point, and the maximum transmission power possible to use on that DL carrier at this moment of time. For TDD mode, this is measured in specified timeslots.

9.3.26 UpPTS interference (1.28Mcps TDD)

Measurement	UpPTS interference (1.28Mcps TDD)
Source	L1 (Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, periodic, Event-triggered
Description	The level of interference in the UpPTS is the difference between the mean received power in the UpPTS and the sum of the estimated mean power levels of all detected UpPCH transmissions. In the case of antenna diversity, the linear average of the UpPTS interference levels for each antenna branch shall be calculated. The reference point for the UpPTS interference measurement shall be the Rx antenna connector.

9.3.27 DL Transmission Branch Load

Measurement	DL Transmission Branch Load
Source	L1(Node B)
Destination	RRC (RNC)
Reporting Trigger	On-demand, Event-triggered, Periodic
Description	The 'DL transmission branch load' is the maximum of the transmission branch loads calculated for each branch. A 'transmission branch load' is the ratio between the total transmitted power [W] on the considered branch and the 'maximum DL branch capability' on this branch. The 'maximum DL branch capability' defines the maximum transmission power possible to use on that branch. The reference point for the transmission branch load measurement shall be the TX antenna connector.

10 Primitives of the physical layer

The Physical layer interacts with other entities as illustrated in figure 1. The interactions with the MAC layer and the RRC layer are shown in terms of primitives where the primitives represent the logical exchange of information and control between the physical layer and higher layers. They do not specify or constrain implementations. The (adjacent) layers connect to each other through Service Access Points (SAPs). Primitives, therefore, are the conveyers of the information exchange and control through SAPs.

Four types of primitives are used for the present document, as follows.

- **REQUEST (REQ):**
  - This type is used when a higher layer is requesting a service from a lower layer.
- **INDICATION (IND):**
  - This type is used by a lower layer providing a service to notify its higher layer of activities concerning that higher layer.
- **RESPONSE (RESP):**
  - This type is used by a higher layer providing the indicated service to respond to its lower layer that the activity has been completed.
- **CONFIRM (CNF):**
  - This type is used by a lower layer providing the requested service to confirm to the higher layer that the activity has been completed.

The primitives defined below are for local communications between MAC and L1, as well as RRC and L1 in the same protocol stack.

For the physical layer two sets of primitives are defined:

- **Primitives between layer 1 and 2:**
  - PHY - Generic name - Type: Parameters.
- **Primitives between layer 1 and the RRC entity:**
  - CPHY - Generic name - Type: Parameters.

NOTE: This is a logical description of the primitives and does not cover addressing aspects (e.g. Transport Channel ID, Physical Channel ID, start frame number or disconnect frame number).

10.1 Generic names of primitives between layers 1 and 2

The primitives between layer 1 and layer 2 are shown in table 7.

Table 7: Primitives between layer 1 and 2

Generic Name	Parameter			
	REQ	**IND**	**RESP**	**CNF**
PHY-Access	Transport Format subset (1), ASC selected for Transport Block Set to be transmitted (5)	Not Defined	Not Defined	access information (1)
PHY-Data	TFI, E-TFI (8), Transport Block Set, CFN_{CELL}, TTI within CFN (7), Paging Indicators (2), ASC selected for that Transport Block Set (3), HS-DSCH information (6), E-DCH information (8)	TFI, E-TFI (8)Transport Block Set, CRC check result, TD (4), HARQ process (7)	Not Defined	Not Defined
PHY-CPCH_Status	Transport Format subset (1)	Not Defined	Not Defined	Transport Format subset (1)
PHY-Status	HARQ status (7)	Event value, HS-DSCH Feedback information (7)	Not Defined	Not Defined
NOTE (1): FDD only. NOTE (2): PCH only NOTE (3): 3.84 Mcps TDD RACH only NOTE (4): optional, TDD only NOTE (5): FDD and 1.28 Mcps TDD RACH only NOTE (6): HS-DSCH only NOTE (7): HS-DSCH and E-DCH only NOTE (8): E-DCH only				

10.1.1 PHY-Access-REQ

The PHY-Access-REQ primitive is used to request access to either a RACH or a CPCH transport channel from the physical layer. A PHY-Access primitive is submitted once before the actual data for peer-to-peer communication is passed to the physical layer using the PHY-Data primitive. This primitive is used in FDD and 1.28 Mcps TDD only.

Parameters:

- Transport Format subset.
- ASC selected for Transport Block Set to be transmitted (RACH only)

10.1.2 PHY-Access-CNF

The PHY-Access-CNF primitive is used to confirm that physical layer synchronisation has been established and that the physical layer is ready for data transmission using the PHY-Data primitive. This primitive is used in FDD and 1.28 Mcps TDD only.

Parameters:

- access information.

10.1.3 PHY-Data-REQ

The PHY-Data primitives are used to request SDUs used for communications passed to and from the physical layer. One PHY-Data primitive is submitted every Transmission Time Interval for each Transport Channel.

Parameters:

- TFI;
- E-TFI (E-DCH only);

- Transport Block Set;
- CFN_{CELL};
- TTI within CFN (HS-DSCH and E-DCH (2ms TTI) only);
- Page Indicators (PIs) (PCH only);
- HS-DSCH information (HS-DSCH information);
- E-DCH information (E-DCH information);
- ASC selected for that Transport Block Set (3.84 Mcps TDD RACH only).

10.1.4 PHY-Data-IND

The PHY-Data primitives are used to indicate SDUs used for Layer 2 passed to and from the physical layer. One PHY-Data primitive is submitted every Transmission Time Interval for each Transport Channel.

Parameters:

- TFI;
- E-TFI (E-DCH only);
- Transport Block Set;
- CRC check result;
- TD (RX Timing Deviation measurement) (optional, TDD only);
- Process Id (HS-DSCH and E-DCH only);
- Retransmission number (E-DCH only).

10.1.5 PHY-CPCH_Status-REQ

The PHY-CPCH_Status-REQ primitive is used by MAC to request CPCH status information that is broadcast on CSICH. The parameter Transport Format subset allows to restrict the CPCH status information request to a limited number of CPCH channels of the given CPCH set. This primitive is used in FDD only.

Parameters:

- Transport Format subset.

10.1.6 PHY-CPCH_Status-CNF

The PHY-CPCH_Status-CNF primitive is used by L1 to indicate CPCH status information that is broadcast on CSICH. Status information is represented in terms of a Transport format subset that is permitted to be employed by the UE. This primitive is used in FDD only.

Parameters:

- Transport Format subset

10.1.7 PHY-Status-IND

The PHY-Status-IND primitive can be used by the layer 1 to notify higher layers of an event that has occurred.

Parameters:

- Feedback information (HS-DSCH and E-DCH only);
- Event value:

- CPCH Emergency stop was completed;
- CPCH Start of Message Indicator was received;
- CPCH Start of Message Indicator was not received;
- L1 hardware failure has occurred.
- CPCH End of Transmission was received

10.2 Generic names of primitives between layers 1 and 3

The status primitives between layer 1 and 3 are shown in table 8.

Table 8: Status primitives between layer 1 and 3

Generic Name	Parameter			
	REQ	IND	RESP	CNF
CPHY-Sync	Not Defined	CCTrCH ID (1)	Not Defined	Not Defined
CPHY-Out-of-Sync	Not Defined	CCTrCH ID (1)	Not Defined	Not Defined
CPHY-Measurement	transmission power threshold, measurement parameters	measurement parameters	Not Defined	Not Defined
CPHY-Error	Not Defined	error code	Not Defined	Not Defined
CPHY-CPCH-EOT	Not Defined	No Parameter (2)	Not Defined	Not Defined
NOTE (1): TDD only. NOTE (2): FDD only				

10.2.1 STATUS PRIMITIVES

10.2.1.1 CPHY-Sync-IND

This primitive is used for L1 to indicate to RRC that synchronisation of a certain physical channel has been done in the receiver. In FDD synchronisation is based on reception of the DPCCH or F-DPCH, and in TDD synchronisation is based on Special Burst, TB reception, and DPCH burst quality estimation. For 3.84 Mcps TDD, when the UE is in cell_DCH state but no DL DPCH is configured the primitive is based on the methods specified in [5].

Parameters:

- CCTrCH ID (TDD only).

10.2.1.2 CPHY-Out-of-Sync-IND

Primitive sent from L1 to RRC indicating that synchronisation of a previously configured connection has been lost in the receiver. In FDD synchronisation is based on reception of the DPCCH or F-DPCH, and in TDD synchronisation is based on Special Burst, TB reception, and DPCH burst quality estimation. For 3.84 Mcps TDD, when the UE is in cell_DCH state but no DL DPCH is configured the primitive is based on the methods specified in [5].

Parameters:

- CCTrCH ID (TDD only).

10.2.1.3 CPHY-Measurement-REQ

The Request primitive is used for RRC to configure L1 measurements.

Parameters:

- transmission power threshold;

- refer to clause 9 for measurement parameters.

10.2.1.4 CPHY-Measurement-IND

The Indication primitive is used to report the measurement results.

Parameters:

- refer to clause 9 for measurement parameters.

10.2.1.5 CPHY-Error-IND

The CPHY-Error primitive is used to indicate to the management entity that an error has occurred as a result of a physical layer fault.

Parameters:

- error code.

10.2.1.6 CPHY-CPCH-EOT-IND

The CPHY-CPCH-EOT-IND primitive is used by L1 to indicate RRC of an end of CPCH transmission event has occurred. This primitive is used in FDD only.

Parameters:

- No Parameter.

10.2.2 CONTROL PRIMITIVES

The control primitives between layer 1 and 3 are shown in table 9.

Table 9: Control primitives between layer 1 and 3

Generic Name	Parameter			
	REQ	IND	RESP	CNF
CPHY-TrCH-Config	transport channel description	Not Defined	Not Defined	No Parameter
CPHY-TrCH-Release	No Parameter	Not Defined	Not Defined	No Parameter
CPHY-RL-Setup	physical channel description	Not Defined	Not Defined	No Parameter
CPHY-RL-Release	No Parameter	Not Defined	Not Defined	No Parameter
CPHY-RL-Modify	physical channel description	Not Defined	Not Defined	No Parameter
CPHY-Commit	activation time	Not Defined	Not Defined	Not Defined
CPHY-CPCH-Estop	No Parameter (1)	No Parameter (1)	No Parameter (1)	No Parameter (1)
CPHY-Out-of-Sync-Config	Out of Sync detection parameters	Not Defined	Not Defined	No Parameter
CPHY-MBMS-Config	MBMS information	Not Defined	Not Defined	No Parameter
NOTE (1): FDD only.				

10.2.2.1 CPHY-TrCH-Config-REQ

This primitive is used for setting up and configuring a transport channel, and also to modify an existing transport channel.

Parameters:

- transport channel description.

10.2.2.2 CPHY-TrCH-Config-CNF

This primitive is used for confirming the setting up and configuring a transport channel, and also modifying an existing transport channel.

Parameters:

- No Parameter.

10.2.2.3 CPHY-TrCH-Release-REQ

This primitive is used for releasing a transport channel.

Parameters:

- No Parameter.

10.2.2.4 CPHY-TrCH-Release-CNF

This primitive is used for confirming the releasing a transport channel.

Parameters:

- No Parameter.

10.2.2.5 CPHY-RL-Setup-REQ

The Request primitive is sent from RRC to L1 for establishment of a Radio link to a certain UE.

Parameters:

- physical channel description.

10.2.2.6 CPHY-RL-Setup-CNF

The Confirm primitive is returned from L1 to RRC when the Radio link is established. In case L1 is unable to execute the request, this is indicated in the confirm primitive.

Parameters:

- No Parameter.

10.2.2.7 CPHY-RL-Release-REQ

The Request primitive is sent from RRC to L1 for release of a Radio link to a certain UE.

Parameters:

- No Parameter.

10.2.2.8 CPHY-RL-Release-CNF

The Confirm primitive is returned from L1 to RRC when the radio link is released.

Parameters:

- No Parameter.

10.2.2.9 CPHY- RL-Modify-REQ

The Request primitive is sent from RRC to L1 for modification of a Radio link to a certain UE.

Parameters:

- physical channel description.

10.2.2.10 CPHY-RL-Modify-CNF

The Confirm primitive is returned from L1 to RRC when the radio link is modified. In case L1 is unable to execute the request, this is indicated in the confirm primitive.

Parameters:

- No Parameter.

10.2.2.11 CPHY-Commit-REQ

This primitive is sent from RRC to L1 to synchronise UE and NW for the physical channel modification.

Parameters:

- activation time.

10.2.2.12 CPHY-CPCH-Estop-IND

The CPHY-CPCH-Estop-IND primitive is used by L1 to notify RRC of a CPCH emergency stop message has been received. This primitive is used in FDD only.

Parameters:

- No Parameter.

10.2.2.13 CPHY-CPCH-Estop-RESP

This primitive is sent from UE RRC to L1 for emergency stop of the CPCH transmission. After receiving this primitive, UE L1 stopping its transmission on the related CPCH. This primitive is used in FDD only.

Parameters:

- No Parameter.

10.2.2.14 CPHY-CPCH-Estop-REQ

This primitive is sent from RRC to L1 for CPCH Emergency Stop. This primitive is sent for triggering of a CPCH emergency stop. After receiving this primitive, Node B L1 sends CPCH Estop Command to UE. This CPCH Estop Command is all 1 bits pattern in the CCC field of DL DPCCH for CPCH. This primitive is used in FDD only.

Parameters:

- No Parameter.

10.2.2.15 CPHY-CPCH-Estop-CNF

This primitive is sent from Node B L1 to RRC for confirming the emergency stop of the CPCH. This primitive is used in FDD only.

Parameters:

- No Parameter.

10.2.2.16 CPHY-Out-of-Sync-Config-REQ

This primitive is sent from RRC to Node B L1 to reconfigure the parameters to detect "in sync" and "out of sync" conditions of uplink physical channel transmission.

Parameters:

- Out of Sync detection parameters

10.2.2.17 CPHY-Out-of-Sync-Config-CNF

This primitive is sent from Node B L1 to RRC for confirming the Reconfiguration of the Out-of-Sync parameters on Node B L1.

Parameters:

- No Parameter.

10.2.2.18 CPHY-MBMS-Config-REQ

This primitive is sent from UE RRC to L1 for the configuration of the MBMS information.

Parameters:

- MBMS information.

10.2.2.19 CPHY-MBMS-Config-CNF

This primitive is used to confirm the configuration of the MBMS information.

Parameters:

- No Parameter.

10.3 Parameter definition

10.3.1 Error code

- Hardware failure.

10.3.2 Event value

- Maximum transmission power has been reached.
- Allowable transmission power has been reached.
- Average transmission power is below allowable transmission power.
- Maximum number of retransmissions has been reached.
- Loss of DL DPCCH.
- Completion of CPCH Emergency stop.
- CPCH Start of Message Indicator was received.
- CPCH Start of Message Indicator was not received.
- Maximum number of frames for CPCH transmission has been reached.
- End of Frame for CPCH transmission has been received.

10.3.3 Access Information

- Ready for RACH data transmission (in case of FDD mode: when Ack on AICH has been received, in case of 1.28 Mcps TDD: when Ack on FPACH has been received);

- timeout, no response on AICH (FDD only) or AP-AICH (FDD only) or FPACH (1.28 Mcps TDD only) has been received while maximum number of access preamble transmissions (FDD only) /synchronisation attempts (1.28 Mcps TDD only) has been performed.

The following values of this parameter apply to FDD only:

- NACK on AICH or AP-AICH has been received;
- ready for CPCH data transmission (CD or CD/CA information received on CD/CA-ICH);
- mismatch of CD/CA-ICH signatures;
- no response on CD/CA-ICH received;
- timeout, no CD/CA-ICH received.

10.3.4 Transport Format Subset

- A subset of the Transport Format set of a Transport Channel.

10.3.5 Physical channel description

10.3.5.1 Primary SCH

- Tx diversity mode.

10.3.5.2 Secondary SCH

- Tx diversity mode.

10.3.5.3 Primary CCPCH

- Frequency info.
- DL scrambling code.
- Tx diversity mode.
- Timeslot (TDD only).
- Burst type (3.84 Mcps TDD only).
- Offset (TDD only).
- Repetition period (TDD only).
- Repetition length (TDD only).

10.3.5.4 Secondary CCPCH

- DL scrambling code.
- Channelisation code.
- Tx diversity mode.
- Timeslot (TDD only).
- Burst type (3.84 Mcps TDD only).
- Midamble shift (TDD only).
- Offset (TDD only).

- Repetition period (TDD only).
- Repetition length (TDD only).
- TFCI presence (TDD only).
- MCCH modification period (only S-CCPCH carrying MCCH).
- MCCH repetition period (only S-CCPCH carrying MCCH).
- MCCH access info period (only S-CCPCH carrying MCCH).
- MSCH scheduling period/offset (only S-CCPCH carrying MSCH).

10.3.5.5 PRACH

- Access Slot (FDD only).
- Preamble scrambling code (FDD only).
- Available preamble signatures (FDD only).
- Spreading factor for data part.
- Power control info:
  - UL target SIR;
  - primary CCPCH DL TX Power;
  - UL interference;
  - power offset (Power ramping) (FDD only).
- Access Service Class Information (PRACH Partitioning):
  - Available signatures for each ASC (FDD only).
  - Available Channelisation codes for each ASC (TDD only).
  - Available Subchannels for each ASC.
- AICH transmission timing parameter (FDD only).
- Timeslots (TDD only).
- Available Channelisation Codes (TDD only)
- Spreading Factor (TDD only).
- Midamble Type (TDD only).

10.3.5.6 Uplink DPDCH+DPCCH

- UL scrambling code.
- DPCCH slot structure (N_{pilot}, N_{TPC}, N_{TFCI}, N_{FBI}).
- Transmission Time offset value.

10.3.5.7 Uplink DPCH

- Timing Advance (TDD only).
- DPCH channelisation code (TDD only).
- Burst Type (3.84 Mcps TDD only).

- DPCH midamble shift (TDD only).
- Timeslot (TDD only).
- Offset (TDD only).
- Repetition Period (TDD only).
- Repetition length (TDD only).
- TFCI presence (TDD only).

10.3.5.8 Downlink DPCH

- Transmission Time offset value.
- DL scrambling code:
  - DL Channelisation code.
- Tx diversity mode:
  - FB mode (FDD only).
- Slot structure ($N_{pilot,}$ N_{TPC}, N_{TFCI}, $N_{FBI,}$, N_{data1}, N_{data2}) (FDD only).
- Special slot structure only for CPCH ($N_{pilot,}$ N_{TPC}, N_{TFCI}, N_{CCC}) (FDD only)
- Burst Type (3.84 Mcps TDD only).
- DPCH midamble shift (TDD only).
- Timeslot (TDD only).
- Offset (TDD only).
- Repetition period (TDD only).
- Repetition length (TDD only).
- TFCI presence (TDD only).

10.3.5.8a F-DPCH (FDD only)

- Transmission Time offset value.
- DL scrambling code:
  - DL Channelisation code.

10.3.5.9 PCPCH (Physical Common Packet Channel)

- CPCH Set ID to which this PCPCH belongs.
- Parameters related to the AP preamble:
  - Access Preamble (AP) scrambling code;
  - available AP signatures/subchannels for access request;
- Parameters related to the CD preamble:
  - CD preamble scrambling code;
  - available CD signatures/subchannels;
- Parameters related to PCPCH message part:

- PCPCH scrambling code;
- PCPCH Channelisation code;
- data rate (spreading factor);
- N_frames_max: Maximum length of CPCH message in radio frames.

10.3.5.10 PICH

- Scrambling code.
- Channelisation code.
- Timeslot (TDD only).
- Burst Type (3.84 Mcps TDD only).
- Midamble shift (TDD only).
- Offset (TDD only).
- Repetition period (TDD only).
- Repetition length (TDD only).

10.3.5.11 AICH

- Scrambling code.
- Channelisation code.
- Tx diversity mode.

NOTE: The value for the parameters needs to be consistent with the corresponding PRACH.

10.3.5.12 AP-AICH

- CPCH Set ID.
- Scrambling code.
- Channelisation code.
- Tx diversity mode.

10.3.5.13 CD-ICH

- CPCH Set ID.
- Scrambling code.
- Channelisation code.
- Tx diversity mode.

NOTE: This physical channel is used in conjunction with PCPCH when UE Channel Selection is active.

10.3.5.14 CD/CA-ICH

- CPCH Set ID.
- Scrambling code.
- Channelisation code.

- Tx diversity mode.

NOTE: This physical channel is used in conjunction with PCPCH when Channel Assignment is active.

10.3.5.15 CSICH

- CPCH Set ID.
- Scrambling code.
- Channelisation code.
- Tx diversity mode.

NOTE: The values for the parameters need to be consistent with the AP-AICH that is time-multiplexed with this CSICH.

10.3.5.16 PDSCH (TDD only)

- Scrambling code.
- Channelisation code.
- Tx diversity mode:
  - ~~FB mode (FDD only).~~
- DL channelisation code (TDD only).
- Burst Type (3.84 Mcps TDD only).
- PDSCH Midamble shift (TDD only).
- Timeslot (TDD only).
- Offset (TDD only).
- Repetition period (TDD only).
- Repetition length (TDD only).
- TFCI presence (TDD only).

10.3.5.17 PUSCH

- PUSCH channelisation code.
- Burst Type (3.84 Mcps TDD only).
- PUSCH midamble shift (TDD only).
- Timeslot (TDD only).
- Offset (TDD only).
- Repetition period (TDD only).
- Repetition length (TDD only).
- TFCI presence (TDD only).
- Timing Advance (TDD only).

10.3.5.18 DwPCH (1.28 Mcps TDD only)

- Tx diversity mode.

- SYNC_DL code ID.

10.3.5.19 UpPCH (1.28 Mcps TDD only)

- SYNC_UL code ID.

10.3.5.20 FPACH (1.28 Mcps TDD only)

- Scrambling code
- Channelisation code
- Timeslot
- Midamble shift
- Tx diversity mode.

10.3.5.21 PNBSCH (Physical Node B Synchronisation channel)

- Node B - Node B over the air communication.
- Only for TDD cells.
- Repetition period.
- **C**oncatenated periodically **E**xtended **C**omplementary sequences.

10.3.5.22 HS-SCCH

- Scrambling code.
- Channelisation code.
- Timeslot (TDD only).
- Burst type (3.84 Mcps TDD only).

10.3.5.23 HS-SICH (TDD only)

- Channelisation code.
- Burst Type 1 (3.84 Mcps TDD only).
- Midamble shift.
- Timeslot.

10.3.5.24 E-AGCH (FDD only)

- Scrambling code.
- Channelisation code.
- Tx diversity mode (FFS).
- Transmission Time offset value (FFS – It is FFS whether timing of E-AGCH is identical to other common channels physical channels such as SCCPCH. Decision may be dependent on UE processing time).

10.3.5.25 E-DPCCH (FDD only)

- No parameter.

10.3.5.26 E-DPDCH (FDD only)

- No parameter.

10.3.5.27 E-HICH (FDD only)

- Scrambling code.
- Channelisation code.
- Hadamard sequence
- Transmission Time offset value (FFS –transmission time offset may be UE specific if slot alignment rather than sub-frame alignment is agreed).
- I or Q mapping (if BPSK modulation applies) (FFS)

10.3.5.28 E-RGCH (FDD only)

- Scrambling code.
- Channelisation code.
- Hadamard sequence.
- Transmission Time offset value (FFS –transmission time offset may be UE specific if slot alignment rather than sub-frame alignment is agreed).
- I or Q mapping (if BPSK modulation applies) (FFS).

10.3.5.28 MICH

- Scrambling code.
- Channelisation code.
- Timeslot (TDD only).
- Burst Type (3.84 Mcps TDD only).
- Midamble shift (TDD only).
- Offset (TDD only).
- Repetition period (TDD only).
- Repetition length (TDD only).

10.3.6 Feedback information

- Quality indication (HS-DSCH and E-DCH only FFS).
- HARQ Status (HS-DSCH and E-DCH only).

Additional content of the Feedback information for the E-DCH is FFS.

10.3.7 HARQ process

- Process Id.

10.3.8 HS-DSCH information

- Modulation scheme.

- Channelisation code.
- Timeslot (TDD only).
- Redundancy version/Constellation.
- Process Id.
- HS-SCCH Cyclic Sequence Number (HCSN) for TDD.

10.3.9 HARQ status

- HARQ acknowledgement (acknowledgement or negative acknowledgement).

10.3.10 E-DCH information

- Number of allowed redundancy versions.
- Maximum number of transmissions
- New transmission indication
- Process Id.
- Power offset

10.3.11 MBMS information

- MBMS L1 combining schedule.
- MBMS service transmission schedule.

3GPP TSG-RAN Working Group 2 #47
Athens, Greece, 9 – 13 May 2005

Tdoc ⌘ R2-051608

CR-Form-v7

CHANGE REQUEST

⌘	**25.303**	**CR**	**0077**	⌘ **rev**	**-**	⌘	Current version:	**5.2.0** ⌘

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

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

Title:	⌘	Feature Clean-up: Removal of DSCH (FDD)		
Source:	⌘	RAN WG2		
Work item code:	⌘	TEI5	***Date:*** ⌘	10/05/2005
Category:	⌘	**C**	***Release:*** ⌘	REL-5
		Use one of the following categories: ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *Rel-4 (Release 4)* *Rel-5 (Release 5)* *Rel-6 (Release 6)*

Reason for change:	⌘	Removal of DSCH for FDD
Summary of change:	⌘	Removal of DSCH for FDD
Consequences if not approved:	⌘	DSCH for FDD mode will remain specified

Clauses affected:	⌘	6.3.1, 6.3.2

		Y	N		
Other specs	⌘	X		Other core specifications ⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
affected:		X		Test specifications	34.108, 34.123
				O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

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

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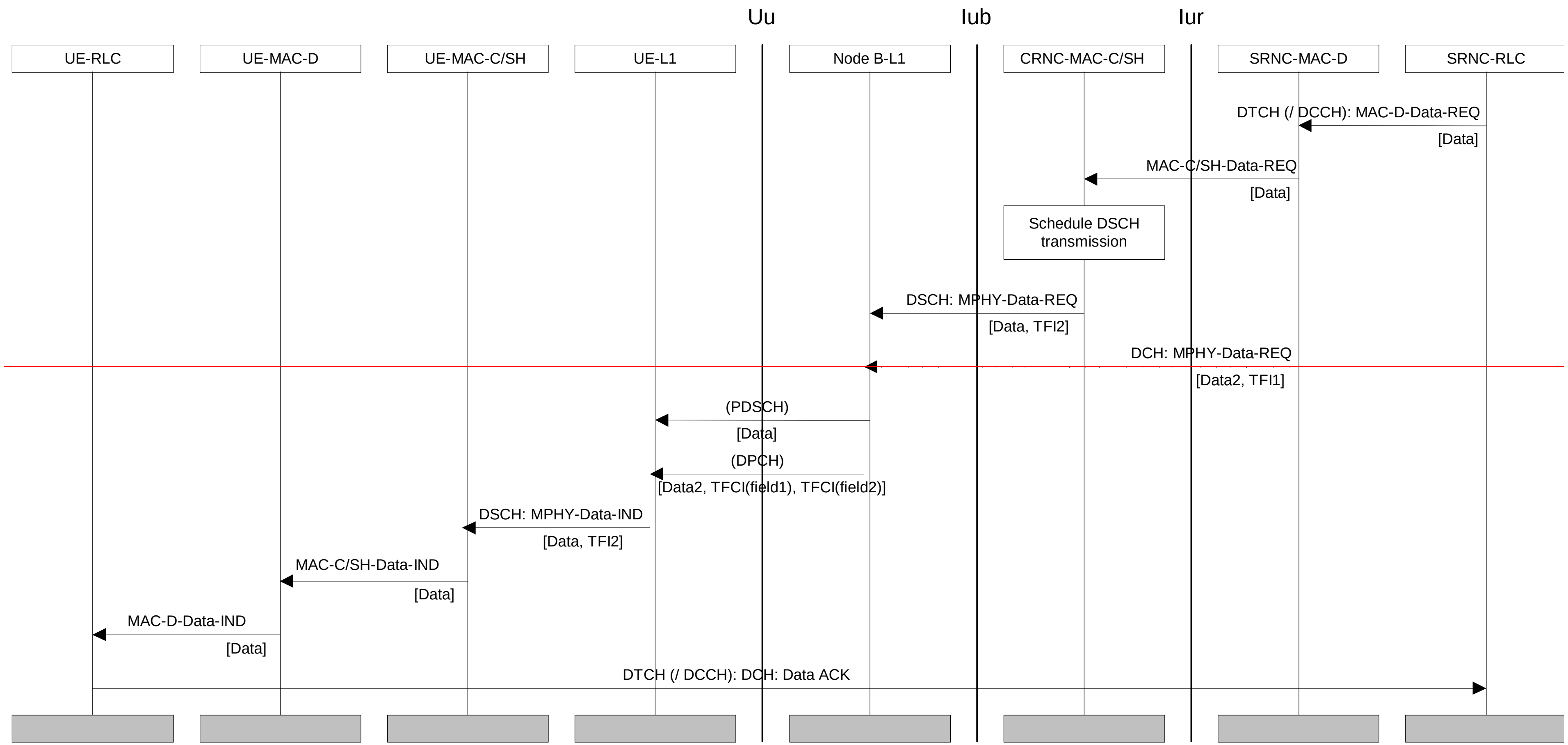
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.3 Data transmission

6.3.1 Void~~Acknowledged-mode data transmission on DSCH using hard split of TFCI-word~~



~~**Figure 19: Example of acknowledged-mode data transmission on DSCH**~~

~~Figure 19 shows an example of acknowledged-mode data transmission on DSCH associated with a DCH. First RLC in SRNC requests data transmission locally from MAC-d. MAC-d routes the request either locally or across the Iur to MAC-c/sh in CRNC, where DSCH transmission scheduling takes place. MAC-c/sh determines the TFI for the data ('TFI2') and requests data transmission across Iub from the physical layer in Node B. At the same time data for an associated dedicated channel may arrive in Node B.~~

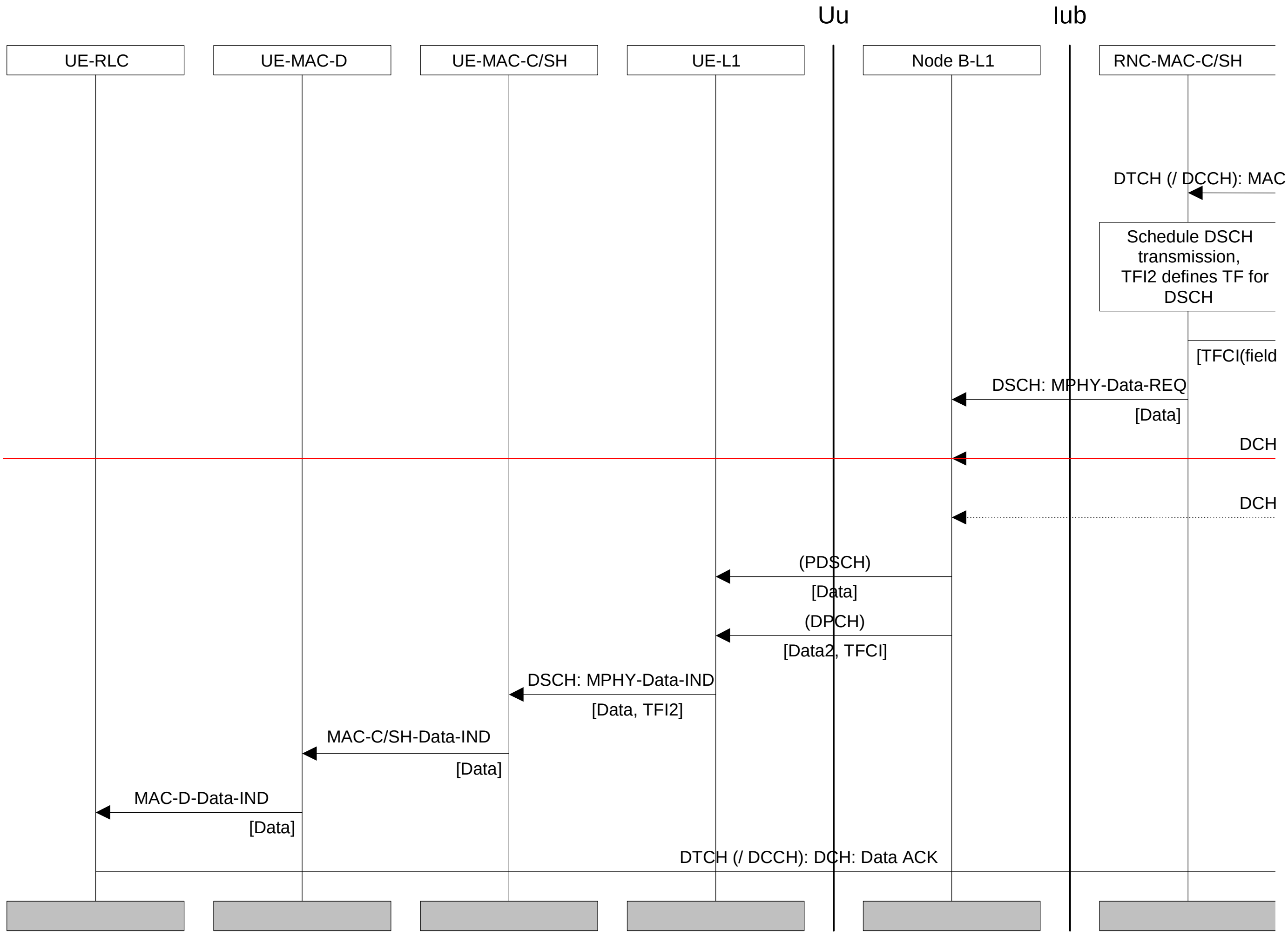
~~All TFIs for DCHs (e.g. 'TFI1')) are translated into TFCI(field1). TFCI(field2) carries corresponding information for the DSCH. TFCI(field1) and TFCI(field2) are combined in the physical layer using 'hard' split of the TFCI-word and transmitted on the DPCCH (dedicated physical control channel) of the associated DPCH (dedicated physical channel). The DSCH data is transmitted separately on the PDSCH (physical downlink shared channel). TFCI(field2) is used to decode DSCH data, which is then forwarded through MAC-c/sh and MAC-d to the receiving RLC. An acknowledgement is eventually sent by the UE-RLC mapped to a DCH, unless the DCH is released before the acknowledgement.~~

6.3.2 Void~~Acknowledged-mode data transmission on DSCH using logical split of TFCI-word~~

~~NOTE: For this release of the specification this example is only valid in the case where SRNC = CRNC.~~

~~Figure 20 shows an example of acknowledged-mode data transmission on DSCH. First RLC in SRNC requests data transmission from MAC-d. MAC-d passes the data on to MAC-c/sh, which schedules the DSCH transmission and determines the TFI2 for the data. TFCI(field2) and CFN (connection frame number) for transmission are given back to MAC-d.~~

~~MAC-c/sh transmits the DSCH data while MAC-d transmits all TFIs synchronised with the transmission of any DCH data and TFIs intended for transmission in the same frame. TFCI(field2)for the DSCH and TFCI(field1)for the DCH are combined into the same TFCI on the physical layer using 'logical' split of TFCI-word and transmitted on the DPCCH (dedicated physical control channel) of the associated DPCH (dedicated physical channel). The DSCH data is transmitted separately on the PDSCH (physical downlink shared channel). TFCI(field2)is used to decode DSCH data, which is then forwarded through MAC-c/sh and MAC-d to the receiving RLC. An acknowledgement is eventually sent by the UE-RLC mapped to a DCH, unless the DCH is released before the acknowledgement.~~



~~Figure 20: Example of acknowledged-mode data transmission on DSCH~~

3GPP TSG-RAN Working Group 2 #47
Athens, Greece, 9 – 13 May 2005

Tdoc ⌘ R2-051609

CR-Form-v7

CHANGE REQUEST

⌘	**25.303**	**CR**	**0078**	⌘ **rev**	**-**	⌘	Current version:	**6.2.0** ⌘

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

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

Title:	⌘ Feature Clean-up: Removal of DSCH (FDD)		
Source:	⌘ RAN WG2		
Work item code:	⌘ TEI5	***Date:*** ⌘	10/05/2005
Category:	⌘ **C**	***Release:*** ⌘	REL-6
	Use one of the following categories: ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *Rel-4 (Release 4)* *Rel-5 (Release 5)* *Rel-6 (Release 6)*

Reason for change:	⌘ Removal of DSCH for FDD
Summary of change:	⌘ Removal of DSCH for FDD
Consequences if not approved:	⌘ DSCH for FDD mode will remain specified

Clauses affected:	⌘ 6.3.1, 6.3.2

		Y	**N**		
Other specs	⌘	**X**		Other core specifications ⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
affected:		**X**		Test specifications	34.108, 34.123
				O&M Specifications	
Other comments:	⌘				

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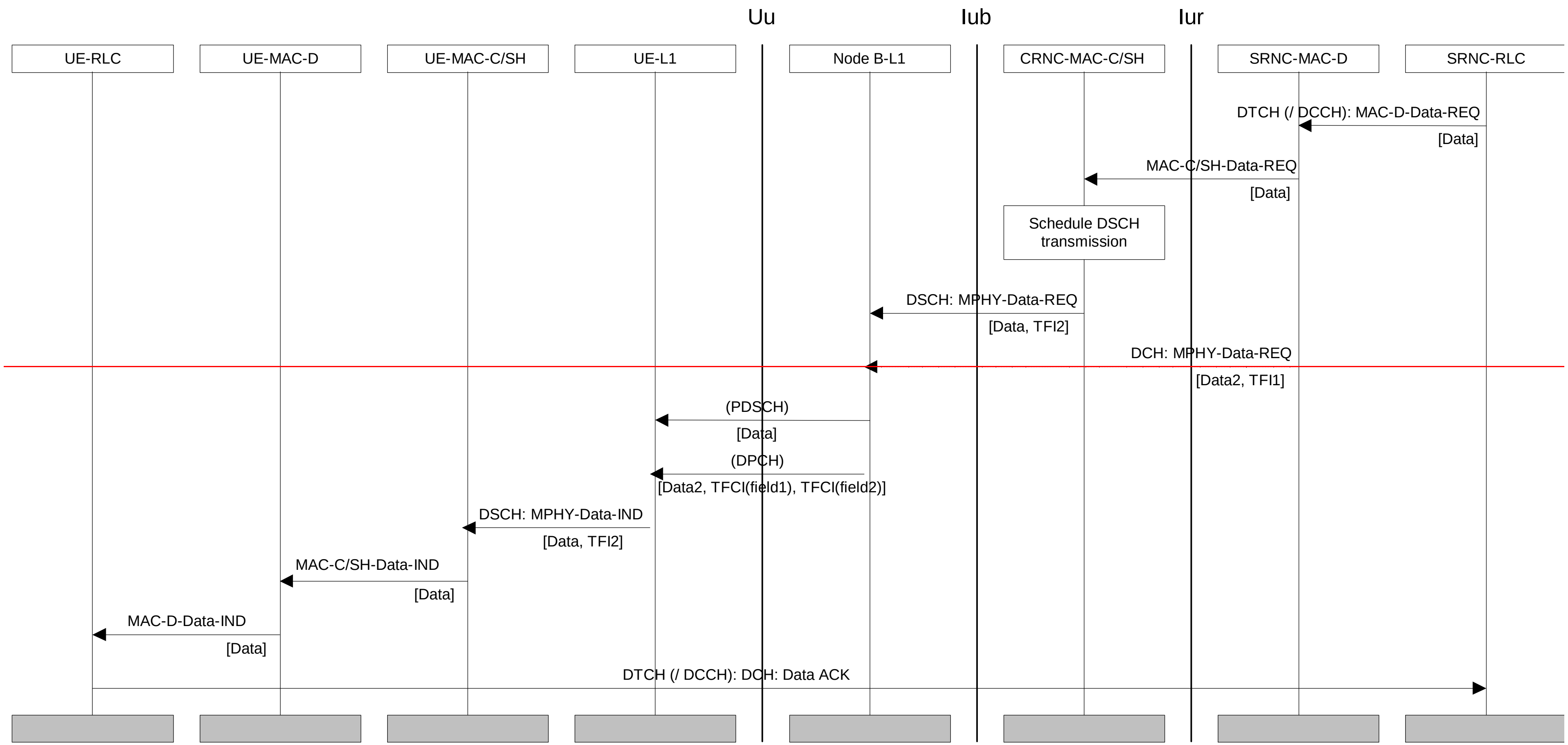
6.3.1 Void~~Acknowledged-mode data transmission on DSCH using hard split of TFCI-word~~



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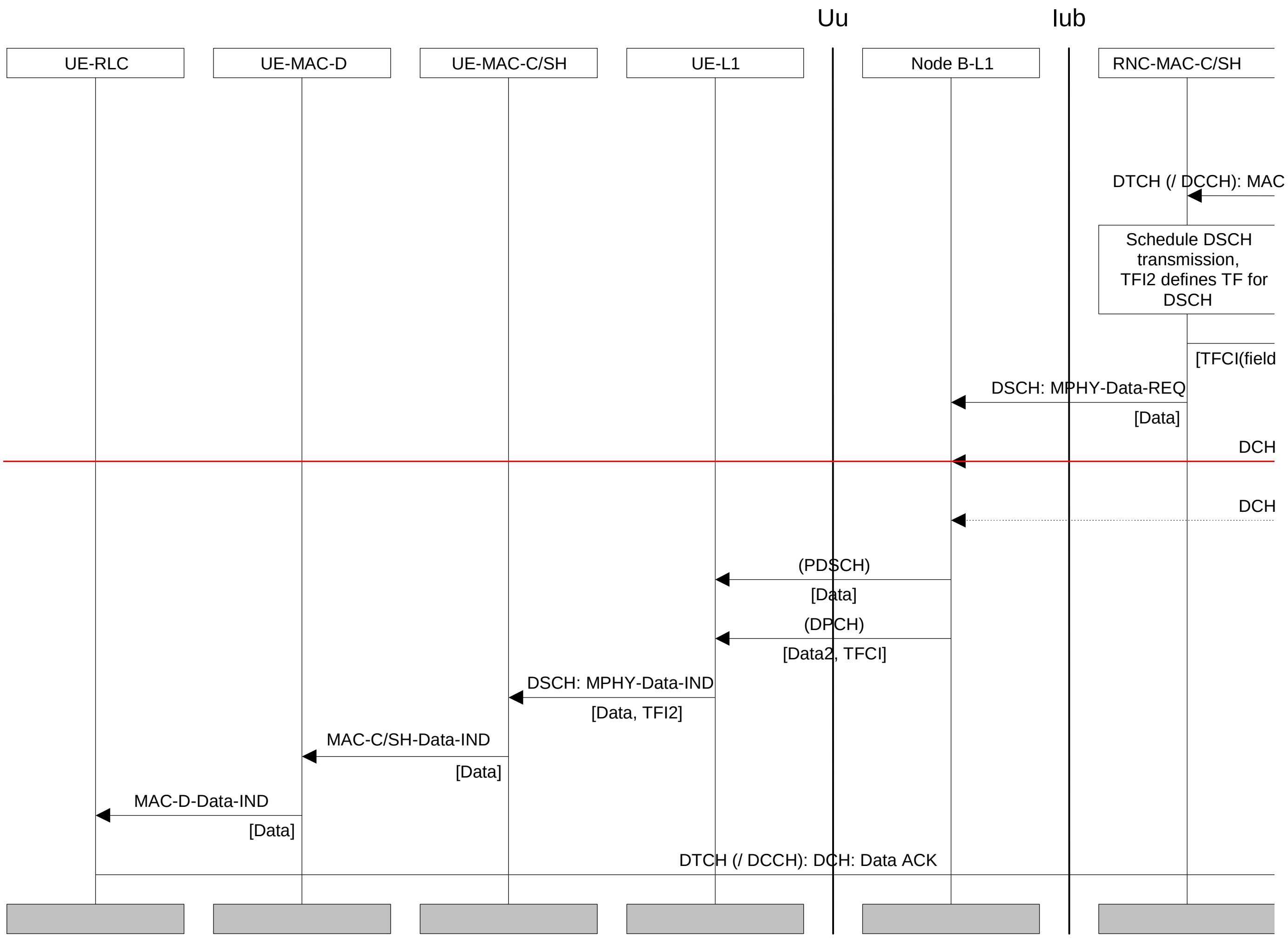
~~NOTE: For this release of the specification this example is only valid in the case where SRNC = CRNC.~~

~~Figure 20 shows an example of acknowledged-mode data transmission on DSCH. First RLC in SRNC requests data transmission from MAC-d. MAC-d passes the data on to MAC-c/sh, which schedules the DSCH transmission and determines the TFI2 for the data. TFCI(field2) and CFN (connection frame number) for transmission are given back to MAC-d.~~

~~MAC-c/sh transmits the DSCH data while MAC-d transmits all TFIs synchronised with the transmission of any DCH data and TFIs intended for transmission in the same frame. TFCI(field2)for the DSCH and TFCI(field1)for the DCH are combined into the same TFCI on the physical layer using 'logical' split of TFCI-word and transmitted on the DPCCH (dedicated physical control channel) of the associated DPCH (dedicated physical channel). The DSCH data is transmitted separately on the PDSCH (physical downlink shared channel). TFCI(field2)is used to decode DSCH data, which is then forwarded through MAC-c/sh and MAC-d to the receiving RLC. An acknowledgement is eventually sent by the UE-RLC mapped to a DCH, unless the DCH is released before the acknowledgement.~~



~~Figure 20: Example of acknowledged-mode data transmission on DSCH~~

3GPP TSG-RAN Working Group 2 #47
Athens, Greece, 9 – 13 May 2005

Tdoc ⌘ R2-051610

CR-Form-v7

CHANGE REQUEST

⌘	**25.306**	**CR**	**0110**	⌘ **rev**	**-**	⌘ Current version:	**5.10.0** ⌘

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

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

Title: ⌘	Feature Clean-up: Removal of DSCH (FDD)		
Source: ⌘	RAN WG2		
Work item code: ⌘	TEI5	***Date:*** ⌘	10/05/2005
Category: ⌘	**C**	***Release:*** ⌘	REL-5
	Use one of the following categories: ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *Rel-4 (Release 4)* *Rel-5 (Release 5)* *Rel-6 (Release 6)*

Reason for change: ⌘	Removal of DSCH for FDD
Summary of change: ⌘	Removal of DSCH for FDD
Consequences if not approved: ⌘	DSCH for FDD mode will remain specified

Clauses affected: ⌘			4.5.3, 4.11, 5.1, 5.2.2, 5.2.3,		
	Y	**N**			
Other specs affected: ⌘	**X**		Other core specifications	⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
	X		Test specifications		34.108, 34.123
			O&M Specifications		
Other comments: ⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

4 UE radio access capability parameters

In the following the UE radio capability parameters are defined. When using the RRC configuration parameters, UTRAN needs to respect the UE capabilities. Only parameters for which there is a need to set different values for different UEs are considered as UE capability parameters. Therefore, the capabilities that are the same for all UEs, including baseline capabilities, are not listed here.

UTRAN needs to respect the UE capabilities when configuring the RBs. Actions in the UE when capabilities are in conflict with a UTRAN request are specified in RRC.

4.1 PDCP parameters

Support for RFC 2507

This parameter defines whether the UE supports header compression according to RFC 2507 as defined in [1] or not.

Support for RFC 3095

This parameter defines whether the UE supports header compression according to RFC 3095 as defined in [1] or not.

Support for RFC 3095 context relocation

This parameter defines whether the UE supports RFC 3095 context relocation as defined in [1] or not.

Support for loss-less SRNS relocation

Defines whether the UE supports loss-less SRNS relocation as defined in [1] or not.

Support for lossless DL RLC PDU size change

Defines whether the UE supports lossless DL RLC PDU size change as defined in [1] or not.

Maximum header compression context space

This parameter is only applicable if the UE supports header compression according to RFC 2507. It is defined as the maximum header compression context size supported by the UE for all RFC 2507 protocol entities for all RBs. UTRAN controls that the UE capability can be fulfilled through the following parameters:

1. MAX_HEADER;
2. TCP_SPACE;
3. NON_TCP_SPACE;

The context space for a single RFC 2507 protocol entity calculates from:

(2 * (TCP_SPACE + 1 + NON_ TCP_SPACE + 1) * MAX_HEADER).

The following criterion must be fulfilled in the configuration:

Maximum header compression context space ≥ sum of context spaces for all RFC 2507 protocol entities for all RBs.

Maximum number of ROHC context sessions

This parameter is only applicable if the UE supports header compression according to RFC3095. It is defined as the maximum number of header compression context sessions supported by the UE.

Support for Reverse Decompression

This parameter determines whether reverse decompression is supported or not and the maximum number of packets that can be reverse decompressed by the decompressor in the UE.

4.2 Void

4.3 RLC and MAC-hs parameters

Total RLC AM and MAC-hs buffer size

When HS-DSCH is not configured this is defined as the maximum total buffer size across all RLC AM entities supported by the UE. When HS-DSCH is configured this is defined as the maximum total buffer size across all MAC-hs reordering entities and all RLC AM entities supported by the UE. The memory signalled in this capability can be dynamically shared by RLC AM entities and MAC-hs reordering entities at any time. UTRAN controls that the UE capability can be fulfilled through the following parameters:

1. The number of RLC AM entities configured (no explicit RRC parameter);
2. UL PDU size;
3. DL PDU size;
4. Transmission window size (in number of PDUs);
5. Receiving window size (in number of PDUs);

The following criterion must be fulfilled in the configuration at all times:

$$\sum_{i=1}^{\#RLC\_AM\_entities} Transmission\_window\_size_i \bullet (UL\_AMD\_PDU\_size_i - AMD\_Header\_size) + \sum_{i=1}^{\#RLC\_AM\_entities} Receiving\_window\_size_i \bullet (DL\_AMD\_PDU\_size_i - AMD\_Header\_size) + \leq Total\_buffer\_size$$

In order to evaluate memory consumption in the UE, it shall be assumed that a stored MAC-hs PDU of N bits requires a memory equal to (N – 10) bits.

The UE shall only consider itself in a memory shortage situation as defined in [9] [10] when the amount of stored AM RLC PDUs and MAC-hs PDUs exceeds its capability.

Maximum number of AM entities

This is defined as the maximum number of RLC AM entities supported by the UE.

Maximum RLC AM Window Size

This is defined as the maximum transmission and receiving window size of RLC AM entities supported by the UE.

4.4 Void

4.5 PHY parameters

4.5.1 Transport channel parameters in downlink

Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant

NOTE 1: "Being received" refers to all bits in the active TFC within the TFCS over all simultaneous transport channels received by the UE. "Arbitrary time instant" means that the time instant corresponding to the highest sum of number of bits is relevant. This note also applies to similar parameter definitions below.

This parameter is defined as:

$$\Sigma_i(N_i)$$

where N_i is defined as the number of bits in transport block #i, and the sum is over all transport blocks being received at an arbitrary time instant. All transport blocks that are to be simultaneously received by the UE on DCH, FACH, PCH and DSCH transport channels are included in the parameter.

NOTE 2: A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* * *Transport Block size* over all simultaneous transport channels is larger than what the UE capability indicates.

This UE capability also limits the maximum number of bits before de-rate-matching as follows: The maximum number of bits before de-rate matching being received at an arbitrary time instant (DPCH, PDSCH, S-CCPCH) shall be less or equal to 6.6 times the Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant.

Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant.

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be convolutionally coded.

Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant.

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be turbo coded.

Maximum number of simultaneous transport channels

This is defined as the maximum number of downlink Transport Channels that the UE is capable to process simultaneously, not taking into account the rate of each Transport Channel.

NOTE: The number of simultaneous transport channels affects how the total memory space and processing capacity can be shared among the transport channels. A UE does not need to support more simultaneous transport channels than the UE capability allows for.

Maximum number of simultaneous CCTrCH

This is defined as the maximum number of downlink CCTrCH that the UE is capable to process simultaneously. CCTrCH should be interpreted as consisting of DCH, FACH or DSCH.

Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval

All transport blocks that are to be simultaneously received by the UE on DCH, FACH, PCH and DSCH transport channels are included in the parameter.

NOTE: Relates to processing requirements for CRC in downlink. A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* is larger than what the UE capability indicates. In the case of several CCTrCHs, the combination of the TFCs within the respective TFCSs for simultaneous TTIs at an arbitrary time instant shall not exceed this parameter.

Maximum number of TFC

Defines the maximum number of transport format combinations the UE can store, where all transport format combinations for all downlink transport format combination sets are counted. Different channelisation code mapping shall be counted as separate TFC in case of DSCH.

Maximum number of TF

The maximum total number of downlink transport formats the UE can store, where all transport formats for all downlink transport channels are counted.

Support for turbo decoding

Defines whether turbo decoding is supported or not.

Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI

Defines the maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI the UE is capable of receiving within a HS-DSCH TTI.

4.5.2 Transport channel parameters in uplink

Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant

NOTE 1: "Being transmitted" refers to all bits in the active TFC within the TFCS over all simultaneous transport channels transmitted by the UE. "Arbitrary time instant" means that the time instant corresponding to the highest sum of number of bits is relevant. This note also applies to similar parameter definitions below.

This parameter is defined as:

$$\Sigma_i(N_i)$$

where N_i is defined as the number of bits in transport block #i, and the sum is over all transport blocks being transmitted at an arbitrary time instant.

NOTE 2: This parameter is related to memory requirements for uplink data received from MAC before it can be transmitted over the radio interface. As shown in Figure 4.1 the worst case occurs for the maximum TTI. A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* * *Transport Block size* over all simultaneous transport channels is larger than what the UE capability indicates.

Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be convolutionally coded.

Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be turbo coded.

Maximum number of simultaneous transport channels

This is defined as the maximum number of uplink transport channels that the UE is capable to process simultaneously, not taking into account the rate of each transport channel.

NOTE: A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* * *Transport Block size* over all simultaneous transport channels is larger than what the UE capability indicates.

Maximum number of simultaneous CCTrCH

This parameter is applicable for TDD only. For FDD there is always only one CCTrCH at a time. The parameter is defined as the maximum number of uplink CCTrCH that the UE is capable to process simultaneously.

Maximum total number of transport blocks transmitted within TTIs that start at the same time

Defines the maximum number of transport blocks that the UE is capable to transmit within TTIs that start at the same time. An example is shown in figure 4.1.

NOTE: Relates to processing requirements for CRC in uplink.

Maximum number of TFC

Defines the maximum number of transport format combinations the UE can store, where all transport format combinations for all uplink transport format combination sets are counted.

Maximum number of TF

The maximum total number of uplink transport formats the UE can store, where all transport formats for all uplink transport channels are counted.

Support for turbo encoding

Defines whether turbo encoding is supported or not.

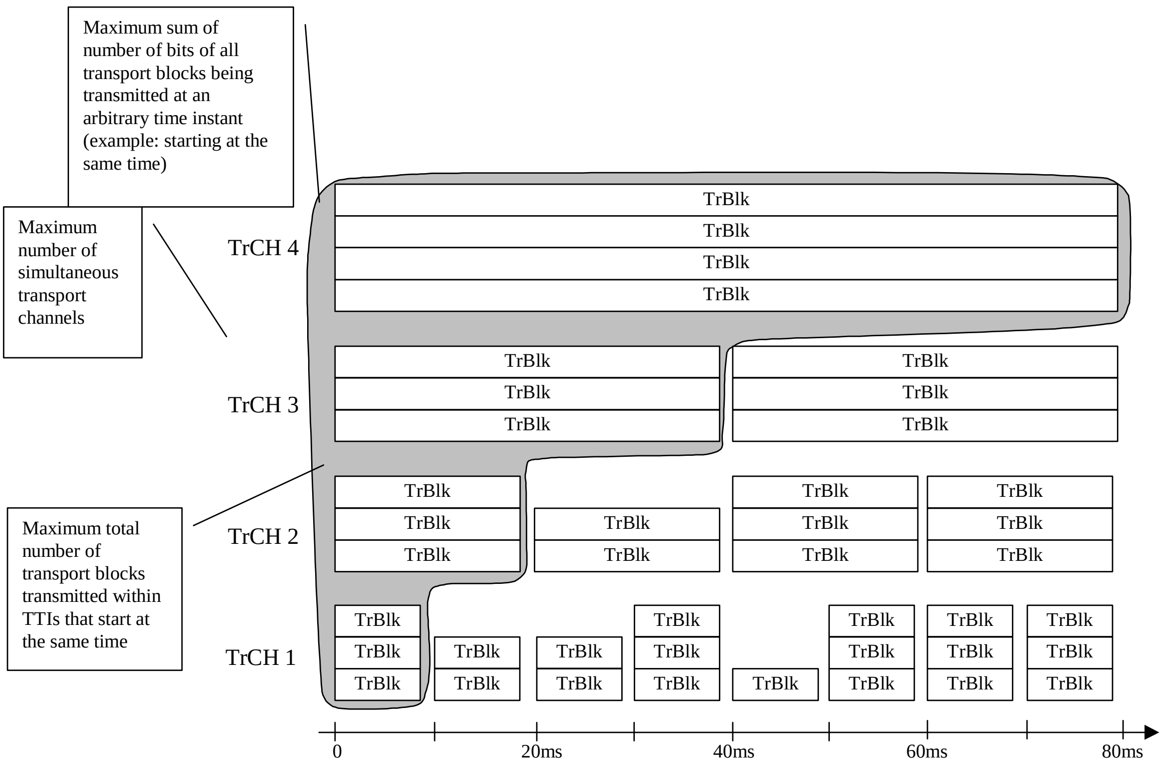


Figure 4.1: UE transport channel processing limitations in uplink

4.5.3 FDD Physical channel parameters in downlink

Maximum number of DPCH~~/PDSCH~~ codes to be simultaneously received

Defines the number of codes the UE is capable of receiving in parallel. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability. The capability does not include codes used for S-CCPCH.

Maximum number of physical channel bits received in any 10 ms interval (DPCH, ~~PDSCH,~~ S-CCPCH)

Defines the number of physical channel bits the UE is capable of receiving. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability.

The number of DPCH channel bits indicates the capability of the UE when operating in non-compressed mode.

The parameter also indicates the capability of the UE to support compressed mode by spreading factor reduction as follows. The UE shall:

- for parameter values up to and including 9600 bits:
  - support compressed mode by spreading factor reduction when operating at any value up to the reported capability.
- for parameter values greater than 9600 bits:
  - support compressed mode by spreading factor reduction when operating at any value up to the greater of:
    - half the reported capability; or
    - 9600bits.

NOTE: Compressed mode by spreading factor reduction is not applicable when operating at spreading factor 4.

Support for SF 512

Defines whether the UE supports spreading factor 512 in downlink or not.

~~Support of PDSCH~~

~~Defines whether the UE supports PDSCH or not.~~

Support of HS-PDSCH

Defines whether the UE supports HS-PDSCH or not.

Simultaneous reception of SCCPCH and DPCH

Defines whether the UE supports simultaneous reception of SCCPCH and DPCH or not.

NOTE: Simultaneous reception of SCCPCH and DPCH, i.e. simultaneous reception of FACH and DCH is required for e.g. DRAC procedure

~~Simultaneous reception of SCCPCH, DPCH and PDSCH~~

~~Defines whether the UE supports simultaneous reception of SCCPCH, DPCH and PDSCH or not. The PDSCH part of this capability is only relevant if the UE supports PDSCH, as covered by the capability "Support of PDSCH".~~

~~NOTE: Simultaneous reception of SCCPCH, DPCH and PDSCH, i.e. simultaneous reception of FACH, DCH and DSCH is required for e.g. simultaneous use of DSCH and the DRAC procedure.~~

Simultaneous reception of SCCPCH, DPCH and HS-PDSCH

Defines whether the UE supports simultaneous reception of SCCPCH, DPCH and HS-PDSCH or not. The HS-PDSCH part of this capability is only relevant if the UE supports HS-PDSCH, as covered by the capability "Support of HS-PDSCH".

NOTE: Simultaneous reception of SCCPCH, DPCH and HS-PDSCH, i.e. simultaneous reception of FACH, DCH and HS-PDSCH is required for e.g. simultaneous use of HS-PDSCH and the DRAC procedure.

Maximum number of simultaneous S-CCPCH radio links

Defines the maximum number of radio links on which the UE is capable of receiving S-CCPCH simultaneously.

Support of dedicated pilots for channel estimation

Defines whether the UE supports dedicated pilots for channel estimation or not.

Support of dedicated pilots for channel estimation of HS-DSCH

Defines whether the UE supports dedicated pilots for channel estimation of HS-PDSCH and HS-SCCH or not.

Maximum number of HS-DSCH codes received

Defines the maximum number of HS-DSCH codes the UE is capable of receiving.

Total number of soft channel bits in HS-DSCH

Defines the maximum number of soft channel bits over all HARQ processes. When explicit signalling is used, UTRAN configures Process Memory Size for each HARQ process so that the following criterion must be fulfilled in the configuration:

Total number of soft channel bits in HS-DSCH ≥ sum of Process Memory Size of all the HARQ processes.

Minimum inter-TTI interval in HS-DSCH

Defines the distance from the beginning of a TTI to the beginning of the next TTI that can be assigned to the UE.

4.5.4 FDD physical channel parameters in uplink

Maximum number of DPDCH bits per 10 ms

Defines the maximum number of the DPDCH bits the UE is capable to transmit per 10 ms.

If the reported capability is lower than 9600, the number of DPDCH channel bits indicates the capability of the UE when operating in non-compressed mode; if the reported capability is equal to or greater than 9600 it indicates the maximum capability of the UE considering both compressed and non compressed mode operation.

NOTE 1: This capability combines the 'Max number of DPDCH' and 'Minimum SF' capabilities into one capability. Note that no flexibility is lost due to this, as multiple DPDCH is only used for SF = 4, i.e. when the number of DPDCH bits exceed a certain value.

NOTE 2: Compressed mode by spreading factor reduction is not applicable when operating at spreading factor 4.

Support of PCPCH

Defines whether the UE supports PCPCH or not.

NOTE 3: When CPCH is supported, then simultaneous DPCCH & SCCPCH reception is needed.

4.5.5 TDD physical channel parameters in downlink

4.5.5.1 3.84 Mcps TDD physical channel parameters in downlink

Maximum number of timeslots per frame

Defines the maximum number of timeslots per frame that the UE can receive.

Maximum number of physical channels per frame

This parameter defines how many physical channels can be received during one frame. The distribution of the received physical channels on the received timeslots can be arbitrary.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PDSCH

Defines whether PDSCH is supported or not.

Support of HS-PDSCH

Defines whether the UE supports HS-PDSCH or not.

Maximum number of physical channels per timeslot

This parameter defines how many physical channels can be received within one timeslot.

Maximum number of HS-DSCH codes per timeslot

This is the maximum number of channelisation codes that can be used for the HS-DSCH in a given downlink timeslot. Where the parameter "Maximum number of physical channels per timeslot" is larger than "Maximum number of HS-DSCH codes per timeslot", this indicates that the UE is able to receive HS-SCCH or associated DPCH transmissions in the same timeslot as HS-PDSCHs, even if the maximum HS-DSCH code allocation for that slot is being used.

Maximum number of HS-DSCH timeslots per TTI

This is the maximum number of timeslots in a given 10 ms frame that can be used for HS-DSCH transmissions.

Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI

Defines maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI the UE is capable of receiving within an HS-DSCH TTI.

Total number of soft channel bits

Defines the maximum number of soft channel bits over all HARQ processes.

4.5.5.2 1.28 Mcps TDD physical channel parameters in downlink

Maximum number of timeslots per subframe

Defines the maximum number of timeslots per subframe that the UE can receive.

Maximum number of physical channels per subframe

This parameter defines how many physical channels can be received during one subframe. The distribution of the received physical channels on the received timeslots can be arbitrary.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PDSCH

Defines whether PDSCH is supported or not.

Support of HS-PDSCH

Defines whether the UE supports HS-PDSCH or not.

Maximum number of physical channels per timeslot

This parameter defines how many physical channels can be received within one timeslot.

Support of 8PSK

Defines whether 8PSK modulation is supported or not.

Maximum number of HS-DSCH codes per timeslot

This is the maximum number of channelisation codes that can be used for the HS-DSCH in a given downlink timeslot. Where the parameter "Maximum number of physical channels per timeslot" is larger than "Maximum number of HS-DSCH codes per timeslot", this indicates that the UE is able to receive HS-SCCH or associated DPCH transmissions in the same timeslot as HS-PDSCHs, even if the maximum HS-DSCH code allocation for that slot is being used.

Maximum number of HS-DSCH timeslots per TTI

This is the maximum number of timeslots in a given 5 ms subframe that can be used for HS-DSCH transmissions.

Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI

Defines maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI the UE is capable of receiving within an HS-DSCH TTI.

Total number of soft channel bits

Defines the maximum number of soft channel bits over all HARQ processes.

4.5.6 TDD physical channel parameters in uplink

4.5.6.1 3.84 Mcps TDD physical channel parameters in uplink

Maximum Number of timeslots per frame

Defines the maximum number of timeslots per frame that the UE can transmit.

Maximum number of physical channels per timeslot

Defines the maximum number physical channels transmitted in parallel during one timeslot.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PUSCH

Defines whether PUSCH is supported or not.

4.5.6.2 1.28 Mcps TDD physical channel parameters in uplink

Maximum Number of timeslots per subframe

Defines the maximum number of timeslots per subframe that the UE can transmit.

Maximum number of physical channels per timeslot

Defines the maximum number of physical channels transmitted in parallel during one timeslot.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PUSCH

Defines whether PUSCH is supported or not.

Support of 8PSK

Defines whether 8PSK modulation is supported or not.

4.5.7 RF parameters

UE power class

Indicates the UE power class as defined in [4] for FDD and [5] for TDD.

Radio frequency bands

This parameter is only applicable for TDD. It defines the uplink and downlink frequency bands supported by the UE as defined in [5].

Tx/Rx frequency separation

This parameter is only applicable for FDD and only if the UE is operating in frequency band a as defined in [4]. It defines the uplink/downlink frequency separations supported by the UE.

4.6 Multi-mode related parameters

Support of UTRA FDD

Defines whether UTRA FDD is supported.

There is no explicit configuration parameter.

Support of UTRA TDD 3.84 Mcps

Defines whether UTRA TDD 3.84 Mcps is supported.

There is no explicit configuration parameter.

Support of UTRA TDD 1.28 Mcps

Defines whether UTRA TDD 1.28 Mcps is supported.

There is no explicit configuration parameter.

4.7 Multi-RAT related parameters

Support of GSM

Defines whether GSM is supported or not. There is a separate parameter for each GSM frequency band.

Support of multi-carrier

Defines whether multi-carrier is supported or not.

Support of UTRAN to GERAN NACC

Defines whether UTRAN to GERAN NACC is supported or not.

4.7a Security parameters

Ciphering algorithm capability

This capability defines the ciphering algorithms supported by the UE. In this version of the protocol, the UE shall support UEA0 and UEA1.

Integrity protection algorithm capability

This capability defines the integrity protection algorithms supported by the UE. In this version of the protocol, the UE shall support UIA1.

4.8 UE positioning related parameters

Standalone location method(s) supported

Defines if a UE can measure its location by some means unrelated to UTRAN (e.g. if the UE has access to a standalone GPS receiver).

OTDOA UE based method supported

Defines if a UE supports the OTDOA UE based schemes.

Network Assisted GPS support

Defines if a UE supports either of the two types of assisted GPS schemes, namely "Network based", "UE based", "Both", or "none".

GPS reference time capable

Defines if a UE has the capability to measure GPS reference time as defined in [6].

Support for IPDL

Defines if a UE has the capability to use IPDL to enhance its "SFN-SFN observed time difference –type 2" measurement.

Support for Rx-Tx time difference type 2

Defines if a UE has the capability to perform the Rx-Tx time difference type 2 measurement.

Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states

Defines if UE Positioning measurements using the assisted GPS method are valid in CELL_PCH and URA_PCH RRC states.

Support for SFN-SFN observed time difference type 2 measurement

Defines if the UE has the capability to perform the SFN-SFN observed time difference type 2 measurement.

4.9 Measurement related capabilities

Need for downlink compressed mode

Defines whether the UE needs compressed mode in the downlink in order to perform inter-frequency or inter-RAT measurements. There are separate parameters for measurements on each UTRA mode, on each RAT, and in each frequency band.

Need for uplink compressed mode

Defines whether the UE needs compressed mode in the uplink in order to perform inter-frequency or inter-RAT measurements. There are separate parameters for measurements on each UTRA mode, on each RAT, and in each frequency band.

4.10 General capabilities

Access stratum release indicator

This is defined as the release of the UTRA layer 1, 2, and 3 specifications that is applicable for the UE e.g. R'99, Rel-4.

4.11 DL capabilities with simultaneous HS-DSCH

DL capability with simultaneous HS-DSCH configuration

Defines the modification of reception capabilities in downlink in terms of DPCH in case an HS-DSCH is configured simultaneously. The parameter values in table 4.11-1 replace the signalled values in case an HS-DSCH is configured simultaneously depending on the setting of the parameter DL DPCH capability with simultaneous HS-DSCH configuration. Other parameters are valid irrespective whether HS-DSCH is configured simultaneously or not.

Table 4.11-1: DL capabilities with simultaneous HS-DSCH

DL DPCH capability with simultaneous HS-DSCH configuration	32 kbps	64 kbps	128 kbps	384 kbps
Transport channel parameters				
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640	3840	3840	6400
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	NA	3840	3840	6400
Maximum number of simultaneous transport channels	8	8	8	8
Maximum number of simultaneous CCTrCH (FDD)	1	1	1	1
Maximum number of simultaneous CCTrCH (TDD)	2	3	3	3
Maximum total number of transport blocks received within TTIs that end at the same time	8	8	16	32
Maximum number of TFC	32	48	96	128
Maximum number of TF	32	64	64	64
Support for turbo decoding	No	Yes	Yes	Yes

DL DPCH capability with simultaneous HS-DSCH configuration	32 kbps	64 kbps	128 kbps	384 kbps
Physical channel parameters (FDD)				
Maximum number of DPCH~~/PDSCH~~ codes to be simultaneously received	1	1	1	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH~~, PDSCH~~, S-CCPCH).	1200	2400	4800	19200
~~Support of PDSCH~~	~~No~~	~~No~~	~~No~~	~~No~~
Physical channel parameters (TDD 3.84 Mcps)				
Maximum number of timeslots per frame	1	2	4	5
Maximum number of physical channels per frame	8	9	14	28
Support of PDSCH	No	No	No	No
Maximum number of physical channels per timeslot	8	9	9	9
Physical channel parameters (TDD 1.28 Mcps)				
Maximum number of timeslots per subframe	1	2	3	4
Maximum number of physical channels per subframe	8	12	18	43
Support of PDSCH	No	No	No	No
Maximum number of physical channels per timeslot	8	11	14	14

5 Possible UE radio access capability parameter settings

5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

		UE radio access capability parameter	Value range
PDCP parameters		Support for RFC 2507	Yes/No
		Support for RFC 3095	Yes/No
		Support for RFC 3095 context relocation	Yes/No
		Support for loss-less SRNS relocation	Yes/No
		Support for loss-less DL RLC PDU size change	Yes/No
		Maximum header compression context space	1024, 2048, 4096, 8192, 16384, 32768, 65536, 131072 bytes
		Maximum number of ROHC context sessions	2, 4, 8, 12, 16, 24, 32, 48, 64, 128, 256, 512, 1024, 16384
		Support for Reverse Decompression	Not supported, 1..65535
RLC and MAC-hs parameters		Total RLC AM and MAC-hs buffer size	2, 10, 50, 100, 150, 200, 300, 400, 500, 750, 1000 kBytes
		Maximum number of AM entities	3, 4, 5, 6, 8, 16, 30
		Maximum RLC AM window size	2047, 4095
PHY parameters	Transport channel parameters in downlink	Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	4, 8, 16, 32
		Maximum number of simultaneous CCTrCH	1, 2, 3, 4, 5, 6, 7, 8

		UE radio access capability parameter	Value range
		Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval	4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC	16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes/No
	Transport channel parameters in uplink	Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	2, 4, 8, 16, 32
		Maximum number of simultaneous CCTrCH of DCH type (TDD only)	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks transmitted within TTIs that start at the same time	2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC	4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo encoding	Yes/No
	FDD Physical channel parameters in downlink	Maximum number of DPCH~~/PDSCH~~ codes to be simultaneously received	1, 2, 3, 4, 5, 6, 7, 8
		Maximum number of physical channel bits received in any 10 ms interval (DPCH~~, PDSCH~~, S-CCPCH)	600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800
		Support for SF 512	Yes/No
		~~Support of PDSCH~~	~~Yes/No~~
		Support of HS-PDSCH	Yes/No
		Simultaneous reception of SCCPCH and DPCH	Yes/No
		~~Simultaneous reception of SCCPCH, DPCH and PDSCH~~	~~Yes/No~~
		Simultaneous reception of SCCPCH, DPCH and HS-PDSCH	Yes/No
		Maximum number of simultaneous S-CCPCH radio links	1 NOTE: Only the value 1 is part of this release of the specification
		Support of dedicated pilots for channel estimation	Yes
		Support of dedicated pilots for channel estimation of HS-DSCH	Yes/No
	FDD Physical channel parameters in uplink	Maximum number of DPDCH bits transmitted per 10 ms	600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600
		Support of PCPCH	Yes/No
	TDD 3.84 Mcps physical channel parameters in downlink	Maximum number of timeslots per frame	1..14
		Maximum number of physical channels per frame	1, 2, 3..224
		Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Support of HS-PDSCH	Yes/No
		Maximum number of physical channels per timeslot	1..16
	TDD 3.84 Mcps physical channel	Maximum Number of timeslots per frame	1..14

		UE radio access capability parameter	Value range
	parameters in uplink	Maximum number of physical channels per timeslot	1, 2
		Minimum SF	16, 8, 4, 2, 1
		Support of PUSCH	Yes/No
	TDD 1.28 Mcps physical channel parameters in downlink	Maximum number of timeslots per subframe	1..6
		Maximum number of physical channels per subframe	1, 2, 3, …, 96
		Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Support of HS-PDSCH	Yes/No
		Maximum number of physical channels per timeslot	1..16
		Support 8PSK	Yes/No
	TDD 1.28 Mcps physical channel parameters in uplink	Maximum number of timeslots per subframe	1..6
		Maximum number of physical channels per timeslot	1, 2
		Minimum SF	16, 8, 4, 2, 1
		Support of 8PSK	Yes/No
		Support of PUSCH	Yes/No
RF parameters	FDD RF parameters	UE power class	3, 4 NOTE: Only power classes 3 and 4 are part of this release of the specification
		Tx/Rx frequency separation	190 Mhz 174.8 MHz to 205.2 MHz 134.8 MHz to 245.2 MHz
RF parameters	TDD 3.84 Mcps RF parameters	UE power class	2, 3 NOTE: Only power classes 2 and 3 are part of this release of the specification
		Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)
	TDD 1.28 Mcps RF parameters	UE power class	2, 3
		Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)
Multi-mode related parameters		Support of UTRA FDD	Yes/No
		Support of UTRA TDD 3.84 Mcps	Yes/No
		Support of UTRA TDD 1.28 Mcps	Yes/No
Multi-RAT related parameters		Support of GSM	Yes/No (per GSM frequency band)
		Support of multi-carrier	Yes/No
		Support of UTRAN to GERAN Network Assisted Cell Change	Yes/No
Security parameters		Support of ciphering algorithm UEA0	Yes
		Support of ciphering algorithm UEA1	Yes
		Support of integrity protection algorithm UIA1	Yes
UE positioning related parameters		Standalone location method(s) supported	Yes/No
		Network assisted GPS support	Network based / UE based / Both/ None
		GPS reference time capable	Yes/No
		Support for IPDL	Yes/No
		Support for OTDOA UE based method	Yes/No
		Support for Rx-Tx time difference type 2 measurement	Yes/No
		Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states	Yes
		Support for SFN-SFN observed time difference type 2 measurement	Yes/No
Measurement related capabilities		Need for downlink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)

	UE radio access capability parameter	Value range
	Need for uplink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
General capabilities	Access Stratum release indicator	R99, REL-4, REL-5
DL capabilities with simultaneous HS-DSCH	DL capability with simultaneous HS-DSCH configuration	32 kbps, 64 kbps, 128 kbps, 384 kbps

Table 5.1a: FDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes received	Minimum inter-TTI interval	Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI	Total number of soft channel bits
Category 1	5	3	7298	19200
Category 2	5	3	7298	28800
Category 3	5	2	7298	28800
Category 4	5	2	7298	38400
Category 5	5	1	7298	57600
Category 6	5	1	7298	67200
Category 7	10	1	14411	115200
Category 8	10	1	14411	134400
Category 9	15	1	20251	172800
Category 10	15	1	27952	172800
Category 11	5	2	3630	14400
Category 12	5	1	3630	28800

UEs of Categories 11 and 12 support QPSK only.

Table 5.1b: RLC and MAC-hs parameters for FDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 1	6	50
Category 2	6	50
Category 3	6	50
Category 4	6	50
Category 5	6	50
Category 6	6	50
Category 7	8	100
Category 8	8	100
Category 9	8	150
Category 10	8	150
Category 11	6	50
Category 12	6	50

Table 5.1c: 1.28 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes per timeslot	Maximum number of HS-DSCH timeslots per TTI	Maximum number of HS-DSCH transport channel bits that can be received within an HS-DSCH TTI	Total number of soft channel bits
Category 1	12	5	7016	28160
Category 2	12	5	7016	56320
Category 3	12	5	7016	84480
Category 4	16	5	7016	28160
Category 5	16	5	7016	56320
Category 6	16	5	7016	84480

HS-DSCH category	Maximum number of HS-DSCH codes per timeslot	Maximum number of HS-DSCH timeslots per TTI	Maximum number of HS-DSCH transport channel bits that can be received within an HS-DSCH TTI	Total number of soft channel bits
Category 7	12	5	10204	40912
Category 8	12	5	10204	81824
Category 9	12	5	10204	122736
Category 10	16	5	10204	40912
Category 11	16	5	10204	81824
Category 12	16	5	10204	122736
Category 13	16	5	14056	56320
Category 14	16	5	14056	112640
Category 15	16	5	14056	168960

Table 5.1d: RLC and MAC-hs parameters for 1.28 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 1	6	50
Category 2	6	50
Category 3	6	50
Category 4	6	50
Category 5	6	50
Category 6	6	50
Category 7	6	50
Category 8	6	50
Category 9	6	50
Category 10	6	50
Category 11	6	50
Category 12	6	50
Category 13	6	100
Category 14	6	100
Category 15	6	100

Table 5.1e: 3.84 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes per timeslot	Maximum number of HS-DSCH timeslots per TTI	Maximum number of HS-DSCH transport channel bits that can be received within an HS-DSCH TTI	Total number of soft channel bits
Category 1	16	2	12000	52992
Category 2	16	12	12000	52992
Category 3	16	4	24000	105984
Category 4	16	12	24000	105984
Category 5	16	6	36000	158976
Category 6	16	12	36000	158976
Category 7	16	12	53000	211968
Category 8	16	12	73000	264960
Category 9	16	12	102000	317952

Table 5.1f: RLC and MAC-hs parameters for 3.84 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 1	6	50
Category 2	6	50
Category 3	6	50
Category 4	6	50
Category 5	6	100
Category 6	6	100
Category 7	6	150
Category 8	8	150
Category 9	8	200

5.2 Reference UE radio access capability combinations

Based on required UE radio access capabilities to support reference RABs as defined in [2], this clause lists reference UE Radio Access capability combinations. Subclause 5.2.1 defines reference combinations of UE radio access capability parameters common for UL and DL. Subclauses 5.2.2 and 5.2.3 define reference combinations of UE radio access capability parameters that are separate for DL and UL respectively. A reference combination for common UL and DL parameters, one combination for UL parameters and one combination for DL parameters together relate to a UE with a certain implementation complexity, that allows support for one or several combined reference RABs. Combinations for UL and DL can be chosen independently. The bit rate supported by the selected combination of common UL and DL parameters needs to be at least as high as the maximum out of the supported bit rates of the selected combination of DL parameters and the selected combination of UL parameters. Different combinations have different levels of implementation complexity.

For defined reference RABs, it is possible to require a UE to meet a certain reference UE radio access capability combination. Each UE needs to have capabilities complying with a given reference radio access capability combination. Each individual radio access capability parameter as defined in subclause 5.1 shall be signalled.

The reference combination numbers shall not be used in the signalling of UE radio access capabilities between the UE and UTRAN. Reference UE radio access capability combinations provide default configurations that should be used as a basis for conformance testing against reference RABs.

The UE shall support at least the UE radio access capability parameter values as specified for the 12kbps UE reference class for both UL and DL.

Allowed values of UE capability parameters are limited by the defined range and granularity of values in subclause 5.1. Values might change depending on further definition of reference RABs for testing.

5.2.1 Combinations of common UE Radio Access Parameters for UL and DL

NOTE: Measurement-related capabilities are not included in the combinations. These capabilities are independent from the supported RABs.

Table 5.2.1.1: UE radio access capability parameter combinations, parameters common for UL and DL

Reference combination of UE Radio Access capability parameters common for UL and DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
PDCP parameters							
Support for RFC 2507	No	No	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1
Support for RFC 3095	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1
Support for RFC 3095 context relocation	No/Yes NOTE 1						
Support for loss-less SRNS relocation	No/Yes NOTE 1						

Reference combination of UE Radio Access capability parameters common for UL and DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Maximum header compression context space	Not applicable for conformance testing						
Maximum number of ROHC context sessions	Not applicable for conformance testing						
Support for Reverse decompression	No/Yes NOTE 1						
RLC parameters							
Total RLC AM buffer size (kbytes)	10	10	10	50	50	100	500
Maximum number of AM entities	4	4	4	5	6	8	8
Maximum RLC AM window size	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1
Multi-mode related parameters							
Support of UTRA FDD	Yes/No NOTE 1						
Support of UTRA TDD 3.84 Mcps	Yes/No NOTE 1						
Support of UTRA TDD 1.28 Mcps	Yes/No NOTE 1						
Multi-RAT related parameters							
Support of GSM	Yes/No NOTE 1						
Support of multi-carrier	Yes/No NOTE 1						
Support of UTRAN to GERAN Network Assisted Cell Change	Yes/No						
Security parameters							
Support of ciphering algorithm UEA0	Yes						
Support of ciphering algorithm UEA1	Yes						
Support of integrity protection algorithm UIA1	Yes						
UE positioning related parameters							
Standalone location method(s) supported	Yes/No NOTE 1						
Network assisted GPS support	Network based / UE based / Both/ None NOTE 1						
GPS reference time capable	Yes/No NOTE 1						
Support for IPDL	Yes/No NOTE 1						
Support for OTDOA UE based method	Yes/No NOTE 1						
Support for Rx-Tx time difference type 2 measurement	Yes/No NOTE 1						
Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states	Yes						
Support for SFN-SFN observed time difference type 2 measurement	Yes/No NOTE 1						
RF parameters for FDD							
UE power class	3 / 4 NOTE 1						
Tx/Rx frequency separation	190 MHz						
RF parameters for TDD 3.84 Mcps							
Radio frequency bands	A / b / c / a+b / a+c / b+c / a+b+c NOTE 1						
UE power class	2 / 3 NOTE 1						
RF parameters for TDD 1.28 Mcps							
Radio frequency bands	A / b / c / a+b / a+c / b+c/ a+b+c NOTE 1						

Reference combination of UE Radio Access capability parameters common for UL and DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
UE power class	2 / 3 NOTE 1						

NOTE 1: Options represent different combinations that should be supported with Conformance Tests.

5.2.2 Combinations of UE Radio Access Parameters for DL

Table 5.2.2.1: UE radio access capability parameter combinations, DL parameters

Reference combination of UE Radio Access capability parameters in DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Transport channel parameters							
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640 (FDD) 1280(TDD)	1280	3840	3840	6400	10240	20480
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640	640	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	NA (FDD) 1280(TDD)	1280	3840	3840	6400	10240	20480(1) 10240(2) NOTE 5
Maximum number of simultaneous transport channels	4	8 NOTE 4	8 NOTE 4	8 NOTE 4	8 NOTE 4	8 NOTE 4	16 NOTE 4
Maximum number of simultaneous CCTrCH (FDD)	1	1 NOTE 3	~~2/~~1 ~~NOTE 2~~ NOTE 3	~~2/~~1 ~~NOTE 2~~ NOTE 3	~~2/~~1 ~~NOTE 2~~ NOTE 3	~~2/~~1 ~~NOTE 2~~ NOTE 3	~~2/~~1 ~~NOTE 2~~ NOTE 3
Maximum number of simultaneous CCTrCH (TDD)	1 NOTE 3	2 NOTE 3	3 NOTE 3	3 NOTE 3	3 NOTE 3	4 NOTE 3	4 NOTE 3
Maximum total number of transport blocks received within TTIs that end at the same time	4	8	8	16	32	64	96
Maximum number of TFC	16	32	48	96	128	256	1024
Maximum number of TF	32	32	64	64	64	128	256
Support for turbo decoding	No (FDD) Yes (TDD)	Yes	Yes	Yes	Yes	Yes	Yes
Support for loss-less DL RLC PDU size change	No	No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Physical channel parameters (FDD)							
Maximum number of DPCH~~/PDSCH~~ codes to be simultaneously received	1	1	~~2/~~1 ~~NOTE 2~~	~~2/~~1 ~~NOTE 2~~	3	3	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH~~, PDSCH~~, S-CCPCH).	1200	1200	~~3600/~~2400 ~~NOTE2~~	~~7200/~~4800 ~~NOTE2~~	19200	28800	57600
Support for SF 512 for DPCH NOTE 6	No	No	No	No	No	No	No
~~Support of PDSCH~~	~~No~~	~~No~~	~~Yes/No~~ ~~NOTE 1~~	~~Yes/No~~ ~~NOTE 1~~	~~Yes/No~~ ~~NOTE 1~~	~~Yes/No~~ ~~NOTE 1~~	~~Yes/No~~ ~~NOTE 1~~
Support of HS-PDSCH	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Maximum number of simultaneous S-CCPCH radio links	1	1	1	1	1	1	1
Support of dedicated pilots for channel estimation	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7
Support of dedicated pilots for channel estimation of HS-DSCH	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1

Reference combination of UE Radio Access capability parameters in DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Physical channel parameters (TDD 3.84 Mcps)							
Maximum number of timeslots per frame	1	1	2	4	5	10	12
Maximum number of physical channels per frame	5	8	9	14	28	64	136
Minimum SF	16	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1/16 NOTE 1
Support of PDSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Support of HS-PDSCH	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Maximum number of physical channels per timeslot	5	8	9	9	9	9	13
Physical channel parameters (TDD 1.28 Mcps)							
Maximum number of timeslots per subframe	1	1	2	3	4	6	6
Maximum number of physical channels per subframe	5	8	12	18	43	77	77
Minimum SF	16	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1
Support of PDSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Support of HS-PDSCH	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Maximum number of physical channels per timeslot	5	8	11	14	14	14	14
Support of 8PSK	No	No	No	No	No	No	Yes

NOTE 1: Options represent different combinations that should be supported with conformance tests.

~~NOTE 2: Options depend on the support of PDSCH. The highest value is required if PDSCH is supported.~~

NOTE 3: The given number does not contain the BCH CCTrCH of the current cell nor of the neighbour cells.

NOTE 4: The given number does not contain the BCH of the neighbour cell.

NOTE 5: (1) For FDD and 3.84 Mcps TDD (2) For 1.28 Mcps TDD.

NOTE 6: This UE capability does not relate to the support of CPCH in the uplink for which SF 512 is needed

NOTE 7: A UE conforming to this release of the specification shall set the support of channel estimation based on dedicated pilot bits to TRUE.

The reference combinations for HS-DSCH capabilities are shown in tables 5.2.2.2, 5.2.2.3 and 5.2.2.4. These tables are subject to further discussions in TSG-RAN WG1 and TSG-RAN WG2.

Table 5.2.2.2: FDD UE radio access capability parameter combinations, DL HS-DSCH parameters

Reference combination	1.2 Mbps class	3.6 Mbps class	7 Mbps class	10 Mbps class
FDD HS-DSCH category	Category 1	Category 5	Category 7	Category 9

Table 5.2.2.3: 1.28 Mcps TDD UE radio access capability parameter combinations, DL HS-DSCH parameters

Reference combination	1.4 Mbps class	2.0 Mbps class	2.8 Mbps class
1.28 Mcps TDD HS-DSCH Category	Category 1	Category 7	Category 13

Table 5.2.2.4: 3.84 Mcps TDD UE radio access capability parameter combinations, DL HS-DSCH parameters

Reference combination	1.2 Mbps class	2.4 Mbps class	3.6 Mbps class	7.3 Mbps class	10.2 Mbps class
3.84Mcps TDD HS-DSCH category	Category 1	Category 3	Category 5	Category 8	Category 9

5.2.3 Combinations of UE Radio Access Parameters for UL

Table 5.2.3.1: UE radio access capability parameter combinations, UL parameters

Reference combination of UE Radio Access capability parameters in UL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class
Transport channel parameters						
Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	640	640(FDD) 1280 (TDD)	3840	3840	6400	10240
Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	NA	NA(FDD) 1280 (TDD)	3840	3840	6400	10240
Maximum number of simultaneous transport channels	4	4	8	8	8	8
Maximum number of simultaneous CCTrCH(TDD only)	1 NOTE 3	1 NOTE 3	2 NOTE 3	2 NOTE 3	2 NOTE 3	2 NOTE 3
Maximum total number of transport blocks transmitted within TTIs that start at the same time	4	4	8	8	16	32
Maximum number of TFC	16	16	32	48	64	128
Maximum number of TF	32	32	32	32	32	64
Support for turbo encoding	No	No (FDD) Yes (TDD)	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)						
Maximum number of DPDCH bits transmitted per 10 ms	600	1200	2400	4800	9600	19200
Simultaneous reception of SCCPCH and DPCH NOTE 2	No	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
~~Simultaneous reception of SCCPCH, DPCH and PDSCH~~ ~~NOTE 2~~	~~No~~	~~No~~	~~No~~	~~No~~	~~No~~	~~No~~
Simultaneous reception of SCCPCH, DPCH and HS-PDSCH NOTE 2	No	No	No	No	No	No
Support of PCPCH NOTE 4	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Physical channel parameters (TDD 3.84 Mcps)						
Maximum Number of timeslots per frame	1	1	2	3	7	9
Maximum number of physical channels per timeslot	1	1	1	1	1	2
Minimum SF	8	4	2	2	2	2
Support of PUSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes
Physical channel parameters (TDD 1.28 Mcps)						
Maximum Number of timeslots per subframe	1	1	2	3	5	5
Maximum number of physical channels per timeslot	1	1	1	1	1	2
Minimum SF	8	4	2	2	2	2

Reference combination of UE Radio Access capability parameters in UL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class
Support of PUSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes
Support of 8PSK	No	No	No	No	No	No

NOTE 1: Options represent different combinations that should be supported with conformance tests.

NOTE 2: The downlink parameters 'Simultaneous reception of SCCPCH and DPCH'~~ and 'Simultaneous reception of SCCPCH, DPCH and PDSCH' are~~ is included in the combinations for uplink as their requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions. In this release of the specification, this is limited to 1 SCCPCH.

NOTE 3: This number does not contain the RACH CCTrCH.

NOTE 4: Support of PCPCH means that the UE supports PCPCH access for both the CA not active case and for the CA active case.

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CR-Form-v7

CHANGE REQUEST

⌘	**25.306**	**CR**	**0111**	⌘ **rev**	**-**	⌘	Current version:	**6.4.1**	⌘

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

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

Title:	⌘	Feature Clean-up: Removal of DSCH (FDD)
Source:	⌘	RAN WG2
Work item code:	⌘	TEI5
Date:	⌘	10/05/2005
Category:	⌘	**C**
Release:	⌘	REL-6

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(addition of feature),*
- ***C*** *(functional modification of feature)*
- ***D*** *(editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
- *2 (GSM Phase 2)*
- *R96 (Release 1996)*
- *R97 (Release 1997)*
- *R98 (Release 1998)*
- *R99 (Release 1999)*
- *Rel-4 (Release 4)*
- *Rel-5 (Release 5)*
- *Rel-6 (Release 6)*

Reason for change:	⌘	Removal of DSCH for FDD
Summary of change:	⌘	Removal of DSCH for FDD
Consequences if not approved:	⌘	DSCH for FDD mode will remain specified

		Y	N			
Clauses affected:	⌘					4.5.3, 4.11, 5.1, 5.2.2, 5.2.3,
Other specs affected:	⌘	X		Other core specifications	⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
		X		Test specifications		34.108, 34.123
				O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

4 UE radio access capability parameters

In the following the UE radio capability parameters are defined. When using the RRC configuration parameters, UTRAN needs to respect the UE capabilities. Only parameters for which there is a need to set different values for different UEs are considered as UE capability parameters. Therefore, the capabilities that are the same for all UEs, including baseline capabilities, are not listed here.

UTRAN needs to respect the UE capabilities when configuring the RBs. Actions in the UE when capabilities are in conflict with a UTRAN request are specified in RRC.

4.1 PDCP parameters

Support for RFC 2507

This parameter defines whether the UE supports header compression according to RFC 2507 as defined in [1] or not.

Support for RFC 3095

This parameter defines whether the UE supports header compression according to RFC 3095 as defined in [1] or not. Except for a CS only UE, the UE shall support header compression according to RFC 3095 as defined in [1].

Support for RFC 3095 context relocation

This parameter defines whether the UE supports RFC 3095 context relocation as defined in [1] or not.

Support for loss-less SRNS relocation

Defines whether the UE supports loss-less SRNS relocation as defined in [1] or not.

Support for lossless DL RLC PDU size change

Defines whether the UE supports lossless DL RLC PDU size change as defined in [1] or not.

Maximum header compression context space

This parameter is only applicable if the UE supports header compression according to RFC 2507. It is defined as the maximum header compression context size supported by the UE for all RFC 2507 protocol entities for all RBs. UTRAN controls that the UE capability can be fulfilled through the following parameters:

1. MAX_HEADER;
2. TCP_SPACE;
3. NON_TCP_SPACE;

The context space for a single RFC 2507 protocol entity calculates from:

(2 * (TCP_SPACE + 1 + NON_ TCP_SPACE + 1) * MAX_HEADER).

The following criterion must be fulfilled in the configuration:

Maximum header compression context space ≥ sum of context spaces for all RFC 2507 protocol entities for all RBs.

Maximum number of ROHC context sessions

This parameter is only applicable if the UE supports header compression according to RFC3095. It is defined as the maximum number of header compression context sessions supported by the UE.

Support for Reverse Decompression

This parameter determines whether reverse decompression is supported or not and the maximum number of packets that can be reverse decompressed by the decompressor in the UE.

4.2 Void

4.3 RLC and MAC-hs parameters

Total RLC AM and MAC-hs buffer size

When HS-DSCH is not configured this is defined as the maximum total buffer size across all RLC AM entities supported by the UE. When HS-DSCH is configured this is defined as the maximum total buffer size across all MAC-hs reordering entities and all RLC AM entities supported by the UE. The memory signalled in this capability is dynamically shared by RLC AM entities and MAC-hs reordering entities at any time.

In order to evaluate memory consumption in the UE, it shall be assumed that:

- a stored AMD PDU of N octets requires a memory equal to N octets;
- a stored MAC-hs PDU of N bits requires a memory equal to (N – 10) bits.

The UE shall only consider itself in a memory shortage situation as defined in [9] [10] when the amount of stored AM RLC PDUs and MAC-hs PDUs exceeds its capability.

Maximum number of AM entities

This is defined as the maximum number of RLC AM entities supported by the UE.

Maximum RLC AM Window Size

This is defined as the maximum transmission and receiving window size of RLC AM entities supported by the UE.

4.4 Void

4.5 PHY parameters

4.5.1 Transport channel parameters in downlink

Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant

NOTE 1: "Being received" refers to all bits in the active TFC within the TFCS over all simultaneous transport channels received by the UE. "Arbitrary time instant" means that the time instant corresponding to the highest sum of number of bits is relevant. This note also applies to similar parameter definitions below.

This parameter is defined as:

$$\Sigma_i(N_i)$$

where N_i is defined as the number of bits in transport block #i, and the sum is over all transport blocks being received at an arbitrary time instant. All transport blocks that are to be simultaneously received by the UE on DCH, FACH, PCH and DSCH transport channels are included in the parameter.

NOTE 2: A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* * *Transport Block size* over all simultaneous transport channels is larger than what the UE capability indicates.

This UE capability also limits the maximum number of bits before de-rate-matching as follows: The maximum number of bits before de-rate matching being received at an arbitrary time instant (DPCH, PDSCH, S-CCPCH) shall be less or equal to 6.6 times the Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant.

Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant.

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be convolutionally coded.

Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant.

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be turbo coded.

Maximum number of simultaneous transport channels

This is defined as the maximum number of downlink Transport Channels that the UE is capable to process simultaneously, not taking into account the rate of each Transport Channel.

NOTE: The number of simultaneous transport channels affects how the total memory space and processing capacity can be shared among the transport channels. A UE does not need to support more simultaneous transport channels than the UE capability allows for.

Maximum number of simultaneous CCTrCH

This is defined as the maximum number of downlink CCTrCH that the UE is capable to process simultaneously. CCTrCH should be interpreted as consisting of DCH, FACH or DSCH.

Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval

All transport blocks that are to be simultaneously received by the UE on DCH, FACH, PCH and DSCH transport channels are included in the parameter.

NOTE: Relates to processing requirements for CRC in downlink. A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* is larger than what the UE capability indicates. In the case of several CCTrCHs, the combination of the TFCs within the respective TFCSs for simultaneous TTIs at an arbitrary time instant shall not exceed this parameter.

Maximum number of TFC

Defines the maximum number of transport format combinations the UE can store, where all transport format combinations for all downlink transport format combination sets are counted. Different channelisation code mapping shall be counted as separate TFC in case of DSCH.

Maximum number of TF

The maximum total number of downlink transport formats the UE can store, where all transport formats for all downlink transport channels are counted.

Support for turbo decoding

Defines whether turbo decoding is supported or not.

Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI

Defines the maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI the UE is capable of receiving within a HS-DSCH TTI.

4.5.2 Transport channel parameters in uplink

Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant

NOTE 1: "Being transmitted" refers to all bits in the active TFC within the TFCS over all simultaneous transport channels transmitted by the UE. "Arbitrary time instant" means that the time instant corresponding to the highest sum of number of bits is relevant. This note also applies to similar parameter definitions below.

This parameter is defined as:

$$\Sigma_i(N_i)$$

where N_i is defined as the number of bits in transport block #i, and the sum is over all transport blocks being transmitted at an arbitrary time instant.

NOTE 2: This parameter is related to memory requirements for uplink data received from MAC before it can be transmitted over the radio interface. As shown in Figure 4.1 the worst case occurs for the maximum TTI. A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* * *Transport Block size* over all simultaneous transport channels is larger than what the UE capability indicates.

Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be convolutionally coded.

Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant

This parameter is defined similar to the parameter above, but the sum includes only transport blocks that are to be turbo coded.

Maximum number of simultaneous transport channels

This is defined as the maximum number of uplink transport channels that the UE is capable to process simultaneously, not taking into account the rate of each transport channel.

NOTE: A UE does not need to support a TFC within the TFCS for which the sum of *Number of Transport Blocks* * *Transport Block size* over all simultaneous transport channels is larger than what the UE capability indicates.

Maximum number of simultaneous CCTrCH

This parameter is applicable for TDD only. For FDD there is always only one CCTrCH at a time. The parameter is defined as the maximum number of uplink CCTrCH that the UE is capable to process simultaneously.

Maximum total number of transport blocks transmitted within TTIs that start at the same time

Defines the maximum number of transport blocks that the UE is capable to transmit within TTIs that start at the same time. An example is shown in figure 4.1.

NOTE: Relates to processing requirements for CRC in uplink.

Maximum number of TFC

Defines the maximum number of transport format combinations the UE can store, where all transport format combinations for all uplink transport format combination sets are counted.

Maximum number of TF

The maximum total number of uplink transport formats the UE can store, where all transport formats for all uplink transport channels are counted.

Support for turbo encoding

Defines whether turbo encoding is supported or not.

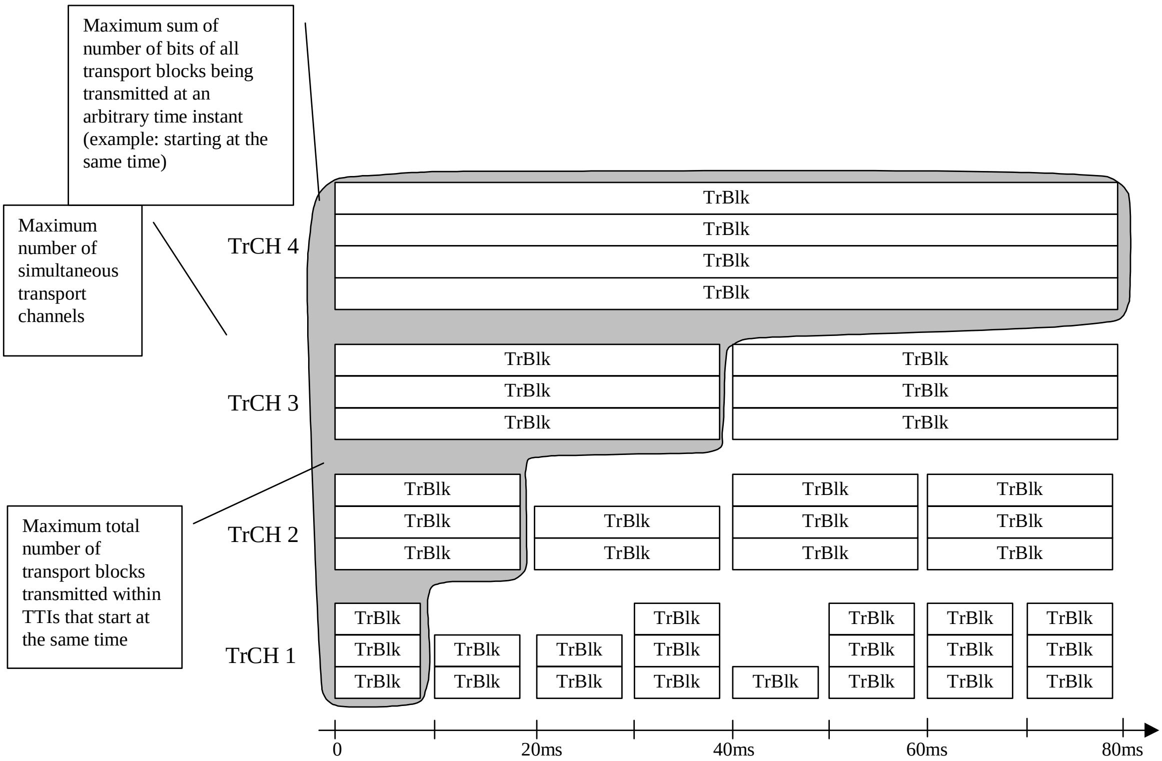

Figure 4.1: UE transport channel processing limitations in uplink

4.5.3 FDD Physical channel parameters in downlink

Maximum number of DPCH~~/PDSCH~~ codes to be simultaneously received

Defines the number of codes the UE is capable of receiving in parallel. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability. The capability does not include codes used for S-CCPCH.

Maximum number of physical channel bits received in any 10 ms interval (DPCH, ~~PDSCH,~~ S-CCPCH)

Defines the number of physical channel bits the UE is capable of receiving. For DPCH in soft/softer handover, each DPCH is only calculated once in this capability.

The number of DPCH channel bits indicates the capability of the UE when operating in non-compressed mode.

The parameter also indicates the capability of the UE to support compressed mode by spreading factor reduction as follows. The UE shall:

- for parameter values up to and including 9600 bits:
  - support compressed mode by spreading factor reduction when operating at any value up to the reported capability.
- for parameter values greater than 9600 bits:
  - support compressed mode by spreading factor reduction when operating at any value up to the greater of:

- half the reported capability; or
- 9600bits.

NOTE: Compressed mode by spreading factor reduction is not applicable when operating at spreading factor 4.

Support for SF 512

Defines whether the UE supports spreading factor 512 in downlink or not.

~~Support of PDSCH~~

~~Defines whether the UE supports PDSCH or not.~~

Support of HS-PDSCH

Defines whether the UE supports HS-PDSCH or not.

Simultaneous reception of SCCPCH and DPCH

Defines whether the UE supports simultaneous reception of SCCPCH and DPCH or not.

NOTE: Simultaneous reception of SCCPCH and DPCH, i.e. simultaneous reception of FACH and DCH is required for e.g. DRAC procedure

~~Simultaneous reception of SCCPCH, DPCH and PDSCH~~

~~Defines whether the UE supports simultaneous reception of SCCPCH, DPCH and PDSCH or not. The PDSCH part of this capability is only relevant if the UE supports PDSCH, as covered by the capability "Support of PDSCH".~~

~~NOTE: Simultaneous reception of SCCPCH, DPCH and PDSCH, i.e. simultaneous reception of FACH, DCH and DSCH is required for e.g. simultaneous use of DSCH and the DRAC procedure.~~

Simultaneous reception of SCCPCH, DPCH and HS-PDSCH

Defines whether the UE supports simultaneous reception of SCCPCH, DPCH and HS-PDSCH or not. The HS-PDSCH part of this capability is only relevant if the UE supports HS-PDSCH, as covered by the capability "Support of HS-PDSCH".

NOTE: Simultaneous reception of SCCPCH, DPCH and HS-PDSCH, i.e. simultaneous reception of FACH, DCH and HS-PDSCH is required for e.g. simultaneous use of HS-PDSCH and the DRAC procedure.

Maximum number of simultaneous S-CCPCH radio links

Defines the maximum number of radio links on which the UE is capable of receiving S-CCPCH simultaneously.

Support of dedicated pilots for channel estimation

Defines whether the UE supports dedicated pilots for channel estimation or not.

Support of dedicated pilots for channel estimation of HS-DSCH

Defines whether the UE supports dedicated pilots for channel estimation of HS-PDSCH and HS-SCCH or not.

Maximum number of HS-DSCH codes received

Defines the maximum number of HS-DSCH codes the UE is capable of receiving.

Total number of soft channel bits in HS-DSCH

Defines the maximum number of soft channel bits over all HARQ processes. When explicit signalling is used, UTRAN configures Process Memory Size for each HARQ process so that the following criterion must be fulfilled in the configuration:

Total number of soft channel bits in HS-DSCH ≥ sum of Process Memory Size of all the HARQ processes.

Minimum inter-TTI interval in HS-DSCH

Defines the distance from the beginning of a TTI to the beginning of the next TTI that can be assigned to the UE.

4.5.4 FDD physical channel parameters in uplink

Maximum number of DPDCH bits per 10 ms

Defines the maximum number of the DPDCH bits the UE is capable to transmit per 10 ms.

If the reported capability is lower than 9600, the number of DPDCH channel bits indicates the capability of the UE when operating in non-compressed mode; if the reported capability is equal to or greater than 9600 it indicates the maximum capability of the UE considering both compressed and non compressed mode operation.

NOTE 1: This capability combines the 'Max number of DPDCH' and 'Minimum SF' capabilities into one capability. Note that no flexibility is lost due to this, as multiple DPDCH is only used for SF = 4, i.e. when the number of DPDCH bits exceed a certain value.

NOTE 2: Compressed mode by spreading factor reduction is not applicable when operating at spreading factor 4.

Support of PCPCH

Defines whether the UE supports PCPCH or not.

NOTE 3: When CPCH is supported, then simultaneous DPCCH & SCCPCH reception is needed.

Support of E-DPDCH

Defines whether the UE supports E-DPDCH or not.

Maximum number of E-DCH codes transmitted

Defines the maximum number of E-DCH codes and spreading factors the UE is capable of transmitting. The UE can support 1, 2 or 4 E-DPDCHs using either SF=2 or/and SF=4.

Support of 2ms TTI for E-DCH

Defines whether the UE supports 2ms TTI or not.

4.5.5 TDD physical channel parameters in downlink

4.5.5.1 3.84 Mcps TDD physical channel parameters in downlink

Maximum number of timeslots per frame

Defines the maximum number of timeslots per frame that the UE can receive.

Maximum number of physical channels per frame

This parameter defines how many physical channels can be received during one frame. The distribution of the received physical channels on the received timeslots can be arbitrary.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PDSCH

Defines whether PDSCH is supported or not.

Support of HS-PDSCH

Defines whether the UE supports HS-PDSCH or not.

Maximum number of physical channels per timeslot

This parameter defines how many physical channels can be received within one timeslot.

Maximum number of HS-DSCH codes per timeslot

This is the maximum number of channelisation codes that can be used for the HS-DSCH in a given downlink timeslot. Where the parameter "Maximum number of physical channels per timeslot" is larger than "Maximum number of HS-DSCH codes per timeslot", this indicates that the UE is able to receive HS-SCCH or associated DPCH transmissions in the same timeslot as HS-PDSCHs, even if the maximum HS-DSCH code allocation for that slot is being used.

Maximum number of HS-DSCH timeslots per TTI

This is the maximum number of timeslots in a given 10 ms frame that can be used for HS-DSCH transmissions.

Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI

Defines maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI the UE is capable of receiving within an HS-DSCH TTI.

Total number of soft channel bits

Defines the maximum number of soft channel bits over all HARQ processes.

4.5.5.2 1.28 Mcps TDD physical channel parameters in downlink

Maximum number of timeslots per subframe

Defines the maximum number of timeslots per subframe that the UE can receive.

Maximum number of physical channels per subframe

This parameter defines how many physical channels can be received during one subframe. The distribution of the received physical channels on the received timeslots can be arbitrary.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PDSCH

Defines whether PDSCH is supported or not.

Support of HS-PDSCH

Defines whether the UE supports HS-PDSCH or not.

Maximum number of physical channels per timeslot

This parameter defines how many physical channels can be received within one timeslot.

Support of 8PSK

Defines whether 8PSK modulation is supported or not.

Maximum number of HS-DSCH codes per timeslot

This is the maximum number of channelisation codes that can be used for the HS-DSCH in a given downlink timeslot. Where the parameter "Maximum number of physical channels per timeslot" is larger than "Maximum number of HS-DSCH codes per timeslot", this indicates that the UE is able to receive HS-SCCH or associated DPCH transmissions in the same timeslot as HS-PDSCHs, even if the maximum HS-DSCH code allocation for that slot is being used.

Maximum number of HS-DSCH timeslots per TTI

This is the maximum number of timeslots in a given 5 ms subframe that can be used for HS-DSCH transmissions.

Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI

Defines maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI the UE is capable of receiving within an HS-DSCH TTI.

Total number of soft channel bits

Defines the maximum number of soft channel bits over all HARQ processes.

4.5.6 TDD physical channel parameters in uplink

4.5.6.1 3.84 Mcps TDD physical channel parameters in uplink

Maximum Number of timeslots per frame

Defines the maximum number of timeslots per frame that the UE can transmit.

Maximum number of physical channels per timeslot

Defines the maximum number physical channels transmitted in parallel during one timeslot.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PUSCH

Defines whether PUSCH is supported or not.

4.5.6.2 1.28 Mcps TDD physical channel parameters in uplink

Maximum Number of timeslots per subframe

Defines the maximum number of timeslots per subframe that the UE can transmit.

Maximum number of physical channels per timeslot

Defines the maximum number of physical channels transmitted in parallel during one timeslot.

Minimum SF

Defines the minimum SF supported by the UE.

Support of PUSCH

Defines whether PUSCH is supported or not.

Support of 8PSK

Defines whether 8PSK modulation is supported or not.

4.5.7 RF parameters

UE power class

Indicates the UE power class as defined in [4] for FDD and [5] for TDD.

Radio frequency bands

This parameter is only applicable for TDD. It defines the uplink and downlink frequency bands supported by the UE as defined in [5].

Tx/Rx frequency separation

This parameter is only applicable for FDD and only if the UE is operating in frequency band a as defined in [4]. It defines the uplink/downlink frequency separations supported by the UE.

4.6 Multi-mode related parameters

Support of UTRA FDD

Defines whether UTRA FDD is supported.

There is no explicit configuration parameter.

Support of UTRA TDD 3.84 Mcps

Defines whether UTRA TDD 3.84 Mcps is supported.

There is no explicit configuration parameter.

Support of UTRA TDD 1.28 Mcps

Defines whether UTRA TDD 1.28 Mcps is supported.

There is no explicit configuration parameter.

4.7 Multi-RAT related parameters

Support of GSM

Defines whether GSM is supported or not. There is a separate parameter for each GSM frequency band.

Support of multi-carrier

Defines whether multi-carrier is supported or not.

Support of UTRAN to GERAN NACC

Defines whether UTRAN to GERAN NACC is supported or not.

4.7a Security parameters

Ciphering algorithm capability

This capability defines the ciphering algorithms supported by the UE. In this version of the protocol, the UE shall support UEA0 and UEA1.

Integrity protection algorithm capability

This capability defines the integrity protection algorithms supported by the UE. In this version of the protocol, the UE shall support UIA1.

4.8 UE positioning related parameters

Standalone location method(s) supported

Defines if a UE can measure its location by some means unrelated to UTRAN (e.g. if the UE has access to a standalone GPS receiver).

OTDOA UE based method supported

Defines if a UE supports the OTDOA UE based schemes.

Network Assisted GPS support

Defines if a UE supports either of the two types of assisted GPS schemes, namely "Network based", "UE based", "Both", or "none".

GPS reference time capable

Defines if a UE has the capability to measure GPS reference time as defined in [6].

Support for IPDL

Defines if a UE has the capability to use IPDL to enhance its "SFN-SFN observed time difference –type 2" measurement.

Support for Rx-Tx time difference type 2

Defines if a UE has the capability to perform the Rx-Tx time difference type 2 measurement.

Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states

Defines if UE Positioning measurements using the assisted GPS method are valid in CELL_PCH and URA_PCH RRC states.

Support for SFN-SFN observed time difference type 2 measurement

Defines if the UE has the capability to perform the SFN-SFN observed time difference type 2 measurement.

4.9 Measurement related capabilities

Need for downlink compressed mode

Defines whether the UE needs compressed mode in the downlink in order to perform inter-frequency or inter-RAT measurements. There are separate parameters for measurements on each UTRA mode, on each RAT, and in each frequency band.

Need for uplink compressed mode

Defines whether the UE needs compressed mode in the uplink in order to perform inter-frequency or inter-RAT measurements. There are separate parameters for measurements on each UTRA mode, on each RAT, and in each frequency band.

4.10 General capabilities

Access stratum release indicator

This is defined as the release of the UTRA layer 1, 2, and 3 specifications that is applicable for the UE e.g. R'99, Rel-4.

4.11 DL capabilities with simultaneous HS-DSCH

DL capability with simultaneous HS-DSCH configuration

Defines the modification of reception capabilities in downlink in terms of DPCH in case an HS-DSCH is configured simultaneously. The parameter values in table 4.11-1 replace the signalled values in case an HS-DSCH is configured simultaneously depending on the setting of the parameter DL DPCH capability with simultaneous HS-DSCH configuration. Other parameters are valid irrespective whether HS-DSCH is configured simultaneously or not.

Table 4.11-1: DL capabilities with simultaneous HS-DSCH

DL DPCH capability with simultaneous HS-DSCH configuration	32 kbps	64 kbps	128 kbps	384 kbps
Transport channel parameters				
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640	3840	3840	6400
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	NA	3840	3840	6400
Maximum number of simultaneous transport channels	8	8	8	8
Maximum number of simultaneous CCTrCH (FDD)	1	1	1	1
Maximum number of simultaneous CCTrCH (TDD)	2	3	3	3
Maximum total number of transport blocks received within TTIs that end at the same time	8	8	16	32
Maximum number of TFC	32	48	96	128
Maximum number of TF	32	64	64	64
Support for turbo decoding	No	Yes	Yes	Yes
Physical channel parameters (FDD)				
Maximum number of DPCH~~/PDSCH~~ codes to be simultaneously received	1	1	1	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH~~, PDSCH~~, S-CCPCH).	1200	2400	4800	19200
~~Support of PDSCH~~	~~No~~	~~No~~	~~No~~	~~No~~
Physical channel parameters (TDD 3.84 Mcps)				
Maximum number of timeslots per frame	1	2	4	5
Maximum number of physical channels per frame	8	9	14	28
Support of PDSCH	No	No	No	No
Maximum number of physical channels per timeslot	8	9	9	9

DL DPCH capability with simultaneous HS-DSCH configuration	32 kbps	64 kbps	128 kbps	384 kbps
Physical channel parameters (TDD 1.28 Mcps)				
Maximum number of timeslots per subframe	1	2	3	4
Maximum number of physical channels per subframe	8	12	18	43
Support of PDSCH	No	No	No	No
Maximum number of physical channels per timeslot	8	11	14	14

4.12 UL capabilities with simultaneous E-DCH

UL capability with simultaneous E-DCH configuration

Defines the modification of transmission capabilities in uplink in terms of DPCH in case an E-DCH is configured simultaneously. The parameter values in table 4.12-1 replace the signalled values in case an E-DCH is configured simultaneously depending on the setting of the parameter UL DPCH capability with simultaneous E-DCH configuration. Other parameters are valid irrespective whether E-DCH is configured simultaneously or not.

Table 4.12-1: UL capabilities with simultaneous E-DCH

UL DPCH capability with simultaneous E-DCH configuration	64 kbps
Transport channel parameters	
Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	3840
Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	3840
Maximum number of simultaneous transport channels	8
Maximum total number of transport blocks transmitted within TTIs that end at the same time	8
Maximum number of TFC	32
Maximum number of TF	32
Support for turbo encoding	Yes
Physical channel parameters (FDD)	
Maximum number of DPDCH bits transmitted per 10 ms	2400
Support of PCPCH	Yes/No

5 Possible UE radio access capability parameter settings

5.1 Value ranges

Table 5.1: UE radio access capability parameter value ranges

		UE radio access capability parameter	Value range
PDCP parameters		Support for RFC 2507	Yes/No
		Support for RFC 3095	Yes/No
		Support for RFC 3095 context relocation	Yes/No
		Support for loss-less SRNS relocation	Yes/No
		Support for loss-less DL RLC PDU size change	Yes/No
		Maximum header compression context space	1024, 2048, 4096, 8192, 16384, 32768, 65536, 131072 bytes
		Maximum number of ROHC context sessions	2, 4, 8, 12, 16, 24, 32, 48, 64, 128, 256, 512, 1024, 16384
		Support for Reverse Decompression	Not supported, 1..65535
RLC and MAC-hs parameters		Total RLC AM and MAC-hs buffer size	2, 10, 50, 100, 150, 200, 300, 400, 500, 750, 1000 kBytes
		Maximum number of AM entities	3, 4, 5, 6, 8, 16, 30
		Maximum RLC AM window size	2047, 4095
PHY parameters	Transport channel parameters in downlink	Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	4, 8, 16, 32
		Maximum number of simultaneous CCTrCH	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks received within TTIs that end within the same 10 ms interval	4, 8, 16, 32, 48, 64, 96, 128, 256, 512
		Maximum number of TFC	16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo decoding	Yes/No
	Transport channel parameters in uplink	Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	640, 1280, 2560, 3840, 5120, 6400, 7680, 8960, 10240, 20480, 40960, 81920, 163840
		Maximum number of simultaneous transport channels	2, 4, 8, 16, 32
		Maximum number of simultaneous CCTrCH of DCH type (TDD only)	1, 2, 3, 4, 5, 6, 7, 8
		Maximum total number of transport blocks transmitted within TTIs that start at the same time	2, 4, 8, 16, 32, 48, 64, 96, 128, 256, 512

		UE radio access capability parameter	Value range
		Maximum number of TFC	4, 8, 16, 32, 48, 64, 96, 128, 256, 512, 1024
		Maximum number of TF	32, 64, 128, 256, 512, 1024
		Support for turbo encoding	Yes/No
	FDD Physical channel parameters in downlink	Maximum number of DPCH~~/PDSCH~~ codes to be simultaneously received	1, 2, 3, 4, 5, 6, 7, 8
		Maximum number of physical channel bits received in any 10 ms interval (DPCH~~, PDSCH~~, S-CCPCH)	600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800
		Support for SF 512	Yes/No
		~~Support of PDSCH~~	~~Yes/No~~
		Support of HS-PDSCH	Yes/No
		Simultaneous reception of SCCPCH and DPCH	Yes/No
		~~Simultaneous reception of SCCPCH, DPCH and PDSCH~~	~~Yes/No~~
		Simultaneous reception of SCCPCH, DPCH and HS-PDSCH	Yes/No
		Maximum number of simultaneous S-CCPCH radio links	1 NOTE: Only the value 1 is part of this release of the specification
		Support of dedicated pilots for channel estimation	Yes
		Support of dedicated pilots for channel estimation of HS-DSCH	Yes/No
	FDD Physical channel parameters in uplink	Maximum number of DPDCH bits transmitted per 10 ms	600, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 48000, 57600
		Support of PCPCH	Yes/No
		Support of E-DPDCH	Yes/No
	TDD 3.84 Mcps physical channel parameters in downlink	Maximum number of timeslots per frame	1..14
		Maximum number of physical channels per frame	1, 2, 3..224
		Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Support of HS-PDSCH	Yes/No
		Maximum number of physical channels per timeslot	1..16
	TDD 3.84 Mcps physical channel parameters in uplink	Maximum Number of timeslots per frame	1..14
		Maximum number of physical channels per timeslot	1, 2
		Minimum SF	16, 8, 4, 2, 1
		Support of PUSCH	Yes/No
	TDD 1.28 Mcps physical channel parameters in downlink	Maximum number of timeslots per subframe	1..6
		Maximum number of physical channels per subframe	1, 2, 3, …, 96
		Minimum SF	16, 1
		Support of PDSCH	Yes/No
		Support of HS-PDSCH	Yes/No
		Maximum number of physical channels per timeslot	1..16
		Support 8PSK	Yes/No
	TDD 1.28 Mcps physical channel parameters in uplink	Maximum number of timeslots per subframe	1..6
		Maximum number of physical channels per timeslot	1, 2
		Minimum SF	16, 8, 4, 2, 1
		Support of 8PSK	Yes/No
		Support of PUSCH	Yes/No

		UE radio access capability parameter	Value range
RF parameters	FDD RF parameters	UE power class	3, 4 NOTE: Only power classes 3 and 4 are part of this release of the specification
		Tx/Rx frequency separation	190 Mhz 174.8 MHz to 205.2 MHz 134.8 MHz to 245.2 MHz
RF parameters	TDD 3.84 Mcps RF parameters	UE power class	2, 3 NOTE: Only power classes 2 and 3 are part of this release of the specification
		Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)
	TDD 1.28 Mcps RF parameters	UE power class	2, 3
		Radio frequency bands	a), b), c), a+b), a+c), b+c), a+b+c)
Multi-mode related parameters		Support of UTRA FDD	Yes/No
		Support of UTRA TDD 3.84 Mcps	Yes/No
		Support of UTRA TDD 1.28 Mcps	Yes/No
Multi-RAT related parameters		Support of GSM	Yes/No (per GSM frequency band)
		Support of multi-carrier	Yes/No
		Support of UTRAN to GERAN Network Assisted Cell Change	Yes/No
Security parameters		Support of ciphering algorithm UEA0	Yes
		Support of ciphering algorithm UEA1	Yes
		Support of integrity protection algorithm UIA1	Yes
UE positioning related parameters		Standalone location method(s) supported	Yes/No
		Network assisted GPS support	Network based / UE based / Both/ None
		GPS reference time capable	Yes/No
		Support for IPDL	Yes/No
		Support for OTDOA UE based method	Yes/No
		Support for Rx-Tx time difference type 2 measurement	Yes/No
		Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states	Yes
		Support for SFN-SFN observed time difference type 2 measurement	Yes/No
Measurement related capabilities		Need for downlink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
		Need for uplink compressed mode	Yes/No (per frequency band, UTRA mode and RAT)
General capabilities		Access Stratum release indicator	R99, REL-4, REL-5
DL capabilities with simultaneous HS-DSCH		DL capability with simultaneous HS-DSCH configuration	32 kbps, 64 kbps, 128 kbps, 384 kbps
UL capabilities with simultaneous E-DCH		UL capabilities with simultaneous E-DCH	64 kbps

Table 5.1a: FDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes received	Minimum inter-TTI interval	Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI	Total number of soft channel bits
Category 1	5	3	7298	19200
Category 2	5	3	7298	28800
Category 3	5	2	7298	28800
Category 4	5	2	7298	38400

HS-DSCH category	Maximum number of HS-DSCH codes received	Minimum inter-TTI interval	Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI	Total number of soft channel bits
Category 5	5	1	7298	57600
Category 6	5	1	7298	67200
Category 7	10	1	14411	115200
Category 8	10	1	14411	134400
Category 9	15	1	20251	172800
Category 10	15	1	27952	172800
Category 11	5	2	3630	14400
Category 12	5	1	3630	28800

UEs of Categories 11 and 12 support QPSK only.

Table 5.1b: RLC and MAC-hs parameters for FDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 1	6	50
Category 2	6	50
Category 3	6	50
Category 4	6	50
Category 5	6	50
Category 6	6	50
Category 7	8	100
Category 8	8	100
Category 9	8	150
Category 10	8	150
Category 11	6	50
Category 12	6	50

Table 5.1c: 1.28 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes per timeslot	Maximum number of HS-DSCH timeslots per TTI	Maximum number of HS-DSCH transport channel bits that can be received within an HS-DSCH TTI	Total number of soft channel bits
Category 1	12	5	7016	28160
Category 2	12	5	7016	56320
Category 3	12	5	7016	84480
Category 4	16	5	7016	28160
Category 5	16	5	7016	56320
Category 6	16	5	7016	84480
Category 7	12	5	10204	40912
Category 8	12	5	10204	81824
Category 9	12	5	10204	122736
Category 10	16	5	10204	40912
Category 11	16	5	10204	81824
Category 12	16	5	10204	122736
Category 13	16	5	14056	56320
Category 14	16	5	14056	112640
Category 15	16	5	14056	168960

Table 5.1d: RLC and MAC-hs parameters for 1.28 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 1	6	50
Category 2	6	50
Category 3	6	50
Category 4	6	50
Category 5	6	50
Category 6	6	50
Category 7	6	50
Category 8	6	50
Category 9	6	50
Category 10	6	50
Category 11	6	50
Category 12	6	50
Category 13	6	100
Category 14	6	100
Category 15	6	100

Table 5.1e: 3.84 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of HS-DSCH codes per timeslot	Maximum number of HS-DSCH timeslots per TTI	Maximum number of HS-DSCH transport channel bits that can be received within an HS-DSCH TTI	Total number of soft channel bits
Category 1	16	2	12000	52992
Category 2	16	12	12000	52992
Category 3	16	4	24000	105984
Category 4	16	12	24000	105984
Category 5	16	6	36000	158976
Category 6	16	12	36000	158976
Category 7	16	12	53000	211968
Category 8	16	12	73000	264960
Category 9	16	12	102000	317952

Table 5.1f: RLC and MAC-hs parameters for 3.84 Mcps TDD HS-DSCH physical layer categories

HS-DSCH category	Maximum number of AM RLC entities	Minimum total RLC AM and MAC-hs buffer size [kBytes]
Category 1	6	50
Category 2	6	50
Category 3	6	50
Category 4	6	50
Category 5	6	100
Category 6	6	100
Category 7	6	150
Category 8	8	150
Category 9	8	200

Table 5.1g: FDD E-DCH physical layer categories

E-DCH category	Maximum number of E-DCH codes transmitted	Minimum spreading factor	Support for 10 and 2 ms TTI EDCH	Maximum number of bits of an E-DCH transport block transmitted within a 10 ms E-DCH TTI	Maximum number of bits of an E-DCH transport block transmitted within a 2 ms E-DCH TTI
Category 1	1	SF4	10 ms TTI only	7296	-
Category 2	2	SF4	10 ms and 2 ms TTI	14592	2919
Category 3	2	SF4	10 ms TTI only	14592	-
Category 4	2	SF2	10 ms and 2 ms TTI	20000	5837
Category 5	2	SF2	10 ms TTI only	20000	-
Category 6	4	SF2	10 ms and 2 ms TTI	20000	11520
NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4					

5.2 Reference UE radio access capability combinations

Based on required UE radio access capabilities to support reference RABs as defined in [2], this clause lists reference UE Radio Access capability combinations. Subclause 5.2.1 defines reference combinations of UE radio access capability parameters common for UL and DL. Subclauses 5.2.2 and 5.2.3 define reference combinations of UE radio access capability parameters that are separate for DL and UL respectively. A reference combination for common UL and DL parameters, one combination for UL parameters and one combination for DL parameters together relate to a UE with a certain implementation complexity, that allows support for one or several combined reference RABs. Combinations for UL and DL can be chosen independently. The bit rate supported by the selected combination of common UL and DL parameters needs to be at least as high as the maximum out of the supported bit rates of the selected combination of DL parameters and the selected combination of UL parameters. Different combinations have different levels of implementation complexity.

For defined reference RABs, it is possible to require a UE to meet a certain reference UE radio access capability combination. Each UE needs to have capabilities complying with a given reference radio access capability combination. Each individual radio access capability parameter as defined in subclause 5.1 shall be signalled.

The reference combination numbers shall not be used in the signalling of UE radio access capabilities between the UE and UTRAN. Reference UE radio access capability combinations provide default configurations that should be used as a basis for conformance testing against reference RABs.

The UE shall support at least the UE radio access capability parameter values as specified for the 12kbps UE reference class for both UL and DL.

Allowed values of UE capability parameters are limited by the defined range and granularity of values in subclause 5.1. Values might change depending on further definition of reference RABs for testing.

5.2.1 Combinations of common UE Radio Access Parameters for UL and DL

NOTE: Measurement-related capabilities are not included in the combinations. These capabilities are independent from the supported RABs.

Table 5.2.1.1: UE radio access capability parameter combinations, parameters common for UL and DL

Reference combination of UE Radio Access capability parameters common for UL and DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
PDCP parameters							

Reference combination of UE Radio Access capability parameters common for UL and DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Support for RFC 2507	No	No	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1	No/Yes NOTE 1
Support for RFC 3095	No/Yes NOTE 1	Yes	Yes	Yes	Yes	Yes	Yes
Support for RFC 3095 context relocation	No/Yes NOTE 1						
Support for loss-less SRNS relocation	No/Yes NOTE 1						
Maximum header compression context space	Not applicable for conformance testing						
Maximum number of ROHC context sessions	Not applicable for conformance testing						
Support for Reverse decompression	No/Yes NOTE 1						
RLC parameters							
Total RLC AM buffer size (kbytes)	10	10	10	50	50	100	500
Maximum number of AM entities	4	4	4	5	6	8	8
Maximum RLC AM window size	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1	2047/4095 NOTE 1
Multi-mode related parameters							
Support of UTRA FDD	Yes/No NOTE 1						
Support of UTRA TDD 3.84 Mcps	Yes/No NOTE 1						
Support of UTRA TDD 1.28 Mcps	Yes/No NOTE 1						
Multi-RAT related parameters							
Support of GSM	Yes/No NOTE 1						
Support of multi-carrier	Yes/No NOTE 1						
Support of UTRAN to GERAN Network Assisted Cell Change	Yes/No						
Security parameters							
Support of ciphering algorithm UEA0	Yes						
Support of ciphering algorithm UEA1	Yes						
Support of integrity protection algorithm UIA1	Yes						
UE positioning related parameters							
Standalone location method(s) supported	Yes/No NOTE 1						
Network assisted GPS support	Network based / UE based / Both/ None NOTE 1						
GPS reference time capable	Yes/No NOTE 1						
Support for IPDL	Yes/No NOTE 1						
Support for OTDOA UE based method	Yes/No NOTE 1						
Support for Rx-Tx time difference type 2 measurement	Yes/No NOTE 1						
Support for UE Positioning assisted GPS measurement validity in CELL_PCH and URA_PCH RRC states	Yes						
Support for SFN-SFN observed time difference type 2 measurement	Yes/No NOTE 1						
RF parameters for FDD							
UE power class	3 / 4 NOTE 1						
Tx/Rx frequency separation	190 MHz						
RF parameters for TDD 3.84 Mcps							

Reference combination of UE Radio Access capability parameters common for UL and DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Radio frequency bands	A / b / c / a+b / a+c / b+c / a+b+c NOTE 1						
UE power class	2 / 3 NOTE 1						
RF parameters for TDD 1.28 Mcps							
Radio frequency bands	A / b / c / a+b / a+c / b+c/ a+b+c NOTE 1						
UE power class	2 / 3 NOTE 1						

NOTE 1: Options represent different combinations that should be supported with Conformance Tests.

5.2.2 Combinations of UE Radio Access Parameters for DL

Table 5.2.2.1: UE radio access capability parameter combinations, DL parameters

Reference combination of UE Radio Access capability parameters in DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Transport channel parameters							
Maximum sum of number of bits of all transport blocks being received at an arbitrary time instant	640 (FDD) 1280(TDD)	1280	3840	3840	6400	10240	20480
Maximum sum of number of bits of all convolutionally coded transport blocks being received at an arbitrary time instant	640	640	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being received at an arbitrary time instant	NA (FDD) 1280(TDD)	1280	3840	3840	6400	10240	20480(1) 10240(2) NOTE 5
Maximum number of simultaneous transport channels	4	8 NOTE 4	8 NOTE 4	8 NOTE 4	8 NOTE 4	8 NOTE 4	16 NOTE 4
Maximum number of simultaneous CCTrCH (FDD)	1	1 NOTE 3	~~2/~~1 ~~NOTE 2~~ NOTE 3	~~2/~~1 ~~NOTE 2~~ NOTE 3	~~2/~~1 ~~NOTE 2~~ NOTE 3	~~2/~~1 ~~NOTE 2~~ NOTE 3	~~2/~~1 ~~NOTE 2~~ NOTE 3
Maximum number of simultaneous CCTrCH (TDD)	1 NOTE 3	2 NOTE 3	3 NOTE 3	3 NOTE 3	3 NOTE 3	4 NOTE 3	4 NOTE 3
Maximum total number of transport blocks received within TTIs that end at the same time	4	8	8	16	32	64	96
Maximum number of TFC	16	32	48	96	128	256	1024
Maximum number of TF	32	32	64	64	64	128	256
Support for turbo decoding	No (FDD) Yes (TDD)	Yes	Yes	Yes	Yes	Yes	Yes
Support for loss-less DL RLC PDU size change	No	No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Physical channel parameters (FDD)							
Maximum number of DPCH~~/PDSCH~~ codes to be simultaneously received	1	1	~~2/~~1 ~~NOTE 2~~	~~2/~~1 ~~NOTE 2~~	3	3	3
Maximum number of physical channel bits received in any 10 ms interval (DPCH~~, PDSCH~~, S-CCPCH).	1200	1200	~~3600/~~2400 ~~NOTE2~~	~~7200/~~4800 ~~NOTE2~~	19200	28800	57600
Support for SF 512 for DPCH NOTE 6	No	No	No	No	No	No	No
~~Support of PDSCH~~	~~No~~	~~No~~	~~Yes/No NOTE 1~~	~~Yes/No NOTE 1~~	~~Yes/No NOTE 1~~	~~Yes/No NOTE 1~~	~~Yes/No NOTE 1~~

Reference combination of UE Radio Access capability parameters in DL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class	2048 kbps class
Support of HS-PDSCH	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Maximum number of simultaneous S-CCPCH radio links	1	1	1	1	1	1	1
Support of dedicated pilots for channel estimation	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7	Yes NOTE 1 NOTE 7
Support of dedicated pilots for channel estimation of HS-DSCH	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Physical channel parameters (TDD 3.84 Mcps)							
Maximum number of timeslots per frame	1	1	2	4	5	10	12
Maximum number of physical channels per frame	5	8	9	14	28	64	136
Minimum SF	16	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1/16 NOTE 1
Support of PDSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Support of HS-PDSCH	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Maximum number of physical channels per timeslot	5	8	9	9	9	9	13
Physical channel parameters (TDD 1.28 Mcps)							
Maximum number of timeslots per subframe	1	1	2	3	4	6	6
Maximum number of physical channels per subframe	5	8	12	18	43	77	77
Minimum SF	16	16	16	16	1/16 NOTE 1	1/16 NOTE 1	1
Support of PDSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes	Yes
Support of HS-PDSCH	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Maximum number of physical channels per timeslot	5	8	11	14	14	14	14
Support of 8PSK	No	No	No	No	No	No	Yes

NOTE 1: Options represent different combinations that should be supported with conformance tests.

~~NOTE 2: Options depend on the support of PDSCH. The highest value is required if PDSCH is supported.~~

NOTE 3: The given number does not contain the BCH CCTrCH of the current cell nor of the neighbour cells.

NOTE 4: The given number does not contain the BCH of the neighbour cell.

NOTE 5: (1) For FDD and 3.84 Mcps TDD (2) For 1.28 Mcps TDD.

NOTE 6: This UE capability does not relate to the support of CPCH in the uplink for which SF 512 is needed

NOTE 7: A UE conforming to this release of the specification shall set the support of channel estimation based on dedicated pilot bits to TRUE.

The reference combinations for HS-DSCH capabilities are shown in tables 5.2.2.2, 5.2.2.3 and 5.2.2.4. These tables are subject to further discussions in TSG-RAN WG1 and TSG-RAN WG2.

Table 5.2.2.2: FDD UE radio access capability parameter combinations, DL HS-DSCH parameters

Reference combination	1.2 Mbps class	3.6 Mbps class	7 Mbps class	10 Mbps class

Reference combination	1.2 Mbps class	3.6 Mbps class	7 Mbps class	10 Mbps class
FDD HS-DSCH category	Category 1	Category 5	Category 7	Category 9

Table 5.2.2.3: 1.28 Mcps TDD UE radio access capability parameter combinations, DL HS-DSCH parameters

Reference combination	1.4 Mbps class	2.0 Mbps class	2.8 Mbps class
1.28 Mcps TDD HS-DSCH Category	Category 1	Category 7	Category 13

Table 5.2.2.4: 3.84 Mcps TDD UE radio access capability parameter combinations, DL HS-DSCH parameters

Reference combination	1.2 Mbps class	2.4 Mbps class	3.6 Mbps class	7.3 Mbps class	10.2 Mbps class
3.84Mcps TDD HS-DSCH category	Category 1	Category 3	Category 5	Category 8	Category 9

5.2.3 Combinations of UE Radio Access Parameters for UL

Table 5.2.3.1: UE radio access capability parameter combinations, UL parameters

Reference combination of UE Radio Access capability parameters in UL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class
Transport channel parameters						
Maximum sum of number of bits of all transport blocks being transmitted at an arbitrary time instant	640	640(FDD) 1280 (TDD)	3840	3840	6400	10240
Maximum sum of number of bits of all convolutionally coded transport blocks being transmitted at an arbitrary time instant	640	640	640	640	640	640
Maximum sum of number of bits of all turbo coded transport blocks being transmitted at an arbitrary time instant	NA	NA(FDD) 1280 (TDD)	3840	3840	6400	10240
Maximum number of simultaneous transport channels	4	4	8	8	8	8
Maximum number of simultaneous CCTrCH(TDD only)	1 NOTE 3	1 NOTE 3	2 NOTE 3	2 NOTE 3	2 NOTE 3	2 NOTE 3
Maximum total number of transport blocks transmitted within TTIs that start at the same time	4	4	8	8	16	32
Maximum number of TFC	16	16	32	48	64	128
Maximum number of TF	32	32	32	32	32	64
Support for turbo encoding	No	No (FDD) Yes (TDD)	Yes	Yes	Yes	Yes
Physical channel parameters (FDD)						
Maximum number of DPDCH bits transmitted per 10 ms	600	1200	2400	4800	9600	19200
Simultaneous reception of SCCPCH and DPCH NOTE 2	No	No	No	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
~~Simultaneous reception of SCCPCH, DPCH and PDSCH~~ ~~NOTE 2~~	~~No~~	~~No~~	~~No~~	~~No~~	~~No~~	~~No~~
Simultaneous reception of SCCPCH, DPCH and HS-PDSCH NOTE 2	No	No	No	No	No	No
Support of PCPCH NOTE 4	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1	Yes/No NOTE 1
Support of E-DPDCH	No	No	Yes/No	Yes/No	Yes/No	Yes/No
Physical channel parameters (TDD 3.84 Mcps)						

Reference combination of UE Radio Access capability parameters in UL	12 kbps class	32 kbps class	64 kbps class	128 kbps class	384 kbps class	768 kbps class
Maximum Number of timeslots per frame	1	1	2	3	7	9
Maximum number of physical channels per timeslot	1	1	1	1	1	2
Minimum SF	8	4	2	2	2	2
Support of PUSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes
Physical channel parameters (TDD 1.28 Mcps)						
Maximum Number of timeslots per subframe	1	1	2	3	5	5
Maximum number of physical channels per timeslot	1	1	1	1	1	2
Minimum SF	8	4	2	2	2	2
Support of PUSCH	No	Yes/No NOTE 1	Yes	Yes	Yes	Yes
Support of 8PSK	No	No	No	No	No	No

NOTE 1: Options represent different combinations that should be supported with conformance tests.

NOTE 2: The downlink parameters 'Simultaneous reception of SCCPCH and DPCH' ~~and 'Simultaneous reception of SCCPCH, DPCH and PDSCH' are~~ is included in the combinations for uplink as their requirements relate to the uplink data rate. Simultaneous reception of SCCPCH and DPCH is required for the DRAC procedure that is intended for controlling uplink transmissions. In this release of the specification, this is limited to 1 SCCPCH.

NOTE 3: This number does not contain the RACH CCTrCH.

NOTE 4: Support of PCPCH means that the UE supports PCPCH access for both the CA not active case and for the CA active case.

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Athens, Greece, 9 – 13 May 2005

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CR-Form-v7

CHANGE REQUEST

⌘	**25.321**	**CR**	**0211**	⌘ **rev**	**-**	⌘ Current version:	**5.10.0** ⌘

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

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

Title:	⌘	Feature Clean-up: Removal of DSCH (FDD)		
Source:	⌘	RAN WG2		
Work item code:	⌘	TEI5	***Date:*** ⌘	10/05/2005
Category:	⌘	**C**	***Release:*** ⌘	Rel-5
		Use one of the following categories: ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *Rel-4 (Release 4)* *Rel-5 (Release 5)* *Rel-6 (Release 6)*

Reason for change:	⌘	Removal of DSCH for FDD
Summary of change:	⌘	Removal of DSCH for FDD
Consequences if not approved:	⌘	DSCH for FDD mode will remain specified

Clauses affected:	⌘	4.2.1, 4.2.3, 4.2.3.1, 4.2.3.2, 4.2.4, 4.2.4.1, 4.2.4.2, 4.3.1, 8.2.2, 9.2.1, 9.2.1.1				
		Y	**N**			
Other specs	⌘	**X**		Other core specifications	⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
affected:		**X**		Test specifications		34.108, 34.123
				O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

4 General

4.1 Objective

The objective is to describe the MAC architecture and the different MAC entities from a functional point of view.

4.2 MAC architecture

The description in this subclause is a model and does not specify or restrict implementations.

According to the RRC functions the RRC is generally in control of the internal configuration of the MAC.

4.2.1 MAC Entities

The diagrams that describe the MAC architecture are constructed from MAC entities.

The entities are assigned the following names.

- MAC-b is the MAC entity that handles the following transport channels:
  - broadcast channel (BCH)
- MAC-c/sh, is the MAC entity that handles the following transport channels:
  - paging channel (PCH)
  - forward access channel (FACH)
  - random access channel (RACH)
  - common packet channel (UL CPCH). The CPCH exists only in FDD mode.
  - downlink shared channel (DSCH). The DSCH exists only in TDD mode.
  - uplink shared channel (USCH). The USCH exists only in TDD mode.
- MAC-d is the MAC entity that handles the following transport channels:
  - dedicated transport channel (DCH)
- MAC-hs is the MAC entity that handles the following transport channels:
  - high speed downlink shared channel (HS-DSCH)

The exact functions completed by the entities are different in the UE from those completed in the UTRAN.

NOTE: When a UE is allocated resources for exclusive use by the bearers that it supports the MAC-d entities dynamically share the resources between the bearers and are responsible for selecting the TFI/ TFCI that is to be used in each transmission time interval.

4.2.2 MAC-b

The following diagram illustrates the connectivity of the MAC-b entity in a UE and in each cell of the UTRAN.

MAC-b represents the control entity for the broadcast channel (BCH).

There is one (current cell) or multiple (current and neighbour cells) MAC-b entities in each UE and one MAC-b in the UTRAN for each cell.

The MAC Control SAP is used to transfer Control information to MAC-b.

The MAC-b entity is located in the Node B.

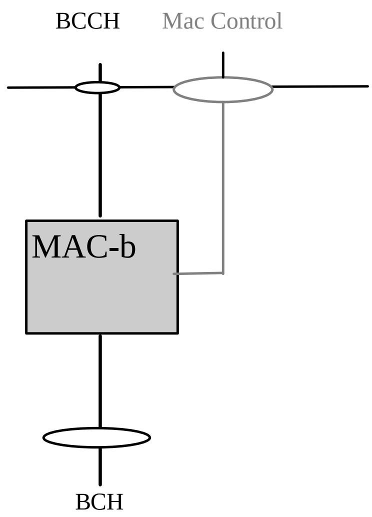


Figure 4.2.2.1: UE side and UTRAN side architecture

4.2.3 Traffic Related Architecture - UE Side

Figure 4.2.3.1 illustrates the connectivity of MAC entities.

The MAC-c/sh controls access to all common transport channels, except the HS-DSCH transport channel.

The MAC-d controls access to all dedicated transport channels, to MAC-c/sh and MAC-hs.

The MAC-hs controls access to the HS-DSCH transport channel.

In the downlink, if logical channels of dedicated type are mapped to common transport channels then MAC-d receives the data from MAC-c/sh or MAC-hs via the illustrated connection between the functional entities.

In the uplink, if logical channels of dedicated type are mapped to common transport channels then MAC-d submits the data to MAC-c/sh via the illustrated connection between the functional entities.

The mapping of logical channels on transport channels depends on the multiplexing that is configured by RRC.

The MAC Control SAP is used to transfer Control information to each MAC entity.

The associated signalling shown in the figure illustrates the exchange of information between layer 1 and layer 2 provided by primitives shown in [3].

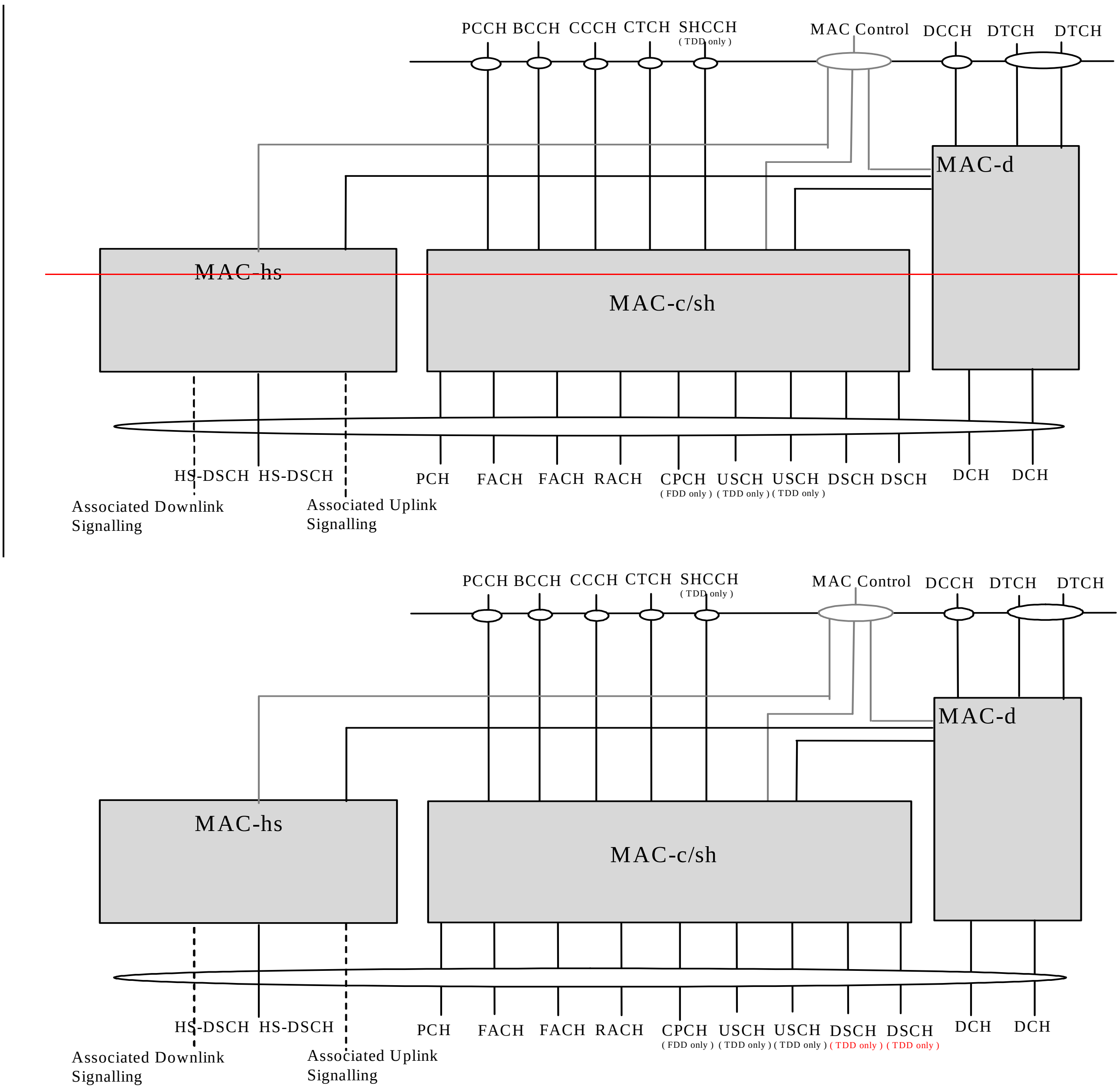


Figure 4.2.3.1: UE side MAC architecture

4.2.3.1 MAC-c/sh entity – UE Side

Figure 4.2.3.1.1 shows the UE side MAC-c/sh entity.

The following functionality is covered:

- TCTF MUX:
  - this function represents the handling (insertion for uplink channels and detection and deletion for downlink channels) of the TCTF field in the MAC header, and the respective mapping between logical and transport channels.
    The TCTF field indicates the common logical channel type, or if a dedicated logical channel is used;
- add/read UE Id:
  - the UE Id is added for CPCH and RACH transmissions
  - the UE Id, when present, identifies data to this UE.

- UL: TF selection:

  - in the uplink, the possibility of transport format selection exists.
    In case of CPCH transmission, a TF is selected based on TF availability determined from status information on the CSICH;

- ASC selection:

  - For RACH, MAC indicates the ASC associated with the PDU to the physical layer. For CPCH, MAC may indicate the ASC associated with the PDU to the Physical Layer. This is to ensure that RACH and CPCH messages associated with a given Access Service Class (ASC) are sent on the appropriate signature(s) and time slot(s). MAC also applies the appropriate back-off parameter(s) associated with the given ASC. When sending an RRC CONNECTION REQUEST message, RRC will determine the ASC; in all other cases MAC selects the ASC;

- scheduling /priority handling

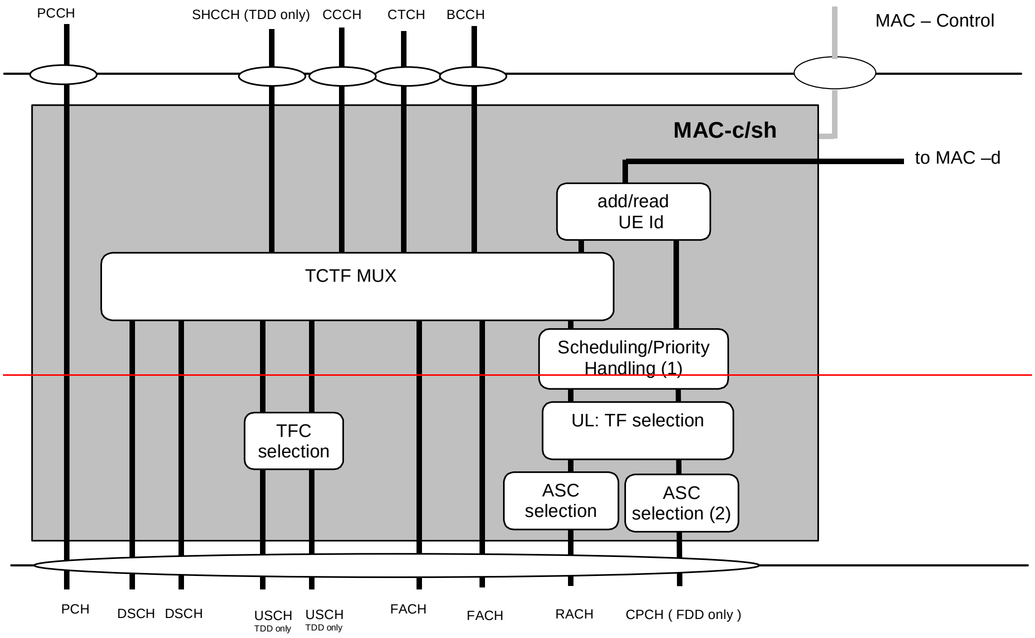
  - this functionality is used to transmit the information received from MAC-d on RACH and CPCH based on logical channel priorities. This function is related to TF selection.

- TFC selection

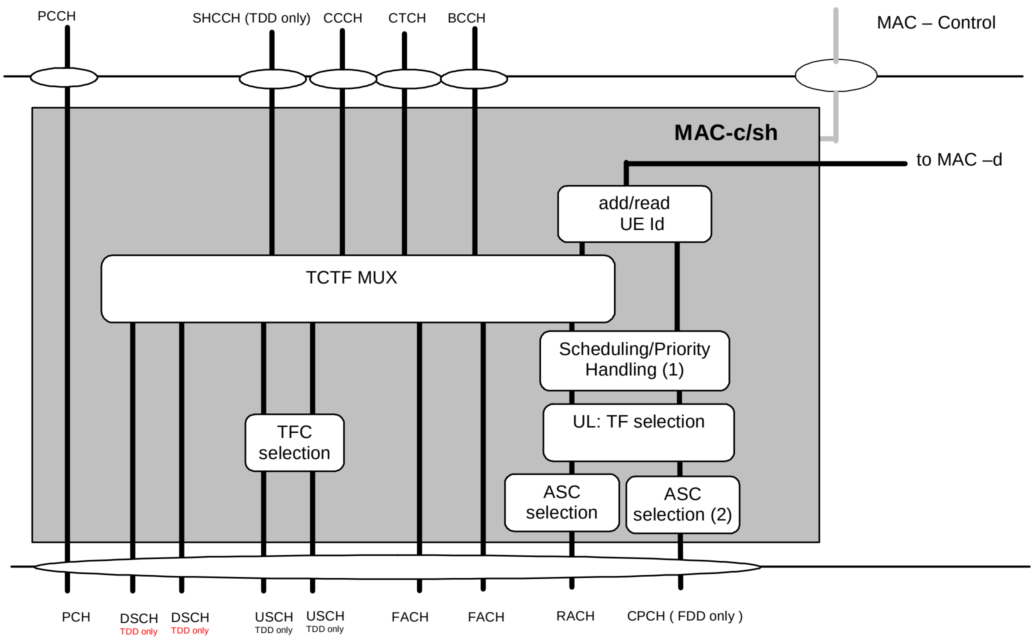
  - transport format and transport format combination selection according to the transport format combination set (or transport format combination subset) configured by RRC is performed,

The RLC provides RLC-PDUs to the MAC, which fit into the available transport blocks on the transport channels.

There is one MAC-c/sh entity in each UE.



Note 1: Scheduling /Priority handling is applicable for CPCH.
Note 2: In case of CPCH, ASC selection may be applicable for AP preamble.



Note 1: Scheduling /Priority handling is applicable for CPCH.
Note 2: In case of CPCH, ASC selection may be applicable for AP preamble.

Figure 4.2.3.1.1: UE side MAC architecture / MAC-c/sh details

4.2.3.2 MAC-d entity – UE Side

Figure 4.2.3.2.1 shows the UE side MAC-d entity.

The following functionality is covered:

- Transport Channel type switching

  - Transport Channel type switching is performed by this entity, based on decision taken by RRC. This is related to a change of radio resources. If requested by RRC, MAC shall switch the mapping of one designated logical channel between common and dedicated transport channels.

- C/T MUX:

  - The C/T MUX is used when multiplexing of several dedicated logical channels onto one transport channel (other than HS-DSCH) or one MAC-d flow (HS-DSCH) is used. An unambiguous identification of the logical channel is included.

- Ciphering:

  - Ciphering for transparent mode data to be ciphered is performed in MAC-d. Details about ciphering can be found in [10].

- Deciphering:

  - Deciphering for ciphered transparent mode data is performed in MAC-d. Details about ciphering can be found in [10].

- UL TFC selection:

  - Transport format and transport format combination selection according to the transport format combination set (or transport format combination subset) configured by RRC is performed.

The MAC-d entity is responsible for mapping dedicated logical channels for the uplink either onto dedicated transport channels or to transfer data to MAC-c/sh to be transmitted via common channels.

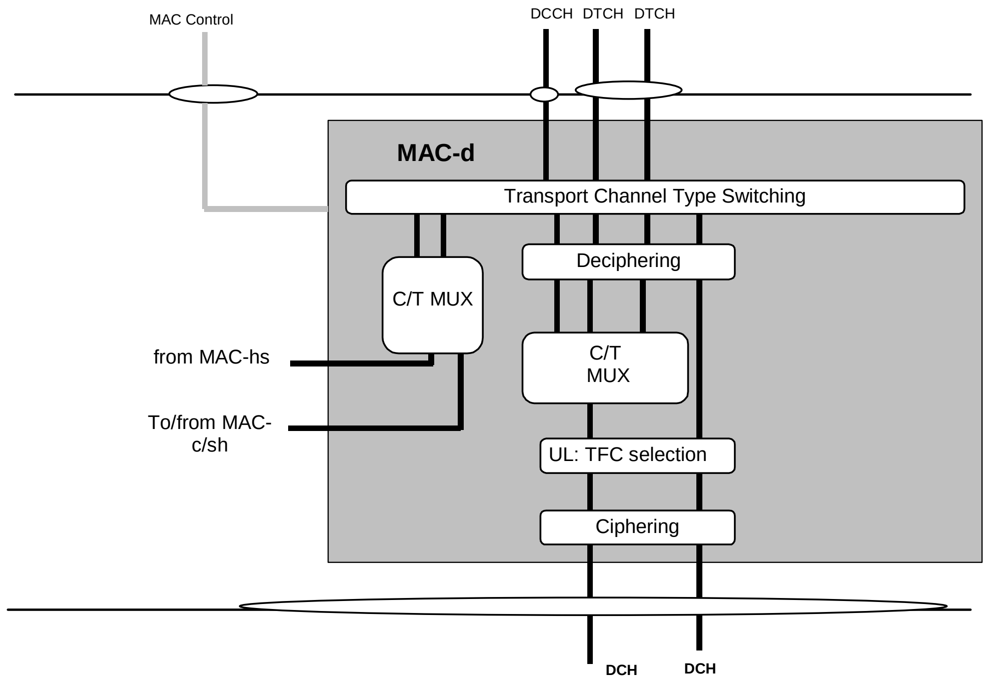
One dedicated logical channel can be mapped simultaneously onto DCH and DSCH in TDD mode.

One dedicated logical channel can be simultaneously mapped onto DCH and HS-DSCH.

The MAC-d entity has a connection to the MAC-c/sh entity. This connection is used to transfer data to the MAC-c/sh to transmit data on transport channels that are handled by MAC-c/sh (uplink) or to receive data from transport channels that are handled by MAC-c/sh (downlink).

The MAC-d entity has a connection to the MAC-hs entity. This connection is used to receive data from the HS-DSCH transport channel which is handled by MAC-hs (downlink).

There is one MAC-d entity in the UE.



Note 1: For DCH , DSCH and HS-DSCH, different scheduling mechanism apply
Note 2: Ciphering is performed in MAC-d only for transparent RLC mode

Figure 4.2.3.2.1: UE side MAC architecture / MAC-d details

4.2.3.3 MAC-hs entity – UE Side

The MAC-hs handles the HSDPA specific functions. In the model below the MAC-hs comprises the following entities:

- HARQ:
  The HARQ entity is responsible for handling the MAC functions relating to the HARQ protocol. The HARQ functional entity handles all the tasks that are required for hybrid ARQ. It is responsible for generating ACKs or NACKs. The detailed configuration of the hybrid ARQ protocol is provided by RRC over the MAC-Control SAP.

- Reordering Queue distribution:
  The reordering queue distribution function routes the MAC-hs PDUs to the correct reordering buffer based on the Queue ID.

- Reordering:
  The reordering entity reorders received MAC-hs PDUs according to the received TSN. MAC-hs PDUs with consecutive TSNs are delivered to the disassembly function upon reception. MAC-hs PDUs are not delivered to the disassembly function if MAC-hs PDUs with lower TSN are missing. There is one reordering entity for each Queue ID configured at the UE.

- Disassembly:
  The disassembly entity is responsible for the disassembly of MAC-hs PDUs. When a MAC-hs PDU is disassembled the MAC-hs header is removed, the MAC-d PDUs are extracted and any present padding bits are removed. Then the MAC-d PDUs are delivered to higher layer.

The associated signalling shown in the figure illustrates the exchange of information between layer 1 and layer 2 provided by primitives shown in [3].

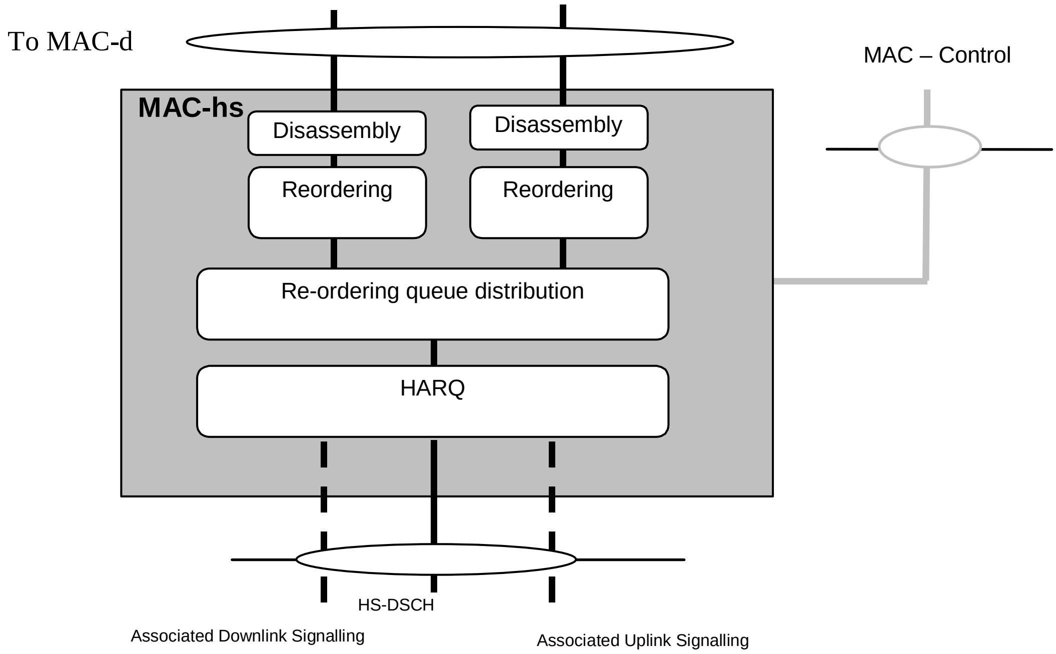


Figure 4.2.3.3.1: UE side MAC architecture / MAC-hs details

4.2.4 Traffic Related Architecture - UTRAN Side

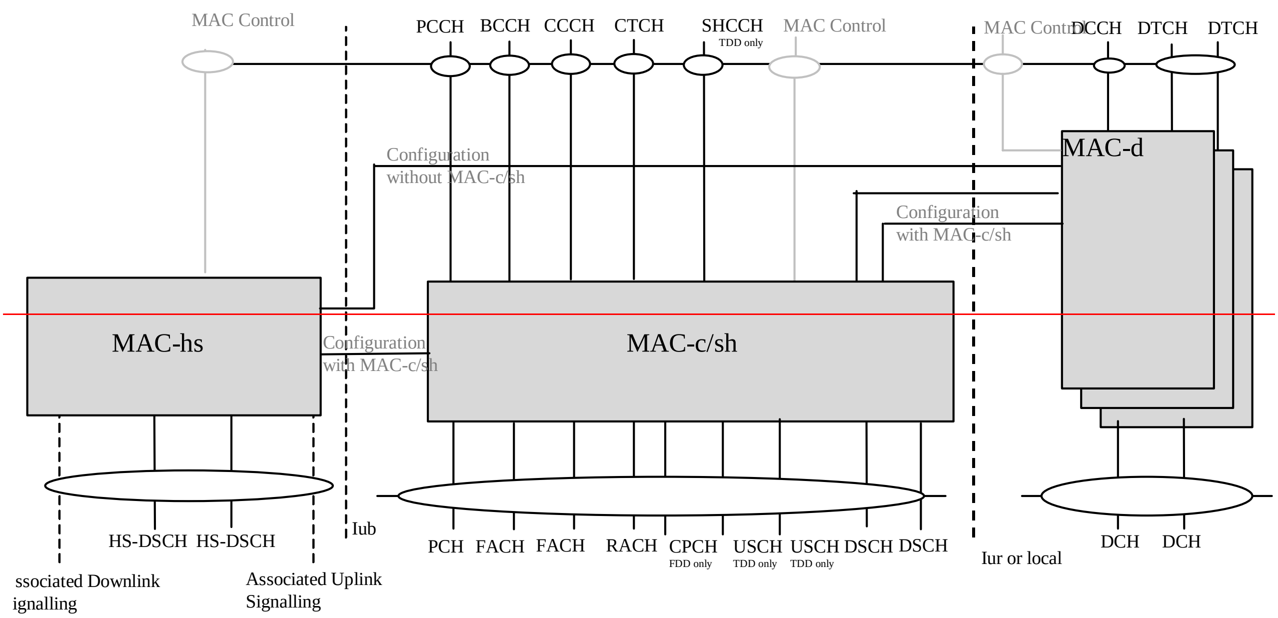
Figure 4.2.4.1 illustrates the connectivity between the MAC entities from the UTRAN side.

It is similar to the UE case with the exception that there will be one MAC-d for each UE and each UE (MAC-d) that is associated with a particular cell may be associated with that cell's MAC-c/sh.

MAC-c/sh is located in the controlling RNC while MAC-d is located in the serving RNC. MAC-hs is located in the Node B. The MAC-d PDUs to be transmitted are transferred from MAC-c/sh to the MAC-hs via the Iub interface in case of configuration with MAC-c/sh, or from the MAC-d via Iur/Iub in case of configuration without MAC-c/sh.

The MAC Control SAP is used to transfer Control information to each MAC entity belonging to one UE.

The associated signalling shown in the figure illustrates the exchange of information between layer 1 and layer 2 provided by primitives shown in [3].



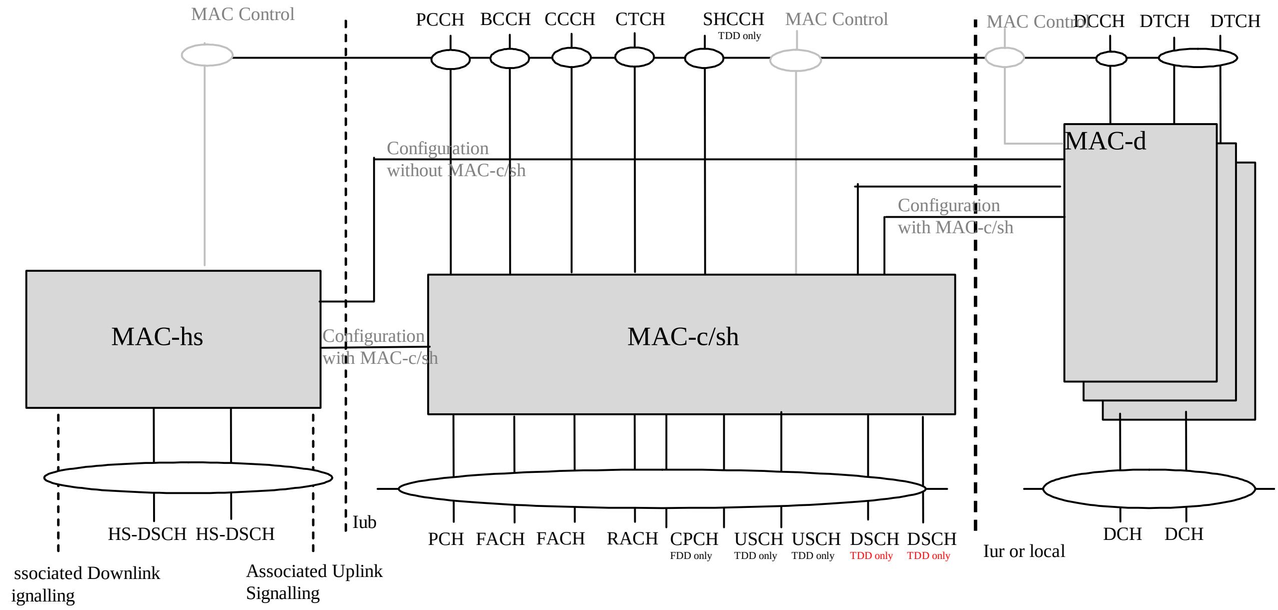


Figure 4.2.4.1: UTRAN side MAC architecture

4.2.4.1 MAC-c/sh entity – UTRAN Side

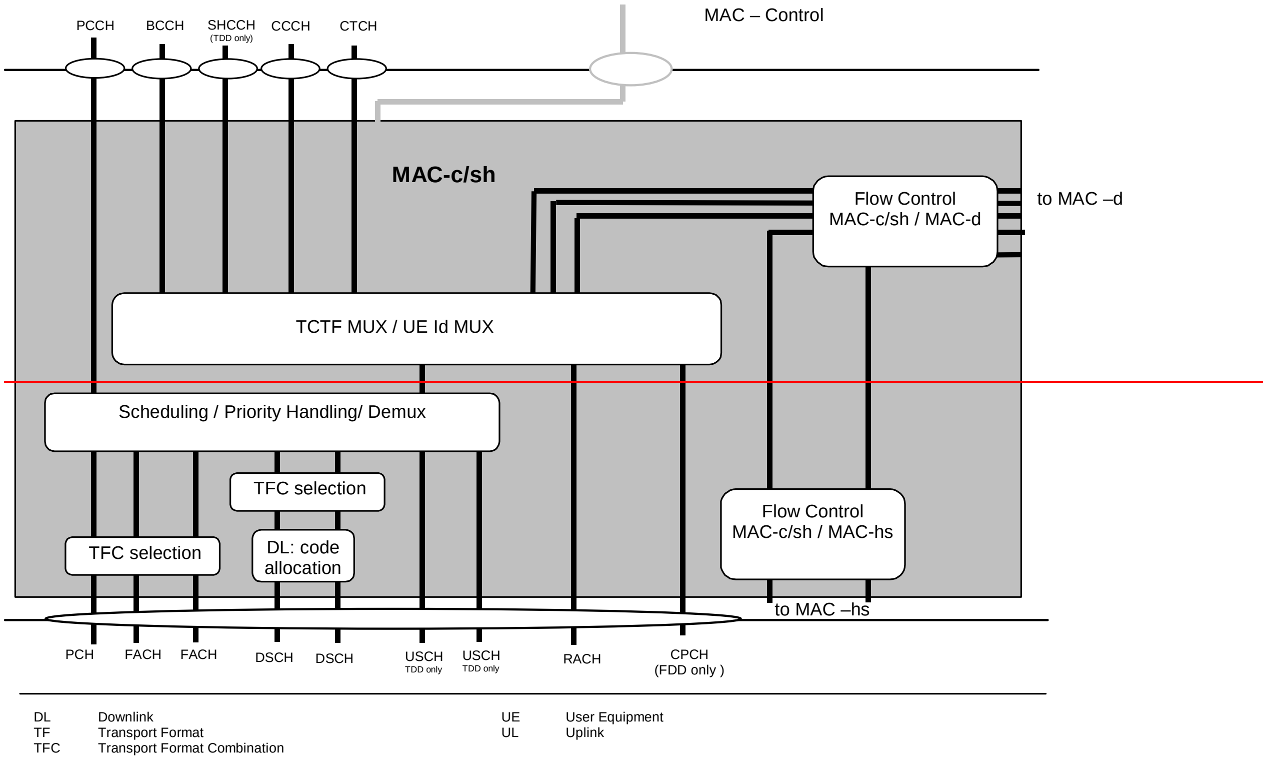
Figure 4.2.4.1.1 shows the UTRAN side MAC-c/sh entity. The following functionality is covered:

- Scheduling – Priority Handling;
  - this function manages FACH and for TDD DSCH resources between the UEs and between data flows according to their priority.
- TCTF MUX
  - this function represents the handling (insertion for downlink channels and detection and deletion for uplink channels) of the TCTF field in the MAC header, and the respective mapping between logical and transport channels.
    The TCTF field indicates the common logical channel type, or if a dedicated logical channel is used;
- UE Id Mux;
  - for dedicated type logical channels, the UE Id field in the MAC header is used to distinguish between UEs;

- TFC selection:
    - in the downlink, transport format combination selection is done for FACH and PCH and for TDD DSCHs;
- Demultiplex;
    - for TDD operation the demultiplex function is used to separate USCH data from different UEs, i.e. to be transferred to different MAC-d entities;
- DL code allocation;
    - for TDD this function is used to indicate the code used on the DSCH;
- Flow control;
    - a flow control function exists toward MAC-d to limit buffering between MAC-d and MAC-c/sh entities. a flow control function also exists towards MAC-hs in case of configuration with MAC-c/sh.

The RLC provides RLC-PDUs to the MAC, which fit into the available transport blocks on the transport channels.

There is one MAC-c/sh entity in the UTRAN for each cell;



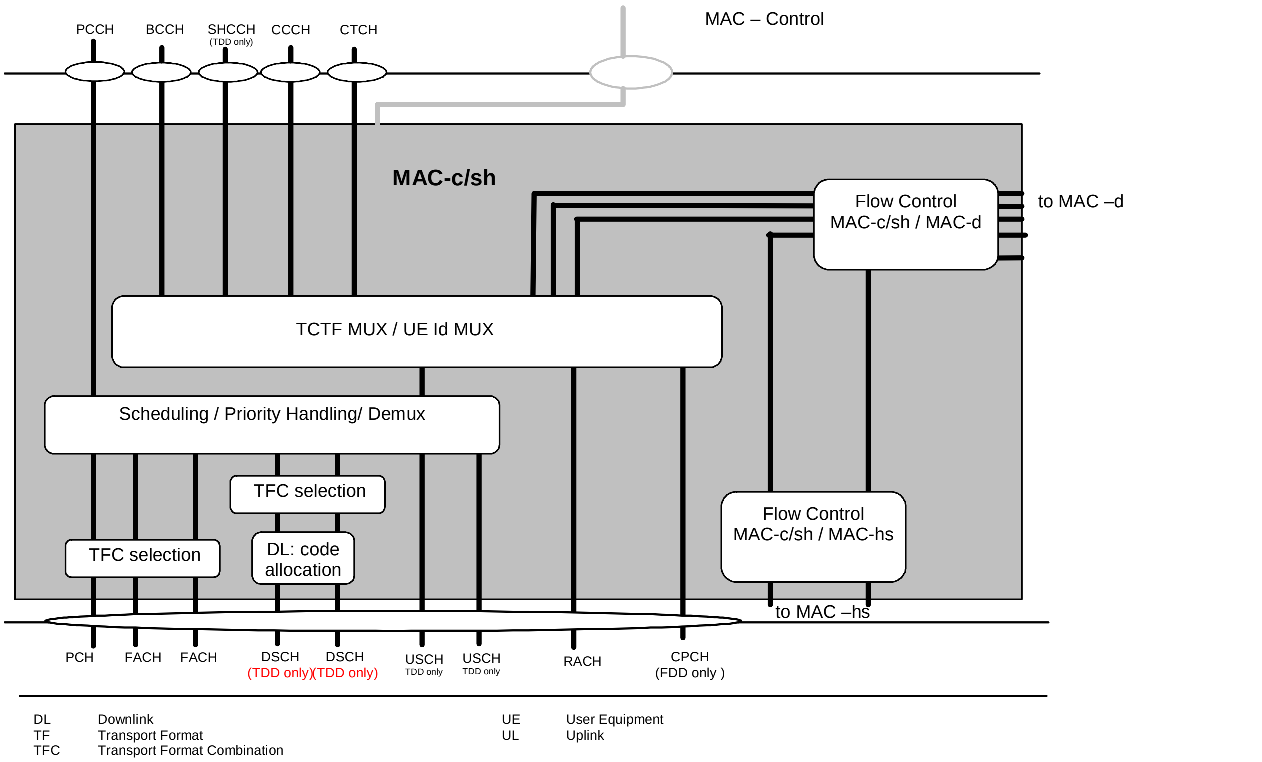


Figure 4.2.4.1.1: UTRAN side MAC architecture / MAC-c/sh details

4.2.4.2 MAC-d entity – UTRAN Side

Figure 4.2.4.2.1 shows the UTRAN side MAC-d entity.

The following functionality is covered:

- Transport Channel type switching:
  - Transport Channel type switching is performed by this entity, based on decision taken by RRC; this is related to a change of radio resources. If requested by RRC, MAC shall switch the mapping of one designated logical channel between common and dedicated transport channels.
- C/T MUX box;
  - the function includes the C/T field when multiplexing of several dedicated logical channels onto one transport channel (other than HS-DSCH) or one MAC-d flow (HS-DSCH) is used.
- Priority setting;
  - This function is responsible for priority setting on data received from DCCH / DTCH;
- Ciphering;
  - Ciphering for transparent mode data to be ciphered is performed in MAC-d. Details about ciphering can be found in [10].
- Deciphering;
  - Deciphering for ciphered transparent mode data is performed in MAC-d. Details about ciphering can be found in [10].
- DL Scheduling/Priority handling;
  - in the downlink, scheduling and priority handling of transport channels is performed within the allowed transport format combinations of the TFCS assigned by the RRC.
- Flow Control;
  - a flow control function exists toward MAC-c/sh to limit buffering between MAC-d and MAC-c/sh entities. This function is intended to limit layer 2 signalling latency and reduce discarded and retransmitted data as a result of FACH or for TDD DSCH congestion. For the Iur interface this is specified in [11]. A flow control function also exists towards MAC-hs in case of configuration without MAC-c/sh, see subclause 4.2.4.2.

A MAC-d entity using common channels other than the high speed downlink shared channel is connected to a MAC-c/sh entity that handles the scheduling of the common channels to which the UE is assigned and DL (FACH) priority identification to MAC-c/sh;

A MAC-d entity using downlink shared channel is connected to a MAC-c/sh entity that handles the shared channels to which the UE is assigned and indicates the level of priority of each PDU to MAC-c/sh;

A MAC-d entity using the high speed downlink shared channel may be connected to a MAC-c/sh entity that in turn is connected to the MAC-hs entity in the Node B (configuration with MAC-c/sh); alternately, a MAC-d entity using the high speed downlink shared channel may be connected to the MAC-hs entity in the Node B in case of configuration without MAC-c/sh.

A MAC-d entity is responsible for mapping dedicated logical channels onto the available dedicated transport channels or routing the data received on a DCCH or DTCH to MAC-c/sh or to MAC-hs.

One dedicated logical channel can be mapped simultaneously on DCH and DSCH in TDD mode. Different scheduling mechanisms apply for DCH and DSCH.

One dedicated logical channel can be mapped simultaneously on DCH and HS-DSCH.

There is one MAC-d entity in the UTRAN for each UE that has one or more dedicated logical channels to or from the UTRAN.

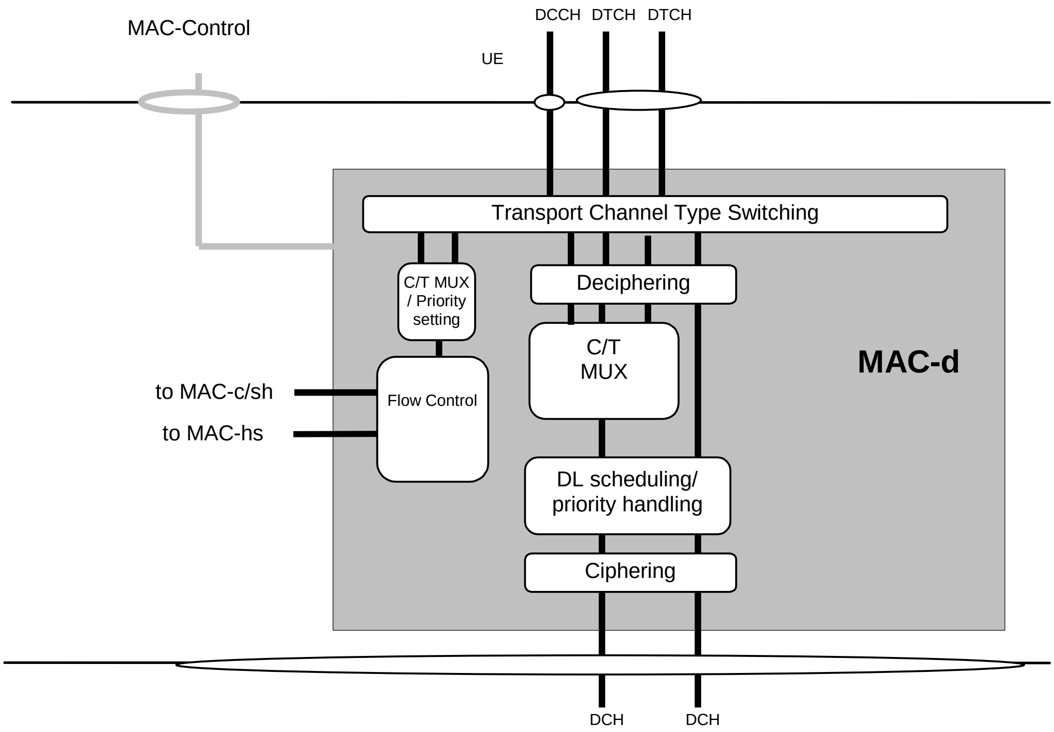


Figure 4.2.4.2.1: UTRAN side MAC architecture / MAC-d details

4.2.4.3 MAC-hs entity – UTRAN Side

There is one MAC-hs entity in the UTRAN for each cell that supports HS-DSCH transmission. The MAC-hs is responsible for handling the data transmitted on the HS-DSCH. Furthermore it is responsible for the management of the physical resources allocated to HSDPA. MAC-hs receives configuration parameters from the RRC layer via the MAC-Control SAP. There should be priority handling per MAC-d PDU in the MAC-hs. The MAC-hs is comprised of four different functional entities:

- Flow Control:
  This is the companion flow control function to the flow control function in the MAC-c/sh in case of configuration with MAC-c/sh and MAC-d in case of configuration without MAC-c/sh. Both entities together provide a controlled data flow between the MAC-c/sh and the MAC-hs (Configuration with MAC-c/sh) or the MAC-d and MAC-hs (Configuration without MAC-c/sh) taking the transmission capabilities of the air interface into account in a dynamic manner. This function is intended to limit layer 2 signalling latency and reduce discarded and retransmitted data as a result of HS-DSCH congestion. Flow control is provided independently by MAC-d flow for a given MAC-hs entity.

- Scheduling/Priority Handling:
  This function manages HS-DSCH resources between HARQ entities and data flows according to their priority. Based on status reports from associated uplink signalling either new transmission or retransmission is determined. Further it determines the Queue ID and TSN for each new MAC-hs PDU being serviced, and in the case of TDD the HCSN is determined. A new transmission can be initiated instead of a pending retransmission at any time to support the priority handling.

- HARQ:
  One HARQ entity handles the hybrid ARQ functionality for one user. One HARQ entity is capable of supporting multiple instances (HARQ process) of stop and wait HARQ protocols. There shall be one HARQ process per HS-DSCH per TTI.

- TFRC selection:
  Selection of an appropriate transport format and resource for the data to be transmitted on HS-DSCH.

The associated signalling shown in the figure illustrates the exchange of information between layer 1 and layer 2 provided by primitives shown in [3].

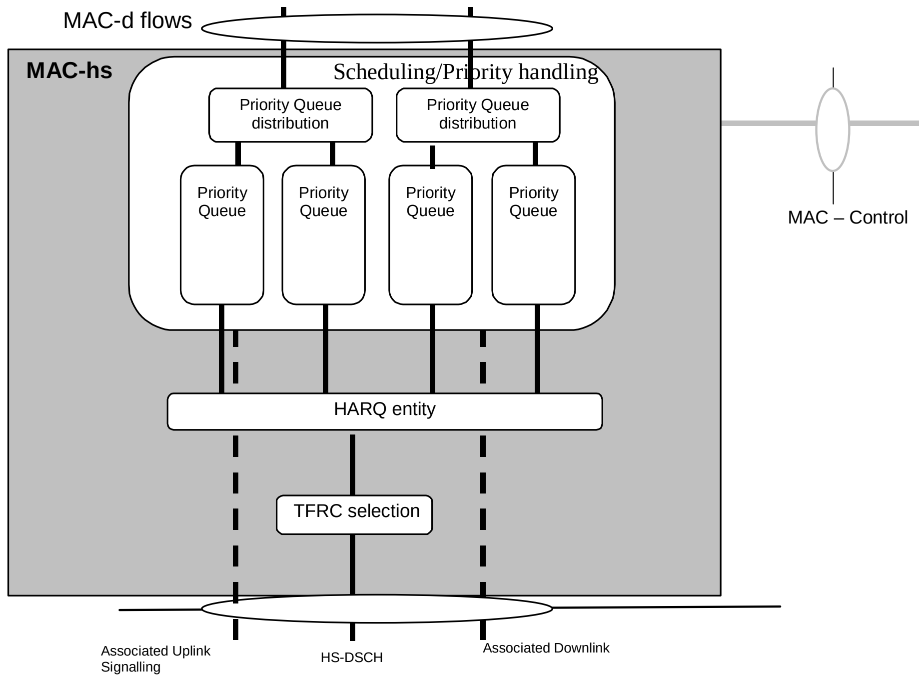


Figure 4.2.4.3.1: UTRAN side MAC architecture / MAC-hs details

4.3 Channel structure

The MAC operates on the channels defined below; the transport channels are described between MAC and Layer 1, the logical channels are described between MAC and RLC.

The following subclauses provide an overview, the normative description can be found in [2] and [3] respectively.

4.3.1 Transport channels

Common transport channel types are:

- Random Access Channel(s) (RACH);
- Forward Access Channel(s) (FACH);
- Downlink Shared Channel(s) (DSCH), for TDD operation only;
- High Speed Downlink Shared Channel(s) (HS-DSCH);
- Common Packet Channel(s) (CPCH) for UL FDD operation only;
- Uplink Shared Channel(s) (USCH), for TDD operation only;
- Broadcast Channel (BCH);
- Paging Channel (PCH).

Dedicated transport channel types are:

- Dedicated Channel (DCH).

4.3.2 Logical Channels

The MAC layer provides data transfer services on logical channels. A set of logical channel types is defined for different kinds of data transfer services as offered by MAC.

Each logical channel type is defined by what type of information is transferred.

4.3.2.1 Logical channel structure

The configuration of logical channel types is depicted in figure 4.3.2.1.

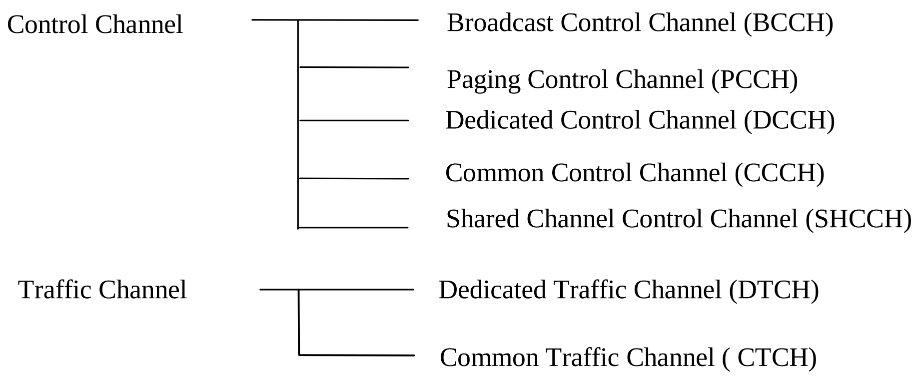


Figure 4.3.2.1: Logical channel structure

4.3.2.2 Control Channels

Following control channels are used for transfer of control plane information only:

- Broadcast Control Channel (BCCH);
- Paging Control Channel (PCCH);
- Common Control Channel (CCCH);
- Dedicated Control Channel (DCCH);
- Shared Channel Control Channel (SHCCH).

4.3.2.3 Traffic Channels

Following traffic channels are used for the transfer of user plane information only:

- Dedicated Traffic Channel (DTCH);
- Common Traffic Channel (CTCH).

5 Services provided to upper layers

This clause describes the different services provided by the MAC to higher layers. For a detailed description of the following functions see [2].

5.1 Description of Services provided to upper layers

- Data transfer: This service provides unacknowledged transfer of MAC SDUs between peer MAC entities without data segmentation.
- Reallocation of radio resources and MAC parameters: This service performs on request of RRC execution of radio resource reallocation and change of MAC parameters.
- Reporting of measurements: Local measurements are reported to RRC.

6 Functions

6.1 Description of the MAC functions

The functions of MAC include:

- mapping between logical channels and transport channels;
- selection of appropriate Transport Format for each Transport Channel depending on instantaneous source rate;
- priority handling between data flows of one UE;
- priority handling between UEs by means of dynamic scheduling;
- identification of UEs on common transport channels;
- multiplexing/demultiplexing of upper layer PDUs into/from transport blocks delivered to/from the physical layer on common transport channels;
- multiplexing/demultiplexing of upper layer PDUs into/from transport block sets delivered to/from the physical layer on dedicated transport channels;
- traffic volume measurement;
- Transport Channel type switching;
- ciphering for transparent mode RLC;
- Access Service Class selection for RACH and CPCH transmission;
- control of HS-DSCH transmission and reception including support of HARQ;
- HS-DSCH Provided Bit Rate measurement.

6.2 Relation between MAC Functions and Transport Channels

6.2.1 Relation between MAC Functions and Transport Channels in UTRAN

Table 6.2.1.1: UTRAN MAC functions corresponding to the transport channel

Associated MAC Functions	Logical Ch	Transport Ch	TF Selection	Priority handling between UEs	Priority handling (one UE)	Scheduling	Identification of UEs	Mux/ Demux on common transport channels	Mux/ Demux on dedicated transport channels	HARQ support
Uplink (Rx)	CCCH	RACH						X		
	DCCH	RACH					X	X		
	DCCH	CPCH					X	X		
	DCCH	DCH							X	
	DTCH	RACH					X	X		
	DTCH	CPCH					X	X		
	DTCH	DCH							X	
	SHCCH	RACH					X	X		
	SHCCH	USCH						X		
	DTCH	USCH						X		
	DCCH	USCH						X		
Downlink (Tx)	BCCH	BCH				X				
	BCCH	FACH	X			X		X		
	PCCH	PCH	X			X				
	CCCH	FACH	X	X		X		X		
	CTCH	FACH	X			X		X		
	DCCH	FACH	X	X		X	X	X		
	DCCH	DSCH	X	X			X	X		
	DCCH	DCH	X		X				X	
	DCCH	HS-DSCH	X (1)	X	X	X	X	X		X
	DTCH	FACH	X	X		X	X	X		
	DTCH	DSCH	X	X			X	X		
	DTCH	DCH	X		X				X	
	DTCH	HS-DSCH	X (1)	X	X	X	X	X		X
	SHCCH	FACH	X	X		X		X		
	SHCCH	DSCH	X	X				X		

NOTE 1: In case of HS-DSCH the TF selection is replaced by TFRC selection.

6.2.2 Relation of MAC Functions and Transport Channels in UE

Table 6.2.2.1: UE MAC functions corresponding to the transport channel

Associated MAC Functions	Logical Ch	Transport Ch	TF Selection	Priority handling (one UE)	Identification	Mux/Demux on common transport channels	Mux/Demux on dedicated transport channels	HARQ support
Uplink (Tx)	CCCH	RACH				X		
	DCCH	RACH	X	X	X	X		
	DCCH	CPCH	X	X	X	X		
	DCCH	DCH	X	X			X	
	DTCH	RACH	X	X	X	X		
	DTCH	CPCH	X	X	X	X		
	DTCH	DCH	X	X			X	
	SHCCH	RACH				X		
	SHCCH	USCH	X	X		X		
	DCCH	USCH	X	X		X		
	DTCH	USCH	X	X		X		
Downlink (Rx)	BCCH	BCH						
	BCCH	FACH				X		
	PCCH	PCH						
	CCCH	FACH				X		
	CTCH	FACH				X		
	DCCH	FACH			X	X		
	DCCH	DSCH				X		
	DCCH	DCH					X	
	DCCH	HS-DSCH			X	X		X
	DTCH	FACH			X	X		
	DTCH	DSCH				X		
	DTCH	DCH					X	
	DTCH	HS-DSCH			X	X		X
	SHCCH	FACH				X		
	SHCCH	DSCH				X		

7 Services expected from physical layer

The physical layer offers information transfer services to MAC. For detailed description, see [3].

8 Elements for layer-to-layer communication

The interaction between the MAC layer and other layers are described in terms of primitives where the primitives represent the logical exchange of information and control between the MAC layer and other layers. The primitives shall not specify or constrain implementations. The MAC is connected to layer 1, RLC and RRC. The following subclauses describe the primitives between these layers.

8.1 Primitives between layers 1 and 2

8.1.1 Primitives

The primitives are described in [3].

8.1.2 Parameters

a) Transport Format Resource Indicator (TFRI) for HS-DSCH:

- For HS-DSCH the Transport Block size is derived from the TFRI value signalled on the HS-SCCH. The mapping between TFRI value and Transport Block size is specified in subclause 9.2.3.

8.2 Primitives between MAC and RLC

8.2.1 Primitives

The primitives between MAC layer and RLC layer are shown in table 8.2.1.1.

Table 8.2.1.1: Primitives between MAC layer and RLC layer

Generic Name	Parameter			
	Request	**Indication**	**Response**	**Confirm**
MAC-DATA	Data, BO, UE-ID type indicator, RLC Entity Info	Data, No_TB, TD (note), Error indication		
MAC-STATUS		No_PDU, PDU_Size, TX status, Status_Report_REQ	BO, RLC Entity Info	
NOTE: TDD only.				

MAC-DATA-Req/Ind:

- MAC-DATA-Req primitive is used to request that an upper layer PDU be sent using the procedures for the information transfer service;
- MAC-DATA-Ind primitive indicates the arrival of upper layer PDUs received within one transmission time interval by means of the information transfer service.

MAC-STATUS-Ind/Resp:

- MAC-STATUS-Ind primitive indicates to RLC for each logical channel the rate at which it may transfer data to MAC. Parameters are the number of PDUs that can be transferred in each transmission time interval and the PDU size; it is possible that MAC would use this primitive to indicate that it expects the current buffer occupancy of the addressed logical channel in order to provide for optimised TFC selection on transport channels with long transmission time interval. At the UE, MAC-STATUS-Ind primitive is also used to indicate from MAC to RLC that MAC has requested data transmission by PHY (i.e. PHY-DATA-REQ has been submitted, see Fig. 11.2.2.1), or that transmission of an RLC PDU on RACH or CPCH has failed due to exceeded preamble ramping cycle counter.
- MAC-STATUS-Resp primitive enables RLC to acknowledge a MAC-STATUS-Ind. It is possible that RLC would use this primitive to indicate that it has nothing to send or that it is in a suspended state or to indicate the current buffer occupancy to MAC.

8.2.2 Parameters

a) Data:

- it contains the RLC layer messages (RLC-PDU) to be transmitted, or the RLC layer messages that have been received by the MAC sub-layer.

b) Number of transmitted transport blocks (No_TB) :

- indicates the number of transport blocks transmitted by the peer entity within the transmission time interval, based on the TFI value.

c) Buffer Occupancy (BO):

- the parameter Buffer Occupancy (BO) indicates for each logical channel the amount of data in number of bytes that is available for transmission and retransmission in RLC layer. When MAC is connected to an AM RLC entity, control PDUs to be transmitted and RLC PDUs outside the RLC Tx window shall also be included in the BO. RLC PDUs that have been transmitted but not negatively acknowledged by the peer entity shall not be included in the BO.

d) RX Timing Deviation (TD), TDD only:

- it contains the RX Timing Deviation as measured by the physical layer for the physical resources carrying the data of the Message Unit. This parameter is optional and only for Indication. It is needed for the transfer of the RX Timing Deviation measurement of RACH transmissions carrying CCCH data to RRC.

e) Number of PDU (No_PDU):

- specifies the number of PDUs that the RLC is permitted to transfer to MAC within a transmission time interval.

f) PDU Size (PDU_Size):

- specifies the size of PDU that can be transferred to MAC within a transmission time interval.

g) UE-ID Type Indicator:

- indicates the UE-ID type to be included in MAC for a DCCH and DTCH when they are mapped onto a common transport channel (i.e. FACH, RACH~~, DSCH~~ in FDD or CPCH). On the UE side UE-ID Type Indicator shall always be set to C-RNTI.

h) TX status:

- when set to value "transmission unsuccessful" this parameter indicates to RLC that transmission of an RLC PDU failed in the previous Transmission Time Interval, when set to value "transmission successful" this parameter indicates to RLC that the requested RLC PDU(s) has been submitted for transmission by the physical layer.

i) RLC Entity Info

- indicates to MAC the configuration parameters that are critical to TFC selection depending on its mode and the amount of data that could be transmitted at the next TTI. This primitive is meant to insure that MAC can perform TFC selection (see subclause 11.4).

j) Error indication

- When a MAC SDU is delivered to upper layer, an error indication is given for the SDU to upper layer if an error indication for the SDU has been received from lower layer.

k) Status_Report_REQ

- indicates to all AM RLC entities mapped on HS-DSCH to generate a status report when the MAC-hs resets.

8.3 Primitives between MAC and RRC

8.3.1 Primitives

The primitives between MAC and RRC are shown in table 8.3.1.1.

Table 8.3.1.1: Primitives between MAC sub-layer and RRC

Generic Name	Parameter			
	Request	Indication	Response	Confirm
CMAC-CONFIG	UE information elements, RB information elements, TrCH information elements, RACH transmission control elements, Ciphering elements, CPCH transmission control elements			
CMAC-MEASUREMENT	Measurement information elements	Measurement result		
CMAC-STATUS		Status info		

CMAC-CONFIG-Req:

- CMAC-CONFIG-Req is used to request for setup, release and configuration of a logical channel, e.g. RNTI allocation, switching the connection between logical channels and transport channels, TFCS update or scheduling priority of logical channel.

CMAC-MEASUREMENT-Req/Ind:

- CMAC-MEASUREMENT-Req is used by RRC to request MAC to perform measurements, e.g. traffic volume measurements;

- CMAC-MEASUREMENT-Ind is used to notify RRC of the measurement result.

CMAC-STATUS-Ind:

- CMAC-STATUS-Ind primitive notifies RRC of status information.

8.3.2 Parameters

See [7] for a detailed description of the UE, RB and TrCH information elements.

a) UE information elements
S-RNTI
SRNC identity
C-RNTI
Activation time

b) RB information elements
RB multiplexing info (Transport channel identity, Logical channel identity, MAC logical channel priority)

c) TrCH information elements
Transport Format Combination Set
MAC-hs reset indicator
Re-ordering release timer (T1)

d) Measurement information elements
Reporting Quantity identifiers
Time interval to take an average or a variance (applicable when Average or Variance is Reporting Quantity)

e) Measurement result
Reporting Quantity

f) Status info
when set to value ""transmission unsuccessful"" this parameter indicates to RRC that transmission of a TM RLC PDU failed (due to e.g. Maximum number of preamble ramping cycles reached for RACH in FDD), when set to value "transmission successful" this parameter indicates to RRC that the requested TM RLC PDU(s) has been submitted for transmission by the physical layer.

g) RACH transmission control elements
Set of ASC parameters (identifier for PRACH partitions, persistence values)

Maximum number of preamble ramping cycles (FDD) or synchronisation attempts (1.28 Mcps TDD) M_{max}
Minimum and maximum number of time units between two preamble ramping cycles, N_{BO1min} and N_{BO1max} (FDD only)
ASC for RRC CONNECTION REQUEST message

h) Ciphering elements
Ciphering mode
Ciphering key
Ciphering sequence number

i) CPCH transmission control elements
CPCH persistency value, P for each Transport Format
Maximum number of preamble ramping cycles $N_{\_access\_fails}$
NF_max (Maximum number of frames for CPCH transmission for each Transport Format)
N_EOT (Number of EOT for release of CPCH transmission)
Backoff control timer parameters
Transport Format Set
Initial Priority Delays
Channel Assignment Active indication

9 Elements for peer-to-peer communication

9.1 Protocol data units

9.1.1 General

A MAC PDU is a bit string, with a length not necessarily a multiple of 8 bits. In the drawings in clause 9.1, bit strings are represented by tables in which the first bit is the leftmost one on the first line of the table, the last bit is the rightmost on the last line of the table, and more generally the bit string is to be read from left to right and then in the reading order of the lines.

Depending on the provided service, MAC SDUs are bit strings with any non-null length, or bit strings with an integer number of octets in length. An SDU is included into a MAC PDU from first bit onward.

In the UE for the uplink, all MAC PDUs delivered to the physical layer within one TTI are defined as Transport Block Set (TBS). It consists of one or several Transport Blocks, each containing one MAC PDU. The Transport Blocks, shall be transmitted in the order as delivered from RLC. When multiplexing of RLC PDUs from different logical channels is performed on MAC, the order of all Transport Blocks originating from the same logical channel shall be the same as the order of the sequence delivered from RLC. The order of the different logical channels in a TBS is set by the MAC protocol.

9.1.2 MAC PDU (non-HS-DSCH)

A MAC PDU consists of an optional MAC header and a MAC Service Data Unit (MAC SDU), see figure 9.1.2.1. Both the MAC header and the MAC SDU are of variable size.

The content and the size of the MAC header depends on the type of the logical channel, and in some cases none of the parameters in the MAC header are needed.

The size of the MAC-SDU depends on the size of the RLC-PDU, which is defined during the setup procedure.

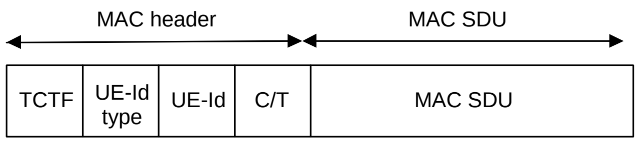


Figure 9.1.2.1: MAC PDU

9.1.3 MAC-d PDU (HS-DSCH)

For HS-DSCH the MAC-d PDU format equals the MAC PDU format for the non HS-DSCH case.

9.1.4 MAC PDU (HS-DSCH)

In case of HS-DSCH a MAC PDU consists of one MAC-hs header and one or more MAC-hs SDUs where each MAC-hs SDU equals a MAC-d PDU. A maximum of one MAC-hs PDU can be transmitted in a TTI per UE. The MAC-hs header is of variable size. The MAC-hs SDUs in one TTI belongs to the same reordering queue.

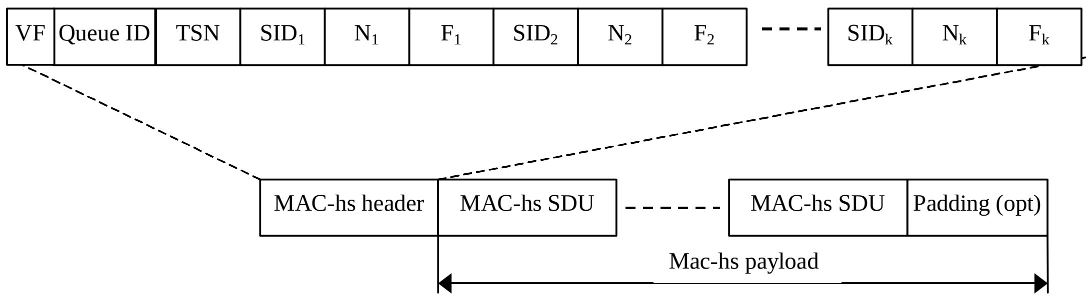


Figure 9.1.4.1: MAC-hs PDU

9.2 Formats and parameters

NOTE: MAC header field encodings as specified in this clause with designation "Reserved" are forbidden to be used by a sender in this version of the protocol.

9.2.1 MAC PDU: Parameters of the MAC PDU header (non HS-DSCH) and MAC-d PDU header (HS-DSCH)

The following fields are defined for the MAC header for transport channels other than HS-DSCH and for the MAC-d PDU header for HS-DSCH:

- Target Channel Type Field
  The TCTF field is a flag that provides identification of the logical channel class on FACH and RACH transport channels, i.e. whether it carries BCCH, CCCH, CTCH, SHCCH or dedicated logical channel information. The size and coding of TCTF for FDD and TDD are shown in tables 9.2.1.1, 9.2.1.2, 9.2.1.3, 9.2.1.4 and 9.2.1.5. Note that the size of the TCTF field of FACH for FDD is either 2 or 8 bits depending of the value of the 2 most significant bits and for TDD is either 3 or 5 bits depending on the value of the 3 most significant bits. The TCTF of the RACH for TDD is either 2 or 4 bits depending on the value of the 2 most significant bits.

Table 9.2.1.1: Coding of the Target Channel Type Field on FACH for TDD

TCTF	Designation
000	BCCH
001	CCCH
010	CTCH
01100	DCCH or DTCH over FACH
01101-01111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
100	SHCCH
101-111	Reserved (PDUs with this coding will be discarded by this version of the protocol)

Table 9.2.1.2: Coding of the Target Channel Type Field on FACH for FDD

TCTF	Designation
00	BCCH
01000000	CCCH
01000001-01111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
10000000	CTCH
10000001-10111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	DCCH or DTCH over FACH

Table 9.2.1.3: Coding of the Target Channel Type Field on USCH or DSCH (TDD only)

TCTF	Designation
0	SHCCH
1	DCCH or DTCH over USCH or DSCH

Table 9.2.1.4: Coding of the Target Channel Type Field on RACH for FDD

TCTF	Designation
00	CCCH
01	DCCH or DTCH over RACH
10-11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

Table 9.2.1.5: Coding of the Target Channel Type Field on RACH for TDD

TCTF	Designation
00	CCCH
0100	DCCH or DTCH Over RACH
0101-0111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
10	SHCCH
11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

- C/T field
  The C/T field provides identification of the logical channel instance when multiple logical channels are carried on the same transport channel (other than HS-DSCH) or same MAC-d flow (HS-DSCH). The C/T field is used also to provide identification of the logical channel type on dedicated transport channels and on FACH and RACH when used for user data transmission. The size of the C/T field is fixed to 4 bits for both common transport channels and dedicated transport channels. Table 9.2.1.5a shows the 4-bit C/T field.

Table 9.2.1.5a: Structure of the C/T field

C/T field	Designation
0000	Logical channel 1
0001	Logical channel 2
...	...
1110	Logical channel 15
1111	Reserved (PDUs with this coding will be discarded by this version of the protocol)

- UE-Id
  The UE-Id field provides an identifier of the UE on common transport channels. The following types of UE-Id used on MAC are defined:
  - UTRAN Radio Network Temporary Identity (U-RNTI) may be used in the MAC header of DCCH using RLC UM (SRB1), when mapped onto common transport channels in downlink direction; the U-RNTI is never used in uplink direction;
  - Cell Radio Network Temporary Identity (C-RNTI) is used on DTCH and DCCH in uplink, and may be used on DCCH in downlink and is used on DTCH in downlink when mapped onto common transport channels, except when mapped onto DSCH transport channel in TDD;
  - ~~In FDD, DSCH Radio Network Temporary Identity (DSCH-RNTI) is used on DTCH and DCCH in downlink when mapped onto DSCH transport channel;~~ ~~the UE id to be used by MAC is configured through the MAC control SAP. The lengths of the UE-id field of the MAC header are given in table 9.2.1.6.~~

Table 9.2.1.6: Lengths of UE Id field

UE Id type	Length of UE Id field
U-RNTI	32 bits
C-RNTI	16 bits
~~DSCH-RNTI~~	~~16 bits~~

- UE-Id Type
  The UE-Id Type field is needed to ensure correct decoding of the UE-Id field in MAC Headers.

Table 9.2.1.7: UE-Id Type field definition

UE-Id Type field 2 bits	UE-Id Type
00	U-RNTI
01	C-RNTI ~~or DSCH-RNTI~~
10	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

9.2.1.1 MAC header for DTCH and DCCH (not mapped on HS-DSCH)

a) DTCH or DCCH mapped to DCH, no multiplexing of dedicated channels on MAC:

- no MAC header is required.

b) DTCH or DCCH mapped to DCH, with multiplexing of dedicated channels on MAC:

- C/T field is included in MAC header.

c) DTCH or DCCH mapped to RACH/FACH:

- TCTF field, C/T field, UE-Id type field and UE-Id are included in the MAC header. For FACH, the UE-Id type field used is the C-RNTI or U-RNTI. For RACH, the UE-Id type field used is the C-RNTI.

d) DTCH or DCCH mapped to DSCH or USCH:

- the TCTF field is included in the MAC header~~ for TDD only~~. ~~The UE-Id type and UE-Id are included in the MAC header for FDD only. The UE-Id type field used is the DSCH-RNTI. ~~The C/T field is included if multiplexing on MAC is applied.

e) DTCH or DCCH mapped to DSCH or USCH where DTCH or DCCH are the only logical channels:

- ~~the UE-Id type and UE-Id are included in the MAC header for FDD only. The UE-Id type field used is the DSCH-RNTI. ~~The C/T field is included in the MAC header if multiplexing on MAC is applied.

f) DTCH or DCCH mapped to CPCH:

- UE-Id type field and UE-Id are included in the MAC header. The C/T field is included in the MAC header if multiplexing on MAC is applied. The UE-Id type field used is the C-RNTI.

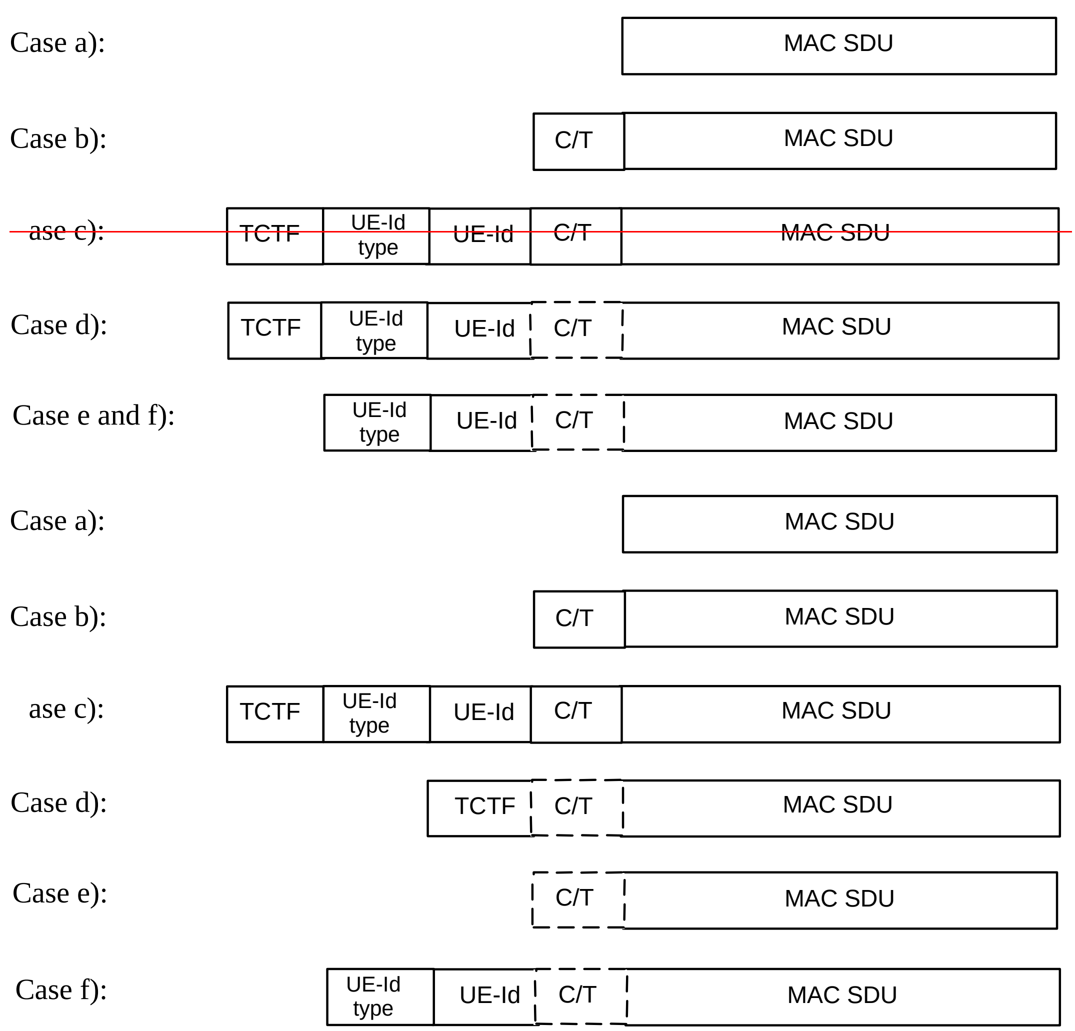


Figure 9.2.1.1.1: MAC PDU formats for DTCH and DCCH

9.2.1.1a MAC-d Header for DTCH and DCCH (mapped on HS-DSCH)

The MAC-d PDU header for DTCH and DCCH mapped on HS-DSCH is as shown in figure 9.2.1.1a.1.

- C/T field is included in the MAC-d PDU header if multiplexing on MAC is applied.

Figure 9.2.1.1a.1 MAC-d PDU format for DTCH and DCCH mapped on HS-DSCH

9.2.1.2 MAC header for BCCH

a) BCCH mapped to BCH:

  - no MAC header is included.

b) BCCH mapped to FACH:

  - the TCTF field is included in MAC header.

Case a):

	MAC SDU

Case b):

TCTF	MAC SDU

Figure 9.2.1.2.1: MAC PDU formats for BCCH

9.2.1.3 MAC header for PCCH

There is no MAC header for PCCH.

9.2.1.4 MAC header for CCCH

CCCH mapped to RACH/FACH:

- TCTF field is included in MAC header.

TCTF	MAC SDU

Figure 9.2.1.4.1: MAC PDU formats for CCCH

9.2.1.5 MAC Header for CTCH

The TCTF field is included as MAC header for CTCH as shown in figure 9.2.1.5.1.

TCTF	MAC SDU

Figure 9.2.1.5.1: MAC PDU format for CTCH

9.2.1.6 MAC Header for SHCCH

The MAC header for SHCCH is as shown in figure 9.2.1.6.1.

a) SHCCH mapped to RACH and USCH/FACH and DSCH:

   - TCTF has to be included.

b) SHCCH mapped to RACH and USCH/FACH and DSCH, where SHCCH is the only channel.

Case a):

TCTF	MAC SDU

Case b):

	MAC SDU

Figure 9.2.1.6.1: MAC PDU format for SHCCH

3GPP TSG-RAN Working Group 2 #47
Athens, Greece, 9 – 13 May 2005

Tdoc* ⌘ *R2-051613

CR-Form-v7

CHANGE REQUEST

⌘	**25.321**	**CR**	**0212**	⌘ **rev**	**-**	⌘	Current version:	**6.4.0** ⌘

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

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

Title:	⌘	Feature Clean-up: Removal of DSCH (FDD)	
Source:	⌘	RAN WG2	
Work item code:	⌘	TEI5	***Date:*** ⌘ 10/05/2005
Category:	⌘	**C**	***Release:*** ⌘ Rel-6
		Use one of the following categories: ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *Rel-4 (Release 4)* *Rel-5 (Release 5)* *Rel-6 (Release 6)*

Reason for change:	⌘	Removal of DSCH for FDD
Summary of change:	⌘	Removal of DSCH for FDD
Consequences if not approved:	⌘	DSCH for FDD mode will remain specified

Clauses affected:	⌘	4.2.1, 4.2.3, 4.2.3.1, 4.2.3.2, 4.2.4, 4.2.4.1, 4.2.4.2, 4.3.1, 8.2.2, 9.2.1, 9.2.1.1				
		Y	**N**			
Other specs	⌘	**X**		Other core specifications	⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
affected:		**X**		Test specifications		34.108, 34.123
				O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

4 General

4.1 Objective

The objective is to describe the MAC architecture and the different MAC entities from a functional point of view.

4.2 MAC architecture

The description in this subclause is a model and does not specify or restrict implementations.

According to the RRC functions the RRC is generally in control of the internal configuration of the MAC.

4.2.1 MAC Entities

The diagrams that describe the MAC architecture are constructed from MAC entities.

The entities are assigned the following names.

- MAC-b is the MAC entity that handles the following transport channels:
  - broadcast channel (BCH)
- MAC-c/sh/m, is the MAC entity that handles the following transport channels:
  - paging channel (PCH)
  - forward access channel (FACH)
  - random access channel (RACH)
  - common packet channel (UL CPCH). The CPCH exists only in FDD mode.
  - downlink shared channel (DSCH). The DSCH exists only in TDD mode.
  - uplink shared channel (USCH). The USCH exists only in TDD mode.
- MAC-d is the MAC entity that handles the following transport channels:
  - dedicated transport channel (DCH)
- MAC-hs is the MAC entity that handles the following transport channels:
  - high speed downlink shared channel (HS-DSCH)
- MAC-m is the MAC entity that handles the following transport channels:
  - forward access channel (FACH).
- MAC-e/es are the MAC entities that handle the following transport channels:
  - enhanced dedicated transport channel (E-DCH).

The exact functions completed by the entities are different in the UE from those completed in the UTRAN.

NOTE: When a UE is allocated resources for exclusive use by the bearers that it supports the MAC-d entities dynamically share the resources between the bearers and are responsible for selecting the TFI/ TFCI that is to be used in each transmission time interval.

4.2.2 MAC-b

The following diagram illustrates the connectivity of the MAC-b entity in a UE and in each cell of the UTRAN.

MAC-b represents the control entity for the broadcast channel (BCH).

There is one (current cell) or multiple (current and neighbour cells) MAC-b entities in each UE and one MAC-b in the UTRAN for each cell.

The MAC Control SAP is used to transfer Control information to MAC-b.

The MAC-b entity is located in the Node B.

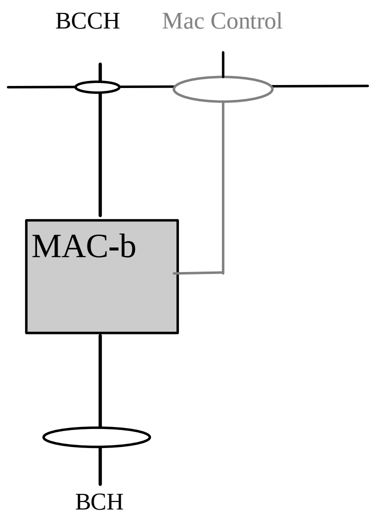


Figure 4.2.2.1: UE side and UTRAN side architecture

4.2.3 Traffic Related Architecture - UE Side

Figure 4.2.3.1 illustrates the connectivity of MAC entities.

The MAC-c/sh/m controls access to all common transport channels, except the HS-DSCH transport channel.

The MAC-d controls access to all dedicated transport channels, to MAC-c/sh/m and MAC-hs.

The MAC-hs controls access to the HS-DSCH transport channel.

The MAC-e/es controls access to the E-DCH transport channel.

In case of selective combining of MTCH channels from multiple cells, the MAC-m controls access to the FACH transport channels used to carry MTCH and MSCH.

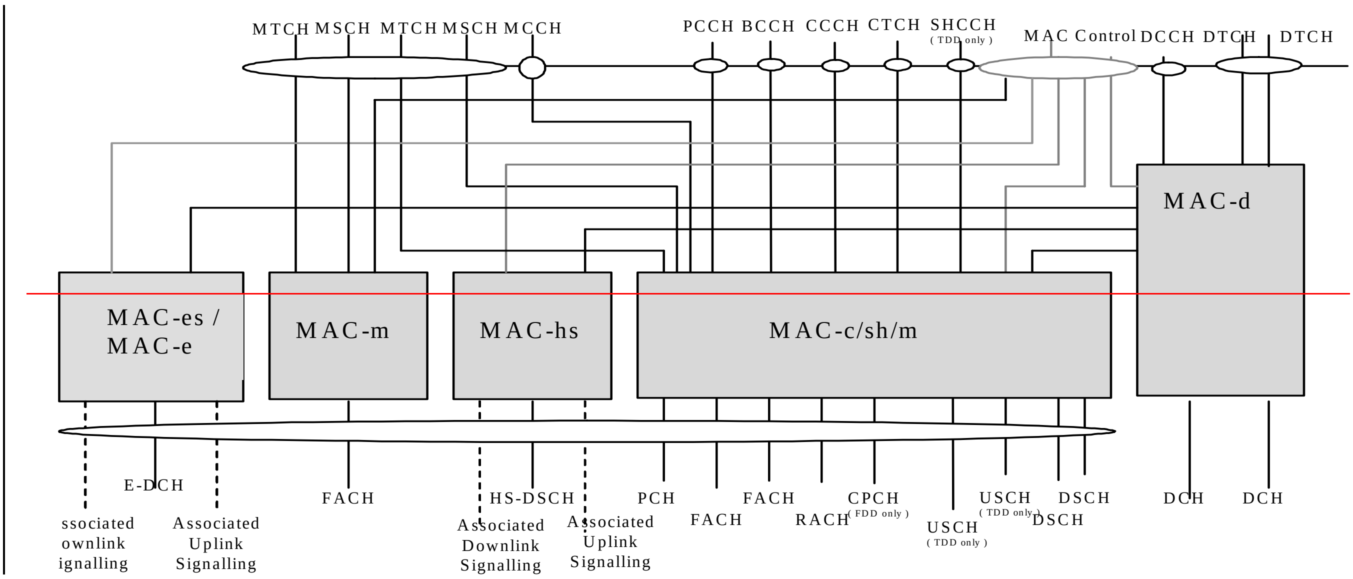
In the downlink, if logical channels of dedicated type are mapped to common transport channels then MAC-d receives the data from MAC-c/sh/m or MAC-hs via the illustrated connection between the functional entities.

In the uplink, if logical channels of dedicated type are mapped to common transport channels then MAC-d submits the data to MAC-c/sh/m via the illustrated connection between the functional entities.

The mapping of logical channels on transport channels depends on the multiplexing that is configured by RRC.

The MAC Control SAP is used to transfer Control information to each MAC entity.

The associated signalling shown in the figure illustrates the exchange of information between layer 1 and layer 2 provided by primitives shown in [3].



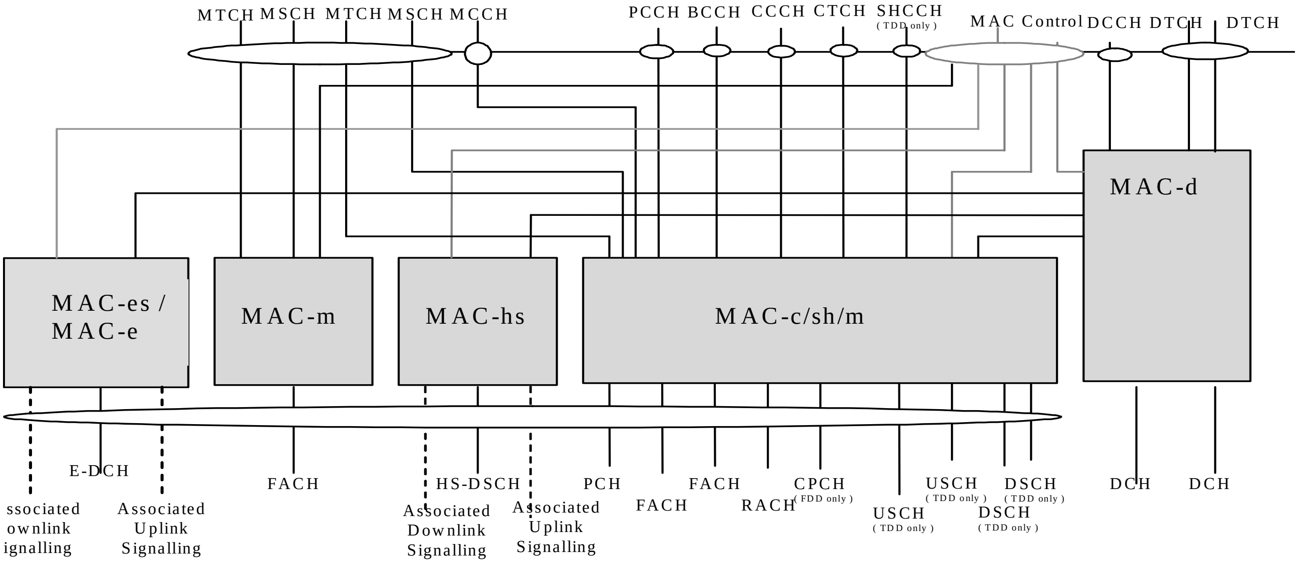


Figure 4.2.3.1: UE side MAC architecture

4.2.3.1 MAC-c/sh/m entity – UE Side

Figure 4.2.3.1.1 shows the UE side MAC-c/sh/m entity.

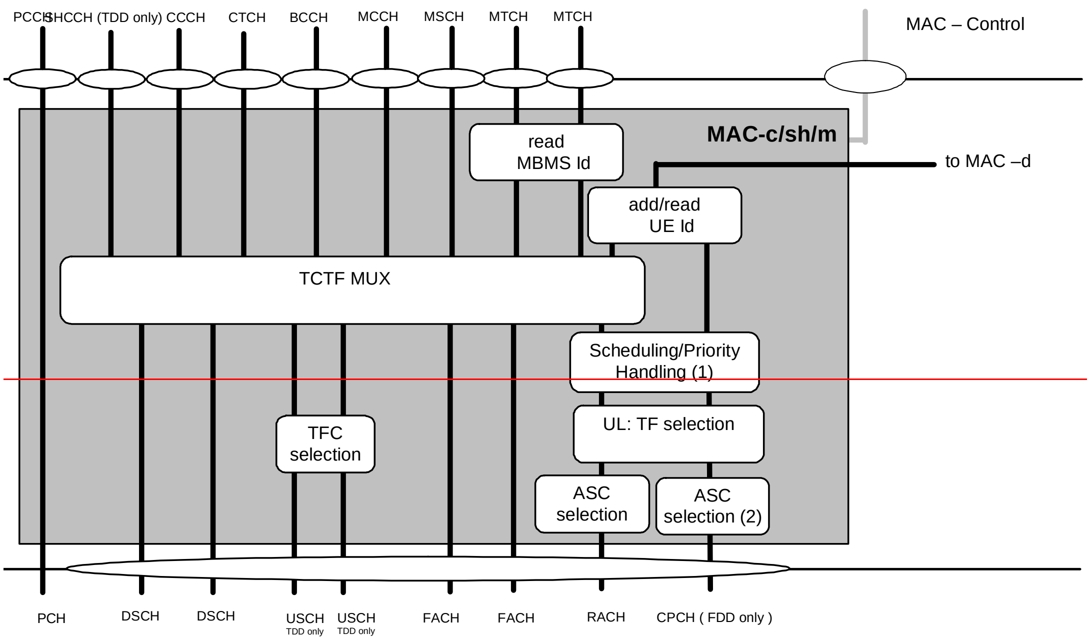
The following functionality is covered:

- TCTF MUX:
  - this function represents the handling (insertion for uplink channels and detection and deletion for downlink channels) of the TCTF field in the MAC header, and the respective mapping between logical and transport channels.
    The TCTF field indicates the common logical channel type, or if a dedicated logical channel is used;
- add/read UE Id:
  - the UE Id is added for CPCH and RACH transmissions;
  - the UE Id, when present, identifies data to this UE.
- read MBMS Id:

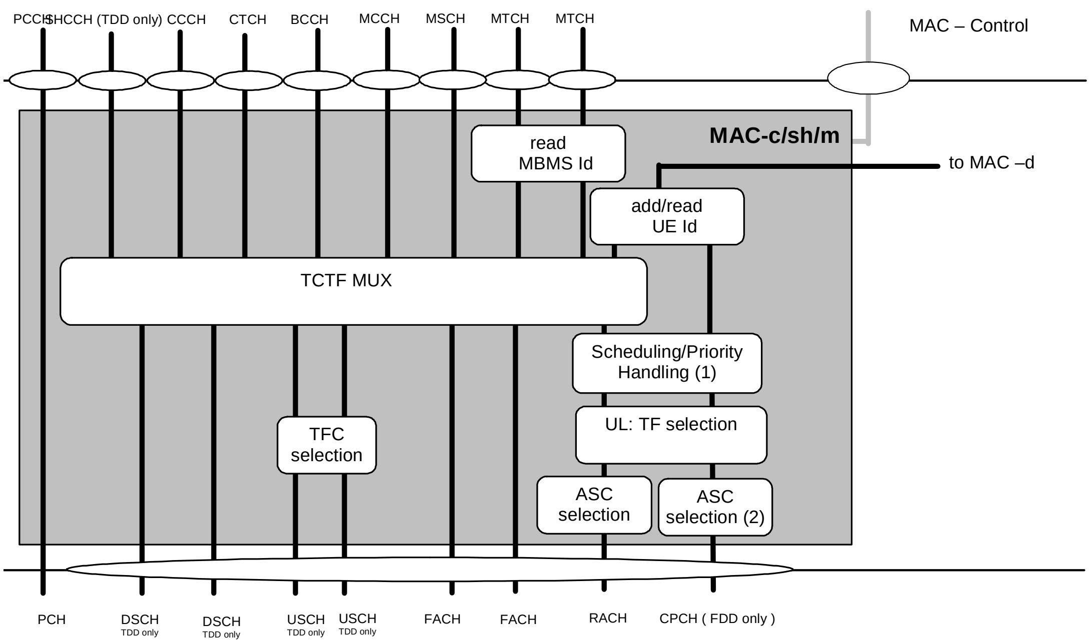
    - the MBMS Id is read in case of MTCH reception;
    - the MBMS Id identifies received data to an MBMS service.
- UL: TF selection:
    - in the uplink, the possibility of transport format selection exists.
      In case of CPCH transmission, a TF is selected based on TF availability determined from status information on the CSICH;
- ASC selection:
    - For RACH, MAC indicates the ASC associated with the PDU to the physical layer. For CPCH, MAC may indicate the ASC associated with the PDU to the Physical Layer. This is to ensure that RACH and CPCH messages associated with a given Access Service Class (ASC) are sent on the appropriate signature(s) and time slot(s). MAC also applies the appropriate back-off parameter(s) associated with the given ASC. When sending an RRC CONNECTION REQUEST message, RRC will determine the ASC; in all other cases MAC selects the ASC;
- scheduling /priority handling
    - this functionality is used to transmit the information received from MAC-d on RACH and CPCH based on logical channel priorities. This function is related to TF selection.
- TFC selection
    - transport format and transport format combination selection according to the transport format combination set (or transport format combination subset) configured by RRC is performed,

The RLC provides RLC-PDUs to the MAC, which fit into the available transport blocks on the transport channels.

There is one MAC-c/sh/m entity in each UE.



Note 1: Scheduling /Priority handling is applicable for CPCH.
Note 2: In case of CPCH, ASC selection may be applicable for AP preamble.



Note 1: Scheduling /Priority handling is applicable for CPCH.
Note 2: In case of CPCH, ASC selection may be applicable for AP preamble.

Figure 4.2.3.1.1: UE side MAC architecture / MAC-c/sh/m details

4.2.3.1b MAC-m entity – UE Side

Figure 4.2.3.1b.1 shows the UE side MAC-m entity.

The following functionality is covered:

- TCTF DEMUX:

- this function represents the handling (detection and deletion for downlink channels) of the TCTF field in the MAC header, and the respective mapping between logical and transport channels.
  The TCTF field indicates the common logical channel type;

- read MBMS Id

  - the MBMS Id is read in case of MTCH reception;

  - the MBMS Id identifies received data to an MBMS service.

The MAC Control SAP is used to transfer control information to MAC-m.

If MTCH channels are selectively combined, the MAC-m entity exists in the UE. Otherwise, the MAC-m entity does not exist.

In case of selective combining of MTCH channels from multiple cells, there are one MAC-c/sh/m for the current cell and one MAC-m entity for each neighboring cell in the UE.

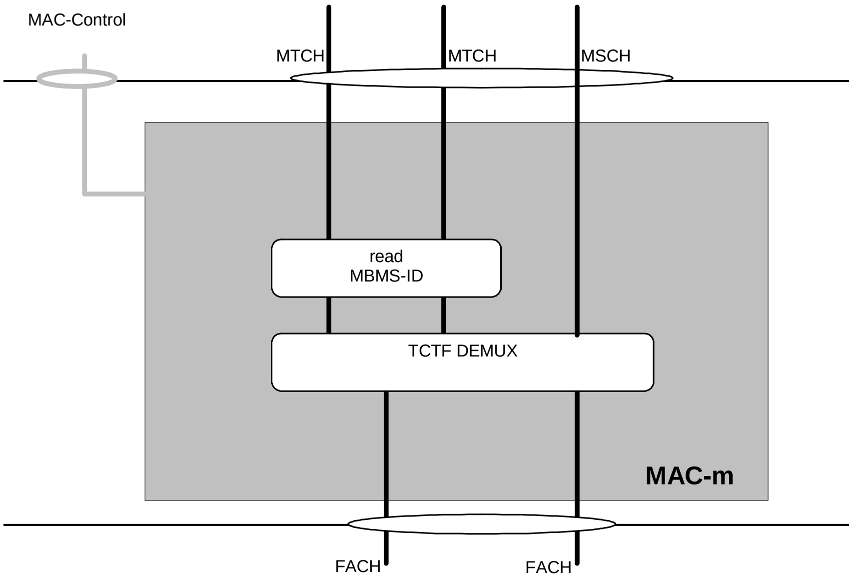


Figure 4.2.3.1b.1: UE side MAC architecture / MAC-m details

4.2.3.2 MAC-d entity – UE Side

Figure 4.2.3.2.1 shows the UE side MAC-d entity.

The following functionality is covered:

- Transport Channel type switching

  - Transport Channel type switching is performed by this entity, based on decision taken by RRC. This is related to a change of radio resources. If requested by RRC, MAC shall switch the mapping of one designated logical channel between common and dedicated transport channels.

- C/T MUX:

  - The C/T MUX is used when multiplexing of several dedicated logical channels onto one transport channel (other than HS-DSCH) or one MAC-d flow (HS-DSCH) is used. An unambiguous identification of the logical channel is included.

- Ciphering:

  - Ciphering for transparent mode data to be ciphered is performed in MAC-d. Details about ciphering can be found in [10].

- Deciphering:

- Deciphering for ciphered transparent mode data is performed in MAC-d. Details about ciphering can be found in [10].

- UL TFC selection:
  - Transport format and transport format combination selection according to the transport format combination set (or transport format combination subset) configured by RRC is performed.

The MAC-d entity is responsible for mapping dedicated logical channels for the uplink either onto dedicated transport channels or to transfer data to MAC-c/sh/m to be transmitted via common channels.

One dedicated logical channel can be mapped simultaneously onto DCH and DSCH in TDD mode.

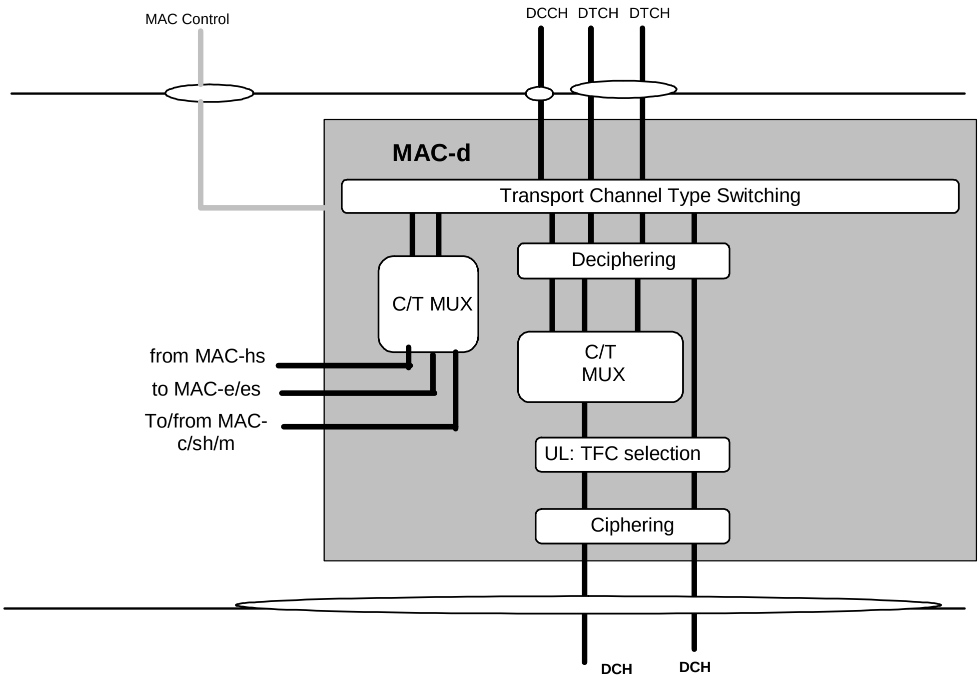
One dedicated logical channel can be simultaneously mapped onto DCH and HS-DSCH.

The MAC-d entity has a connection to the MAC-c/sh/m entity. This connection is used to transfer data to the MAC-c/sh/m to transmit data on transport channels that are handled by MAC-c/sh/m (uplink) or to receive data from transport channels that are handled by MAC-c/sh/m (downlink).

The MAC-d entity has a connection to the MAC-hs entity. This connection is used to receive data from the HS-DSCH transport channel which is handled by MAC-hs (downlink).

The MAC-d entity has a connection to the MAC-e/es entity. This connection is used to transmit data on the E-DCH transport channel which is handled by the MAC-e/es (uplink).

There is one MAC-d entity in the UE.



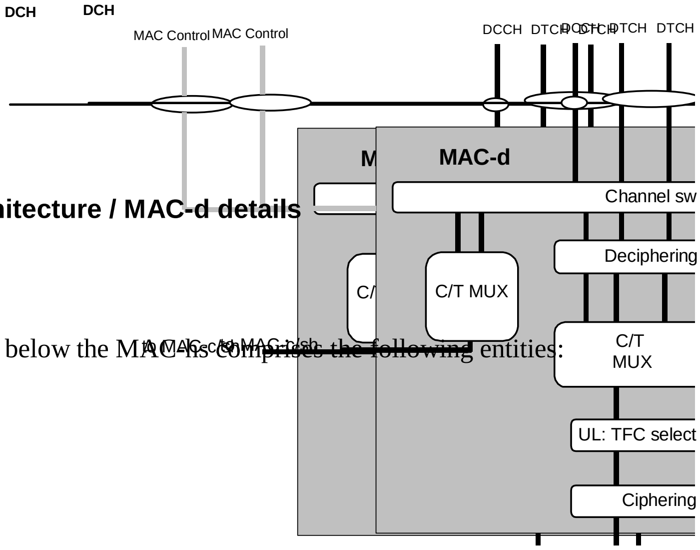


Figure 4.2.3.2.1: UE side MAC architecture / MAC-d details

4.2.3.3 MAC-hs entity – UE Side

The MAC-hs handles the HSDPA specific functions. In the model below the MAC-hs comprises the following entities:

- HARQ:
  The HARQ entity is responsible for handling the MAC functions relating to the HARQ protocol. The HARQ functional entity handles all the tasks that are required for hybrid ARQ. It is responsible for generating ACKs or NACKs. The detailed configuration of the hybrid ARQ protocol is provided by RRC over the MAC-Control SAP.

- Reordering Queue distribution:
  The reordering queue distribution function routes the MAC-hs PDUs to the correct reordering buffer based on the Queue ID.

- Reordering:
  The reordering entity reorders received MAC-hs PDUs according to the received TSN. MAC-hs PDUs with consecutive TSNs are delivered to the disassembly function upon reception. MAC-hs PDUs are not delivered to the disassembly function if MAC-hs PDUs with lower TSN are missing. There is one reordering entity for each Queue ID configured at the UE.

- Disassembly:
  The disassembly entity is responsible for the disassembly of MAC-hs PDUs. When a MAC-hs PDU is disassembled the MAC-hs header is removed, the MAC-d PDUs are extracted and any present padding bits are removed. Then the MAC-d PDUs are delivered to higher layer.

The associated signalling shown in the figure illustrates the exchange of information between layer 1 and layer 2 provided by primitives shown in [3].

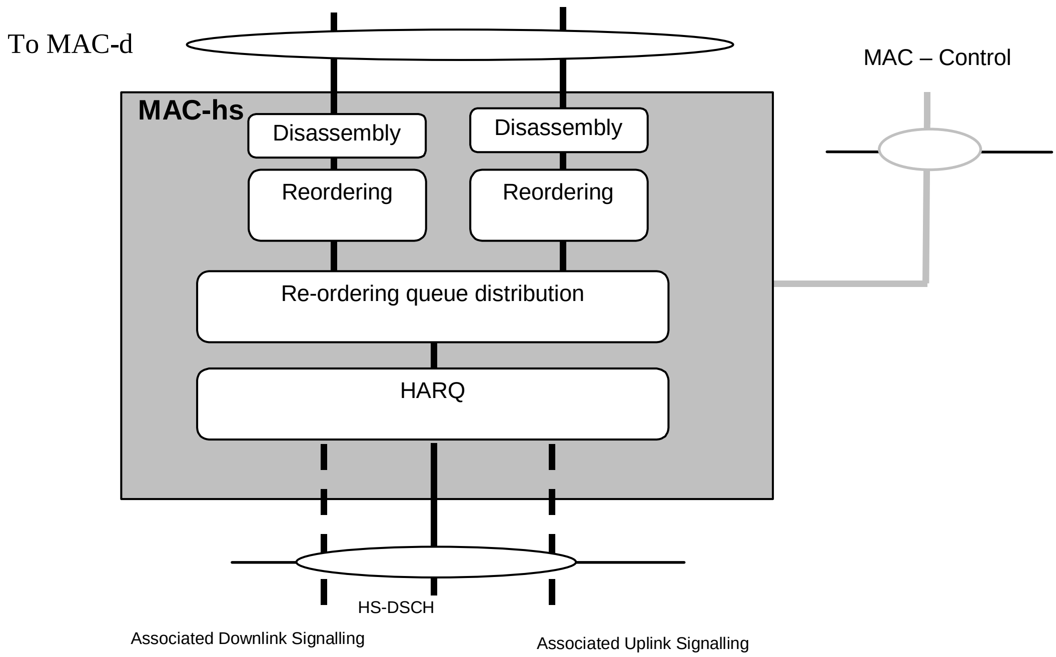


Figure 4.2.3.3.1: UE side MAC architecture / MAC-hs details

4.2.3.4 MAC-e/es entity – UE Side

The MAC-es/e handles the E-DCH specific functions. The split between MAC-e and MAC-es in the UE is not detailed. In the model below the MAC-e/es comprises the following entities:

- HARQ:
  The HARQ entity is responsible for handling the MAC functions relating to the HARQ protocol. It is responsible for storing MAC-e payloads and re-transmitting them. The detailed configuration of the hybrid ARQ protocol is provided by RRC over the MAC-Control SAP. The HARQ entity provides the E-TFC, the retransmission sequence number (RSN), and the power offset to be used by L1. Redundancy version (RV) of the HARQ transmission is derived by L1 from RSN, CFN and in case of 2 ms TTI from the sub-frame number.

- Multiplexing:
  The multiplexing entity is responsible for concatenating multiple MAC-d PDUs into MAC-es PDUs, and to multiplex one or multiple MAC-es PDUs into a single MAC-e PDU, to be transmitted at the next TTI, and as instructed by the E-TFC selection function. It is also responsible for managing and setting the TSN per logical channel for each MAC-es PDU.

- E-TFC selection:
  This entity is responsible for E-TFC selection according to the scheduling information (Relative Grants and Absolute Grants) received from UTRAN via L1, and for arbitration among the different flows mapped on the E-DCH. The detailed configuration of the E-TFC entity is provided by RRC over the MAC-Control SAP. The E-TFC selection function controls the multiplexing function.

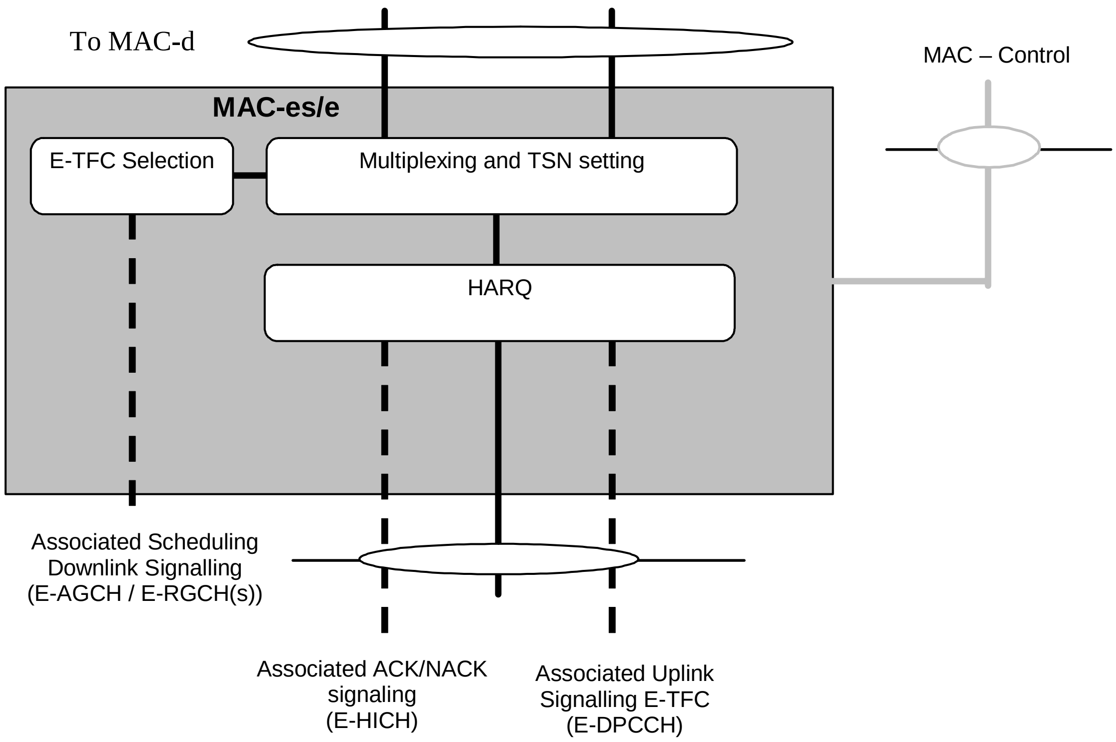


Figure 4.2.3.4.1: UE side MAC architecture / MAC-e/es details

4.2.4 Traffic Related Architecture - UTRAN Side

Figure 4.2.4.1 illustrates the connectivity between the MAC entities from the UTRAN side.

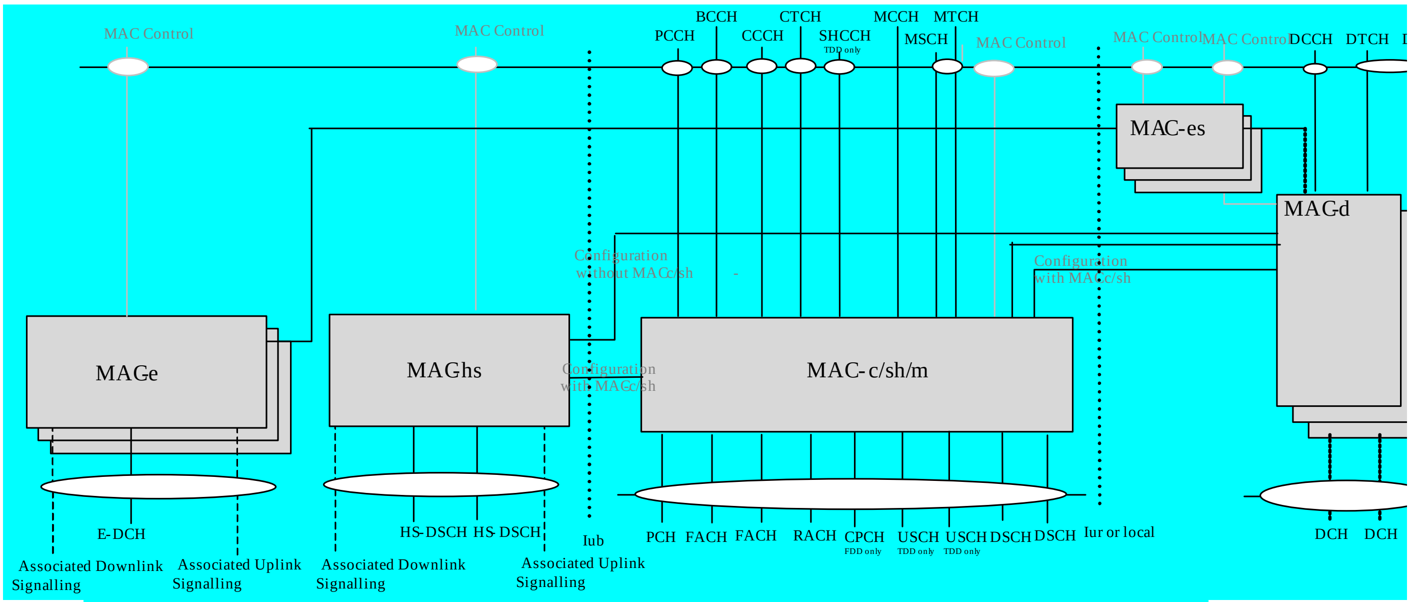
It is similar to the UE case with the exception that there will be one MAC-d for each UE and each UE (MAC-d) that is associated with a particular cell may be associated with that cell's MAC-c/sh/m.

MAC-c/sh/m is located in the controlling RNC while MAC-d is located in the serving RNC. MAC-hs is located in the Node B. The MAC-d PDUs to be transmitted are transferred from MAC-c/sh/m to the MAC-hs via the Iub interface in case of configuration with MAC-c/sh/m, or from the MAC-d via Iur/Iub in case of configuration without MAC-c/sh/m.

For each UE that uses E-DCH, one MAC-e entity per Node-B and one MAC-es entity in the SRNC are configured. MAC-e, located in the Node B, controls access to the E-DCH and is connected to MAC-es, located in the SRNC. MAC-es is further connected to MAC-d. There is one transport bearer set up per E-DCH MAC-d flow.

The MAC Control SAP is used to transfer Control information to each MAC entity belonging to one UE.

The associated signalling shown in the figure illustrates the exchange of information between layer 1 and layer 2 provided by primitives shown in [3].



/* This figure is not editable. "(TDD only)" needs to be added below DSCH in this figure.*/

Figure 4.2.4.1: UTRAN side MAC architecture

4.2.4.1 MAC-c/sh/m entity – UTRAN Side

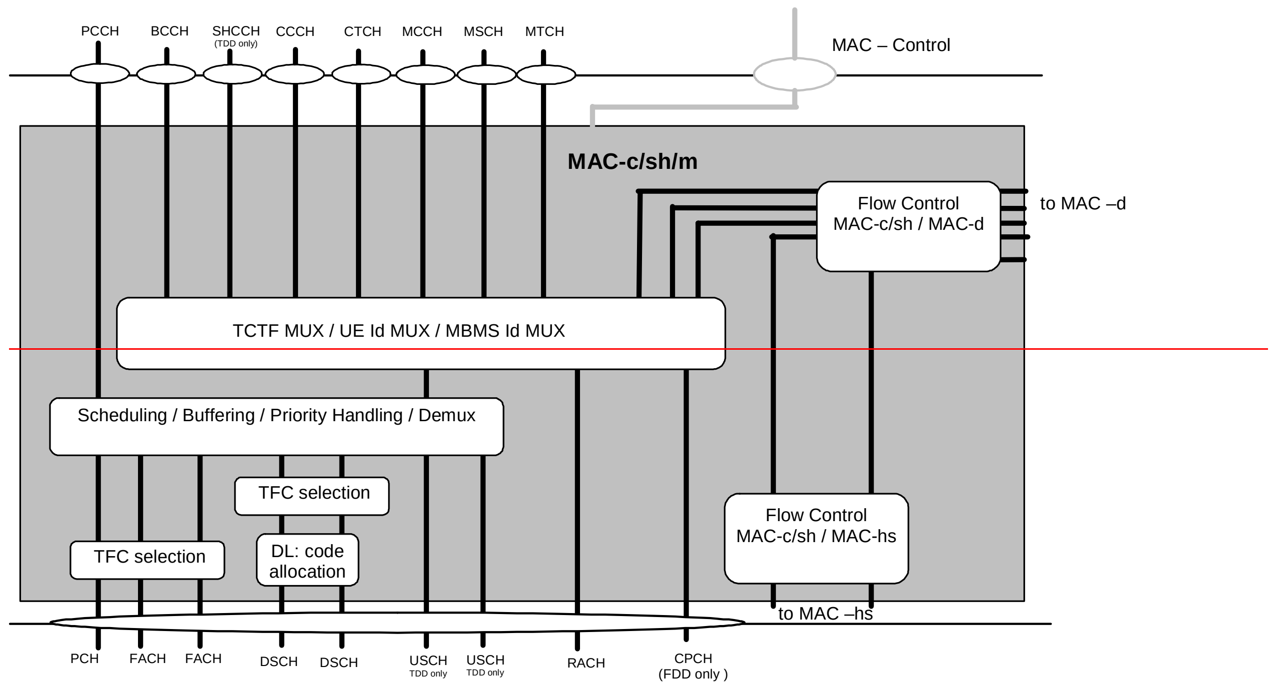
Figure 4.2.4.1.1 shows the UTRAN side MAC-c/sh/m entity. The following functionality is covered:

- Scheduling – Buffering – Priority Handling;
  - this function manages FACH and for TDD DSCH resources between the UEs and between data flows according to their priority and delay requirements set by higher layers.
- TCTF MUX
  - this function represents the handling (insertion for downlink channels and detection and deletion for uplink channels) of the TCTF field in the MAC header, and the respective mapping between logical and transport channels.
    The TCTF field indicates the common logical channel type, or if a dedicated logical channel is used;
- UE Id Mux;
  - for dedicated type logical channels, the UE Id field in the MAC header is used to distinguish between UEs;
- MBMS Id Mux;
  - for MTCH channels, the MBMS Id field in the MAC header is used to distinguish between MBMS services;
- TFC selection:
  - in the downlink, transport format combination selection is done for FACH and PCH and for TDD DSCHs;
- Demultiplex;
  - for TDD operation the demultiplex function is used to separate USCH data from different UEs, i.e. to be transferred to different MAC-d entities;
- DL code allocation;
  - for TDD this function is used to indicate the code used on the DSCH;
- Flow control;

- a flow control function exists toward MAC-d to limit buffering between MAC-d and MAC-c/sh/m entities. a flow control function also exists towards MAC-hs in case of configuration with MAC-c/sh/m.

The RLC provides RLC-PDUs to the MAC, which fit into the available transport blocks on the transport channels.

There is one MAC-c/sh/m entity in the UTRAN for each cell;



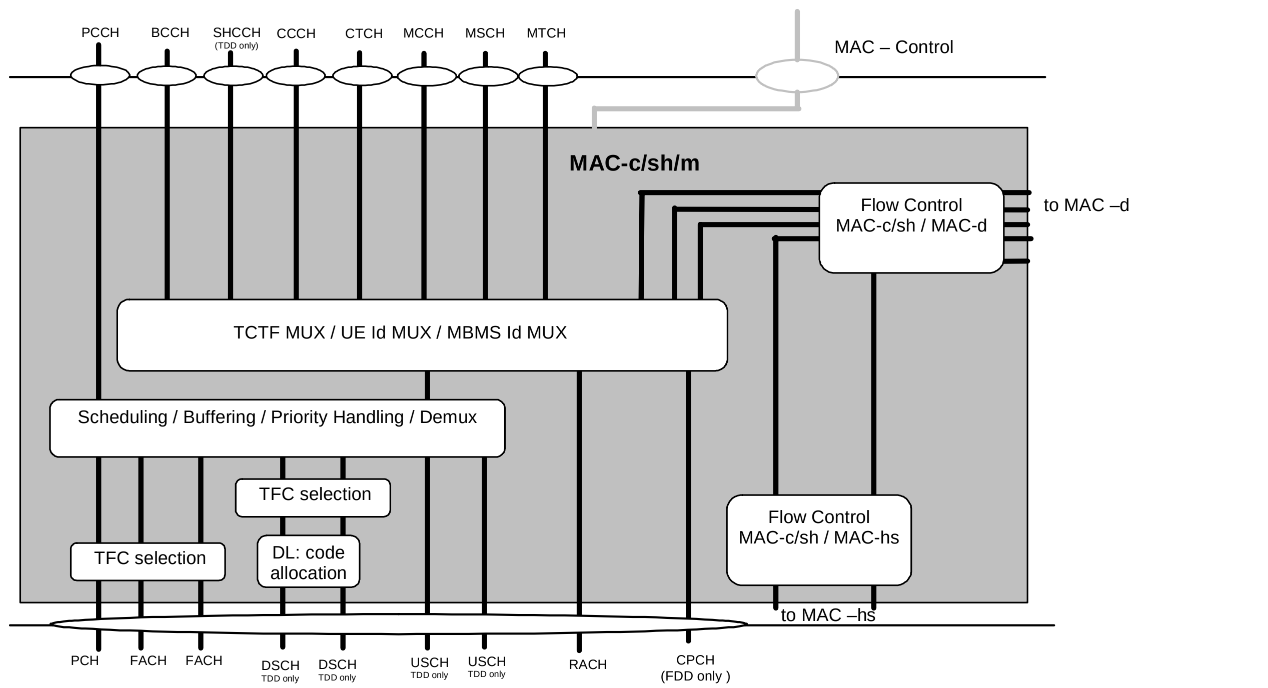


Figure 4.2.4.1.1: UTRAN side MAC architecture / MAC-c/sh/m details

4.2.4.2 MAC-d entity – UTRAN Side

Figure 4.2.4.2.1 shows the UTRAN side MAC-d entity.

The following functionality is covered:

- Transport Channel type switching:
  - Transport Channel type switching is performed by this entity, based on decision taken by RRC; this is related to a change of radio resources. If requested by RRC, MAC shall switch the mapping of one designated logical channel between common and dedicated transport channels.
- C/T MUX box;
  - the function includes the C/T field when multiplexing of several dedicated logical channels onto one transport channel (other than HS-DSCH) or one MAC-d flow (HS-DSCH) is used.
- Priority setting;
  - This function is responsible for priority setting on data received from DCCH / DTCH;
- Ciphering;
  - Ciphering for transparent mode data to be ciphered is performed in MAC-d. Details about ciphering can be found in [10].
- Deciphering;
  - Deciphering for ciphered transparent mode data is performed in MAC-d. Details about ciphering can be found in [10].
- DL Scheduling/Priority handling;
  - in the downlink, scheduling and priority handling of transport channels is performed within the allowed transport format combinations of the TFCS assigned by the RRC.
- Flow Control;
  - a flow control function exists toward MAC-c/sh/m to limit buffering between MAC-d and MAC-c/sh/m entities. This function is intended to limit layer 2 signalling latency and reduce discarded and retransmitted data as a result of FACH or for TDD DSCH congestion. For the Iur interface this is specified in [11]. A flow control function also exists towards MAC-hs in case of configuration without MAC-c/sh/m, see subclause 4.2.4.2.

A MAC-d entity using common channels other than the high speed downlink shared channel is connected to a MAC-c/sh/m entity that handles the scheduling of the common channels to which the UE is assigned and DL (FACH) priority identification to MAC-c/sh/m;

A MAC-d entity using downlink shared channel is connected to a MAC-c/sh/m entity that handles the shared channels to which the UE is assigned and indicates the level of priority of each PDU to MAC-c/sh/m;

A MAC-d entity using the high speed downlink shared channel may be connected to a MAC-c/sh/m entity that in turn is connected to the MAC-hs entity in the Node B (configuration with MAC-c/sh/m); alternately, a MAC-d entity using the high speed downlink shared channel may be connected to the MAC-hs entity in the Node B in case of configuration without MAC-c/sh/m.

A MAC-d entity using the enhanced dedicated transport channel (Uplink only) is connected to a MAC-es entity that handles the re-ordering and combining of data received from different Node Bs. Given that the MAC-es is collocated in the SRNC, it is not necessary to flow control this connection. The MAC-es will indicate the logical channel for which the data is intended, to allow the MAC-d to route it appropriately.

A MAC-d entity is responsible for mapping dedicated logical channels onto the available dedicated transport channels or routing the data received on a DCCH or DTCH to MAC-c/sh/m or to MAC-hs.

One dedicated logical channel can be mapped simultaneously on DCH and DSCH in TDD mode. Different scheduling mechanisms apply for DCH and DSCH. One dedicated logical channel can be mapped simultaneously on DCH and HS-DSCH.

There is one MAC-d entity in the UTRAN for each UE that has one or more dedicated logical channels to or from the UTRAN.

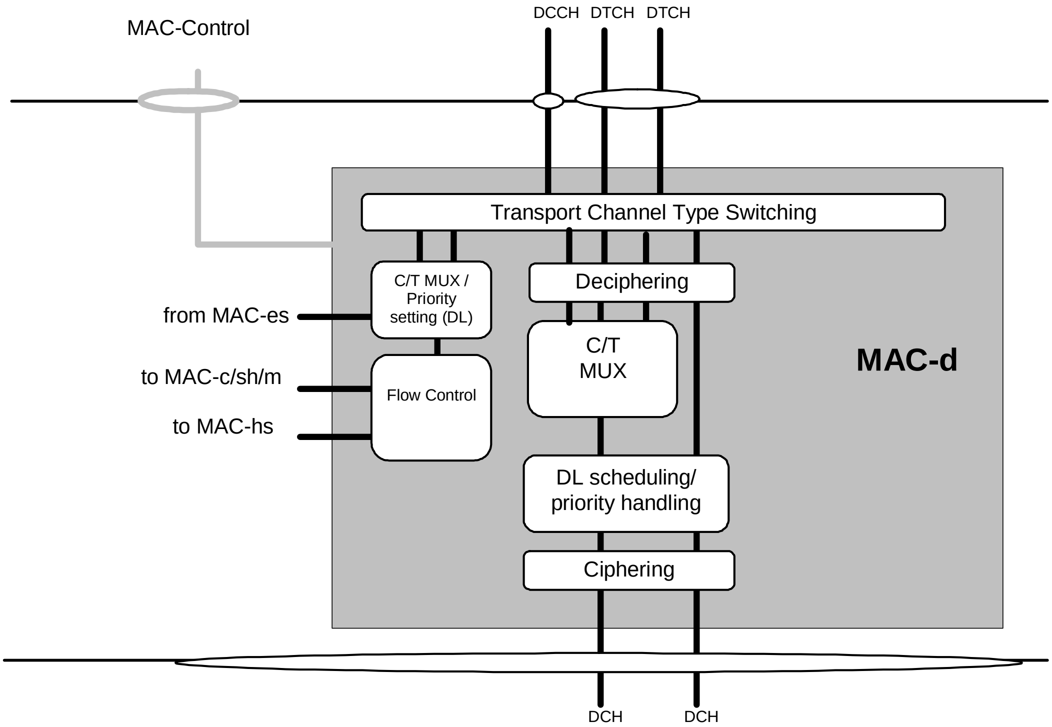


Figure 4.2.4.2.1: UTRAN side MAC architecture / MAC-d details

4.2.4.3 MAC-hs entity – UTRAN Side

There is one MAC-hs entity in the UTRAN for each cell that supports HS-DSCH transmission. The MAC-hs is responsible for handling the data transmitted on the HS-DSCH. Furthermore it is responsible for the management of the physical resources allocated to HSDPA. MAC-hs receives configuration parameters from the RRC layer via the MAC-Control SAP. There should be priority handling per MAC-d PDU in the MAC-hs. The MAC-hs is comprised of four different functional entities:

- Flow Control:
  This is the companion flow control function to the flow control function in the MAC-c/sh/m in case of configuration with MAC-c/sh/m and MAC-d in case of configuration without MAC-c/sh/m. Both entities together provide a controlled data flow between the MAC-c/sh/m and the MAC-hs (Configuration with MAC-c/sh/m) or the MAC-d and MAC-hs (Configuration without MAC-c/sh/m) taking the transmission capabilities of the air interface into account in a dynamic manner. This function is intended to limit layer 2 signalling latency and reduce discarded and retransmitted data as a result of HS-DSCH congestion. Flow control is provided independently by MAC-d flow for a given MAC-hs entity.

- Scheduling/Priority Handling:
  This function manages HS-DSCH resources between HARQ entities and data flows according to their priority. Based on status reports from associated uplink signalling either new transmission or retransmission is determined. Further it determines the Queue ID and TSN for each new MAC-hs PDU being serviced, and in the case of TDD the HCSN is determined. A new transmission can be initiated instead of a pending retransmission at any time to support the priority handling.

- HARQ:
  One HARQ entity handles the hybrid ARQ functionality for one user. One HARQ entity is capable of supporting multiple instances (HARQ process) of stop and wait HARQ protocols. There shall be one HARQ process per HS-DSCH per TTI.

- TFRC selection:
  Selection of an appropriate transport format and resource for the data to be transmitted on HS-DSCH.

The associated signalling shown in the figure illustrates the exchange of information between layer 1 and layer 2 provided by primitives shown in [3].

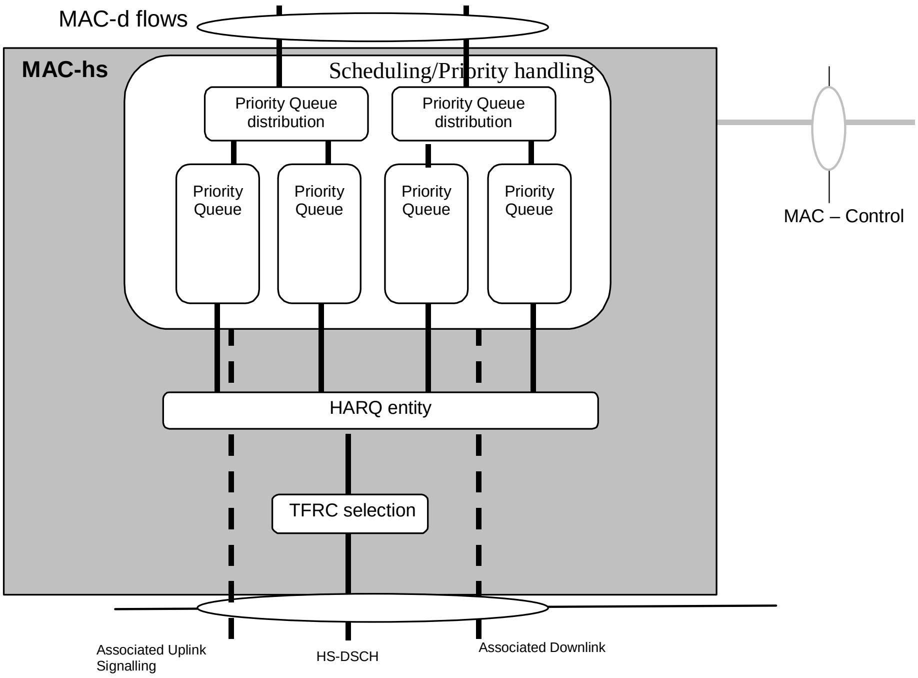


Figure 4.2.4.3.1: UTRAN side MAC architecture / MAC-hs details

4.2.4.4 MAC-es entity – UTRAN Side

For each UE, there is one MAC-es entity in the SRNC. The MAC-es sublayer handles E-DCH specific functionality, which is not covered in the MAC-e entity in Node B. In the model below, the MAC-e comprises the following entities:

- Reordering Queue Distribution:
  The reordering queue distribution function routes the MAC-es PDUs to the correct reordering buffer based the SRNC configuration.

- Reordering:
  This function reorders received MAC-es PDUs according to the received TSN and Node-B tagging i.e. (CFN, subframe number). MAC-es PDUs with consecutive TSNs are delivered to the disassembly function upon reception. PDUs are not delivered to the disassembly function if PDUs with a lower TSN are missing. There is one Re-ordering Process per logical channel.

- Macro diversity selection:
  The function is performed in the MAC-es, in case of soft handover with multiple Node-Bs (The soft combining for all the cells of a Node-B takes place in the Node-B). This means that the reordering function receives MAC-es PDUs from each Node-B in the E-DCH active set. The exact implementation is not specified. However the model below is based on one Reordering Queue Distribution entity receiving all the MAC-d flow from all the Node-Bs, and one MAC-es entity per UE.

- Disassembly:
  The disassembly function is responsible for disassembly of MAC-es PDUs. When a MAC-es PDU is disassembled the MAC-es header is removed, the MAC-d PDU’s are extracted and delivered to MAC-d.

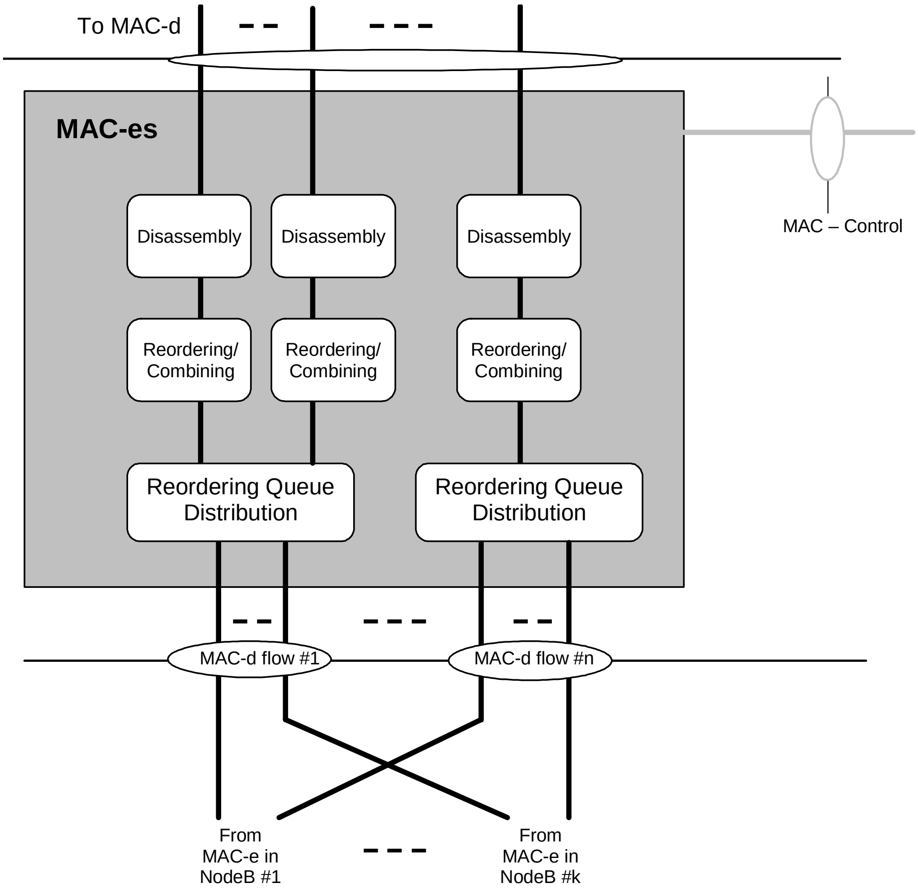


Figure 4.2.4.4-1: UTRAN side MAC architecture / MAC-es details (SHO case)

4.2.4.5 MAC-e entity – UTRAN Side

There is one MAC-e entity in Node B for each UE and one E-DCH scheduler function in the Node-B. The MAC-e and E-DCH scheduler handle HSUPA specific functions in Node B. In the model below, the MAC-e and E-DCH scheduler comprises the following entities:

- E-DCH Scheduling:
  This function manages E-DCH cell resources between UEs. Based on scheduling requests, scheduling assignments are determined and transmitted. The general principles of the E-DCH scheduling are described in subclause 11.8.2.3 below. However implementation is not specified (i.e. depends on RRM strategy).

- E-DCH Control:
  The E-DCH control entity is responsible for reception of scheduling requests and transmission of scheduling assignments. The general principles of the E-DCH schedulling are described in subclause [FFS] below.

- De-multiplexing:
  This function provides de-multiplexing of MAC-e PDUs. MAC-es PDUs are forwarded to the associated MAC-d flow.

- HARQ:
  One HARQ entity is capable of supporting multiple instances (HARQ process) of stop and wait HARQ protocols. Each process is responsible for generating ACKs or NACKs indicating delivery status of E-DCH transmissions. The HARQ entity handles all tasks that are required for the HARQ protocol.

The associated signalling shown in the figure illustrates the exchange of information between layer 1 and layer 2 provided by primitives.

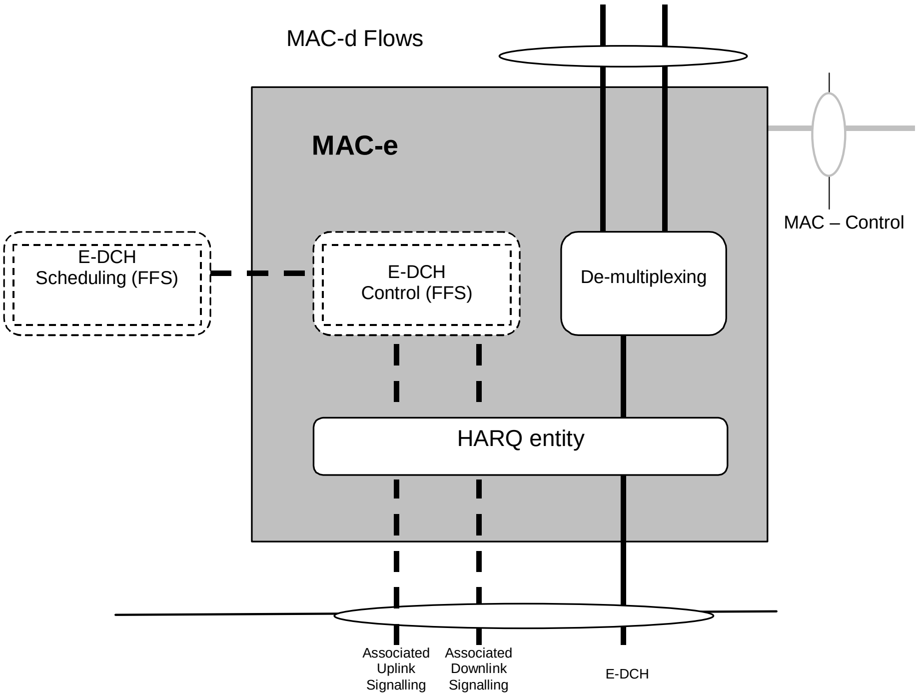


Figure 4.2.4.5-1: UTRAN side MAC architecture / MAC-e details

4.3 Channel structure

The MAC operates on the channels defined below; the transport channels are described between MAC and Layer 1, the logical channels are described between MAC and RLC.

The following subclauses provide an overview, the normative description can be found in [2] and [3] respectively.

4.3.1 Transport channels

Common transport channel types are:

- Random Access Channel(s) (RACH);
- Forward Access Channel(s) (FACH);
- Downlink Shared Channel(s) (DSCH), for TDD operation only;
- High Speed Downlink Shared Channel(s) (HS-DSCH);
- Common Packet Channel(s) (CPCH) for UL FDD operation only;
- Uplink Shared Channel(s) (USCH), for TDD operation only;
- Broadcast Channel (BCH);
- Paging Channel (PCH).

Dedicated transport channel types are:

- Dedicated Channel (DCH);
- Enhanced Dedicated Channel (E-DCH) for UL FDD operation only.

4.3.2 Logical Channels

The MAC layer provides data transfer services on logical channels. A set of logical channel types is defined for different kinds of data transfer services as offered by MAC.

Each logical channel type is defined by what type of information is transferred.

4.3.2.1 Logical channel structure

The configuration of logical channel types is depicted in figure 4.3.2.1.

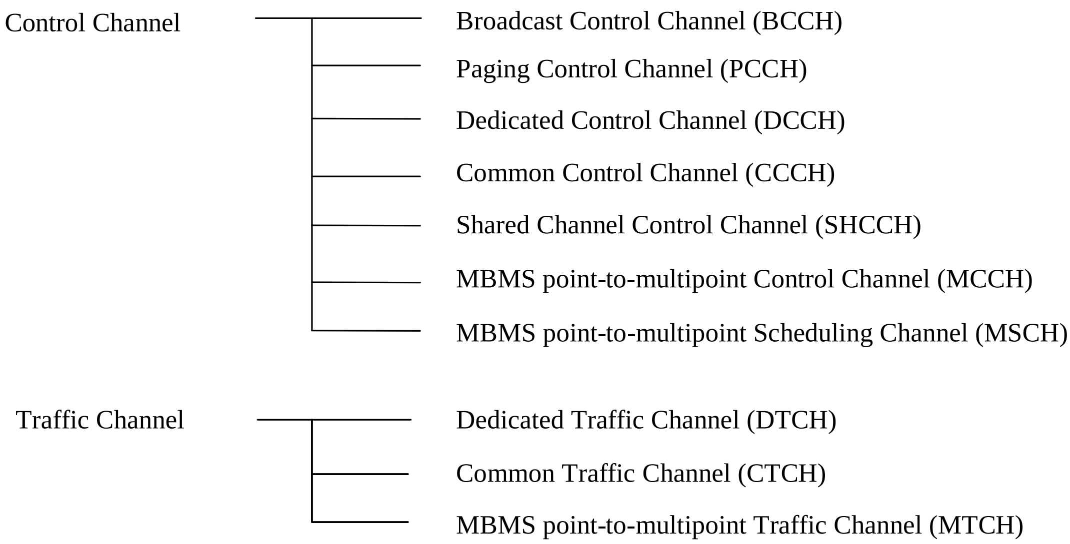


Figure 4.3.2.1: Logical channel structure

4.3.2.2 Control Channels

Following control channels are used for transfer of control plane information only:

- Broadcast Control Channel (BCCH);
- Paging Control Channel (PCCH);
- Common Control Channel (CCCH);
- Dedicated Control Channel (DCCH);
- Shared Channel Control Channel (SHCCH);
- MBMS point-to-multipoint Control Channel (MCCH);
- MBMS point-to-multipoint Scheduling Channel (MSCH)

4.3.2.3 Traffic Channels

Following traffic channels are used for the transfer of user plane information only:

- Dedicated Traffic Channel (DTCH);
- Common Traffic Channel (CTCH);
- MBMS point-to-multipoint Traffic Channel (MTCH).

5 Services provided to upper layers

This clause describes the different services provided by the MAC to higher layers. For a detailed description of the following functions see [2].

5.1 Description of Services provided to upper layers

- Data transfer: This service provides unacknowledged transfer of MAC SDUs between peer MAC entities without data segmentation.
- Reallocation of radio resources and MAC parameters: This service performs on request of RRC execution of radio resource reallocation and change of MAC parameters.
- Reporting of measurements: Local measurements are reported to RRC.

6 Functions

6.1 Description of the MAC functions

The functions of MAC include:

- mapping between logical channels and transport channels;
- selection of appropriate Transport Format for each Transport Channel depending on instantaneous source rate;
- priority handling between data flows of one UE;
- priority handling between UEs by means of dynamic scheduling;
- identification of UEs on common transport channels;
- identification of MBMS services on common transport channels;
- multiplexing/demultiplexing of upper layer PDUs into/from transport blocks delivered to/from the physical layer on common transport channels;
- multiplexing/demultiplexing of upper layer PDUs into/from transport block sets delivered to/from the physical layer on dedicated transport channels;
- traffic volume measurement;
- Transport Channel type switching;
- ciphering for transparent mode RLC;
- Access Service Class selection for RACH and CPCH transmission;
- control of HS-DSCH transmission and reception including support of HARQ;
- HS-DSCH Provided Bit Rate measurement;
- control of E-DCH transmission and reception including support of HARQ.

6.2 Relation between MAC Functions and Transport Channels

6.2.1 Relation between MAC Functions and Transport Channels in UTRAN

Table 6.2.1.1: UTRAN MAC functions corresponding to the transport channel

Associated MAC Functions	Logical Ch	Transport Ch	TF Selection	Priority handling between UEs	Priority handling (one UE)	Scheduling	Identification of UEs or MBMS services	Mux/ Demux on common transport channels	Mux/ Demux on dedicated transport channels	HARQ support
Uplink (Rx)	CCCH	RACH						X		
	DCCH	RACH					X	X		
	DCCH	CPCH					X	X		
	DCCH	DCH							X	
	DTCH	RACH					X	X		
	DTCH	CPCH					X	X		
	DTCH	DCH							X	
	SHCCH	RACH					X	X		
	SHCCH	USCH						X		
	DTCH	USCH						X		
	DCCH	USCH						X		
	DTCH	E-DCH				X			X	X
	DCCH	E-DCH				X			X	X
Downlink (Tx)	BCCH	BCH				X				
	BCCH	FACH	X			X		X		
	PCCH	PCH	X			X				
	CCCH	FACH	X	X		X		X		
	CTCH	FACH	X			X		X		
	MCCH	FACH	X			X		X		
	MSCH	FACH	X			X		X		
	MTCH	FACH	X			X	X	X		
	CTCH	FACH	X			X		X		
	DCCH	FACH	X	X		X	X	X		
	DCCH	DSCH	X	X			X	X		
	DCCH	DCH	X		X				X	
	DCCH	HS-DSCH	X (1)	X	X	X	X	X		X
	DTCH	FACH	X	X		X	X	X		
	DTCH	DSCH	X	X			X	X		
	DTCH	DCH	X		X				X	
	DTCH	HS-DSCH	X (1)	X	X	X	X	X		X
	SHCCH	FACH	X	X		X		X		
	SHCCH	DSCH	X	X				X		

NOTE 1: In case of HS-DSCH the TF selection is replaced by TFRC selection.

6.2.2 Relation of MAC Functions and Transport Channels in UE

Table 6.2.2.1: UE MAC functions corresponding to the transport channel

Associated MAC Functions	Logical Ch	Transport Ch	TF Selection	Priority handling (one UE)	Identification	Mux/Demux on common transport channels	Mux/Demux on dedicated transport channels	HARQ support
Uplink (Tx)	CCCH	RACH				X		
	DCCH	RACH	X	X	X	X		
	DCCH	CPCH	X	X	X	X		
	DCCH	DCH	X	X			X	
	DTCH	RACH	X	X	X	X		
	DTCH	CPCH	X	X	X	X		
	DTCH	DCH	X	X			X	
	SHCCH	RACH				X		
	SHCCH	USCH	X	X		X		
	DCCH	USCH	X	X		X		
	DTCH	USCH	X	X		X		
	DCCH	E-DCH	X	X			X	X
	DTCH	E-DCH	X	X			X	X
Downlink (Rx)	BCCH	BCH						
	BCCH	FACH				X		
	PCCH	PCH						
	CCCH	FACH				X		
	CTCH	FACH				X		
	MCCH	FACH				X		
	MSCH	FACH				X		
	MTCH	FACH			X	X		
	DCCH	FACH			X	X		
	DCCH	DSCH				X		
	DCCH	DCH					X	
	DCCH	HS-DSCH			X	X		X
	DTCH	FACH			X	X		
	DTCH	DSCH				X		
	DTCH	DCH					X	
	DTCH	HS-DSCH			X	X		X
	SHCCH	FACH				X		
	SHCCH	DSCH				X		

7 Services expected from physical layer

The physical layer offers information transfer services to MAC. For detailed description, see [3].

8 Elements for layer-to-layer communication

The interaction between the MAC layer and other layers are described in terms of primitives where the primitives represent the logical exchange of information and control between the MAC layer and other layers. The primitives shall not specify or constrain implementations. The MAC is connected to layer 1, RLC and RRC. The following subclauses describe the primitives between these layers.

8.1 Primitives between layers 1 and 2

8.1.1 Primitives

The primitives are described in [3].

8.1.2 Parameters

a) Transport Format Resource Indicator (TFRI) for HS-DSCH:

- For HS-DSCH the Transport Block size is derived from the TFRI value signalled on the HS-SCCH. The mapping between TFRI value and Transport Block size is specified in subclause 9.2.3.

b) HARQ information for E-DCH:

- ACK/NACK information (details specified in subclause 9.2.5.1).
- RSN information (details specified in subclause 9.2.5.1).

c) Relative Grant information for E-DCH:

- Serving Relative Grant information (details specified in subclause 9.2.5.2.1).
- Non-serving Relative Grant information (details specified in subclause 9.2.5.2.1).

d) Absolute Grant information for E-DCH (details specified in subclause 9.2.5.2.2).

8.2 Primitives between MAC and RLC

8.2.1 Primitives

The primitives between MAC layer and RLC layer are shown in table 8.2.1.1.

Table 8.2.1.1: Primitives between MAC layer and RLC layer

Generic Name	Parameter			
	Request	Indication	Response	Confirm
MAC-DATA	Data, BO, UE-ID type indicator, RLC Entity Info	Data, No_TB, TD (note), Error indication		
MAC-STATUS		No_PDU, PDU_Size, TX status, Status_Report_REQ	BO, RLC Entity Info	
NOTE: TDD only.				

MAC-DATA-Req/Ind:

- MAC-DATA-Req primitive is used to request that an upper layer PDU be sent using the procedures for the information transfer service;
- MAC-DATA-Ind primitive indicates the arrival of upper layer PDUs received within one transmission time interval by means of the information transfer service.

MAC-STATUS-Ind/Resp:

- MAC-STATUS-Ind primitive indicates to RLC for each logical channel the rate at which it may transfer data to MAC. Parameters are the number of PDUs that can be transferred in each transmission time interval and the PDU size; it is possible that MAC would use this primitive to indicate that it expects the current buffer occupancy of the addressed logical channel in order to provide for optimised TFC selection on transport channels with long transmission time interval. At the UE, MAC-STATUS-Ind primitive is also used to indicate from MAC to RLC that MAC has requested data transmission by PHY (i.e. PHY-DATA-REQ has been submitted, see Fig. 11.2.2.1), or that transmission of an RLC PDU on RACH or CPCH has failed due to exceeded preamble ramping cycle counter.

- MAC-STATUS-Resp primitive enables RLC to acknowledge a MAC-STATUS-Ind. It is possible that RLC would use this primitive to indicate that it has nothing to send or that it is in a suspended state or to indicate the current buffer occupancy to MAC.

8.2.2 Parameters

a) Data:

- it contains the RLC layer messages (RLC-PDU) to be transmitted, or the RLC layer messages that have been received by the MAC sub-layer.

b) Number of transmitted transport blocks (No_TB) :

- indicates the number of transport blocks transmitted by the peer entity within the transmission time interval, based on the TFI value.

c) Buffer Occupancy (BO):

- the parameter Buffer Occupancy (BO) indicates for each logical channel the amount of data in number of bytes that is available for transmission and retransmission in RLC layer. When MAC is connected to an AM RLC entity, control PDUs to be transmitted and RLC PDUs outside the RLC Tx window shall also be included in the BO. RLC PDUs that have been transmitted but not negatively acknowledged by the peer entity shall not be included in the BO.

d) RX Timing Deviation (TD), TDD only:

- it contains the RX Timing Deviation as measured by the physical layer for the physical resources carrying the data of the Message Unit. This parameter is optional and only for Indication. It is needed for the transfer of the RX Timing Deviation measurement of RACH transmissions carrying CCCH data to RRC.

e) Number of PDU (No_PDU):

- specifies the number of PDUs that the RLC is permitted to transfer to MAC within a transmission time interval.

f) PDU Size (PDU_Size):

- specifies the size of PDU that can be transferred to MAC within a transmission time interval.

g) UE-ID Type Indicator:

- indicates the UE-ID type to be included in MAC for a DCCH and DTCH when they are mapped onto a common transport channel (i.e. FACH, RACH~~, DSCH~~ in FDD or CPCH). On the UE side UE-ID Type Indicator shall always be set to C-RNTI.

h) TX status:

- when set to value "transmission unsuccessful" this parameter indicates to RLC that transmission of an RLC PDU failed in the previous Transmission Time Interval, when set to value "transmission successful" this parameter indicates to RLC that the requested RLC PDU(s) has been submitted for transmission by the physical layer.

i) RLC Entity Info

- indicates to MAC the configuration parameters that are critical to TFC selection depending on its mode and the amount of data that could be transmitted at the next TTI. This primitive is meant to insure that MAC can perform TFC selection (see subclause 11.4).

j) Error indication

- When a MAC SDU is delivered to upper layer, an error indication is given for the SDU to upper layer if an error indication for the SDU has been received from lower layer.

k) Status_Report_REQ

- indicates to all AM RLC entities mapped on HS-DSCH to generate a status report when the MAC-hs resets.

8.3 Primitives between MAC and RRC

8.3.1 Primitives

The primitives between MAC and RRC are shown in table 8.3.1.1.

Table 8.3.1.1: Primitives between MAC sub-layer and RRC

Generic Name	Parameter			
	Request	Indication	Response	Confirm
CMAC-CONFIG	UE information elements, RB information elements, TrCH information elements, RACH transmission control elements, Ciphering elements, CPCH transmission control elements, MBMS information elements			
CMAC-MEASUREMENT	Measurement information elements	Measurement result		
CMAC-STATUS		Status info		

CMAC-CONFIG-Req:

- CMAC-CONFIG-Req is used to request for setup, release and configuration of a logical channel, e.g. RNTI allocation, switching the connection between logical channels and transport channels, TFCS update or scheduling priority of logical channel.

CMAC-MEASUREMENT-Req/Ind:

- CMAC-MEASUREMENT-Req is used by RRC to request MAC to perform measurements, e.g. traffic volume measurements;

- CMAC-MEASUREMENT-Ind is used to notify RRC of the measurement result.

CMAC-STATUS-Ind:

- CMAC-STATUS-Ind primitive notifies RRC of status information.

8.3.2 Parameters

See [7] for a detailed description of the UE, RB and TrCH information elements.

a) UE information elements
S-RNTI
SRNC identity
C-RNTI
Activation time

b) RB information elements
RB multiplexing info (Transport channel identity, Logical channel identity, MAC logical channel priority)
DDI mapping table for E-DCH transmission

c) TrCH information elements
Transport Format Combination Set
MAC-hs reset indicator
Re-ordering release timer (T1)
HARQ Profile parameters (power offset, maximum number of re-transmissions)

E-DCH TTI duration
Allowed combinations for multiplexing of MAC-d flows into MAC-e PDUs

d) Measurement information elements
Reporting Quantity identifiers
Time interval to take an average or a variance (applicable when Average or Variance is Reporting Quantity)

e) Measurement result
Reporting Quantity

f) Status info
when set to value ""transmission unsuccessful"" this parameter indicates to RRC that transmission of a TM RLC PDU failed (due to e.g. Maximum number of preamble ramping cycles reached for RACH in FDD), when set to value "transmission successful" this parameter indicates to RRC that the requested TM RLC PDU(s) has been submitted for transmission by the physical layer.

g) RACH transmission control elements
Set of ASC parameters (identifier for PRACH partitions, persistence values)
Maximum number of preamble ramping cycles (FDD) or synchronisation attempts (1.28 Mcps TDD) M_{max}
Minimum and maximum number of time units between two preamble ramping cycles, N_{BO1min} and N_{BO1max} (FDD only)
ASC for RRC CONNECTION REQUEST message

h) Ciphering elements
Ciphering mode
Ciphering key
Ciphering sequence number

i) CPCH transmission control elements
CPCH persistency value, P for each Transport Format
Maximum number of preamble ramping cycles $N_{\_access\_fails}$
NF_max (Maximum number of frames for CPCH transmission for each Transport Format)
N_EOT (Number of EOT for release of CPCH transmission)
Backoff control timer parameters
Transport Format Set
Initial Priority Delays
Channel Assignment Active indication

j) MBMS information elements
MBMS Id

k) E-DCH configuration elements
HARQ Round Trip Time

9 Elements for peer-to-peer communication

9.1 Protocol data units

9.1.1 General

A MAC PDU is a bit string, with a length not necessarily a multiple of 8 bits. In the drawings in clause 9.1, bit strings are represented by tables in which the first bit is the leftmost one on the first line of the table, the last bit is the rightmost on the last line of the table, and more generally the bit string is to be read from left to right and then in the reading order of the lines.

Depending on the provided service, MAC SDUs are bit strings with any non-null length, or bit strings with an integer number of octets in length. An SDU is included into a MAC PDU from first bit onward.

In the UE for the uplink, all MAC PDUs delivered to the physical layer within one TTI are defined as Transport Block Set (TBS). It consists of one or several Transport Blocks, each containing one MAC PDU. The Transport Blocks, shall be transmitted in the order as delivered from RLC. When multiplexing of RLC PDUs from different logical channels is performed on MAC, the order of all Transport Blocks originating from the same logical channel shall be the same as the order of the sequence delivered from RLC. The order of the different logical channels in a TBS is set by the MAC protocol.

9.1.2 MAC PDU (not HS-DSCH or E-DCH)

A MAC PDU consists of an optional MAC header and a MAC Service Data Unit (MAC SDU), see figure 9.1.2.1. Both the MAC header and the MAC SDU are of variable size.

The content and the size of the MAC header depends on the type of the logical channel, and in some cases none of the parameters in the MAC header are needed.

The size of the MAC-SDU depends on the size of the RLC-PDU, which is defined during the setup procedure.

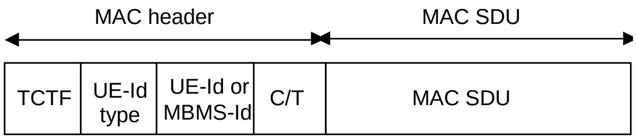


Figure 9.1.2.1: MAC PDU

9.1.3 MAC-d PDU (HS-DSCH)

For HS-DSCH the MAC-d PDU format equals the MAC PDU format for the non HS-DSCH case.

9.1.4 MAC PDU (HS-DSCH)

In case of HS-DSCH a MAC PDU consists of one MAC-hs header and one or more MAC-hs SDUs where each MAC-hs SDU equals a MAC-d PDU. A maximum of one MAC-hs PDU can be transmitted in a TTI per UE. The MAC-hs header is of variable size. The MAC-hs SDUs in one TTI belongs to the same reordering queue.

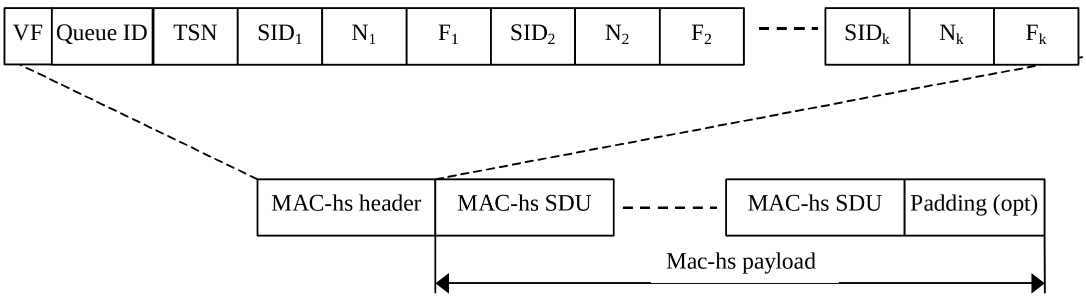


Figure 9.1.4.1: MAC-hs PDU

9.1.5 MAC PDU (E-DCH)

In the case of E-DCH there are two MAC sublayers, MAC-e and MAC-es. MAC-es sits on top of MAC-e and receives PDUs directly from MAC-d. MAC-es SDUs (i.e. MAC-d PDUs) of the same size, coming from a particular logical channel can be multiplexed together into a single MAC-es payload. To this payload is prepended the MAC-es header (see subclause 9.2.4.1). The number of PDUs, as well as the DDI value identifying the logical channel, the MAC-d flow and the MAC-es SDU size will be included as part of the MAC-e header. Multiple MAC-es PDUs, but only one MAC-e PDU can be transmitted in a TTI.

In the illustration below the field DDI_0 is referring to the specific DDI value that indicates that there are no more MAC-es PDUs included in the MAC-e PDU (see subclause 9.2.4.2). This header will not be associated with a new MAC-es payload.

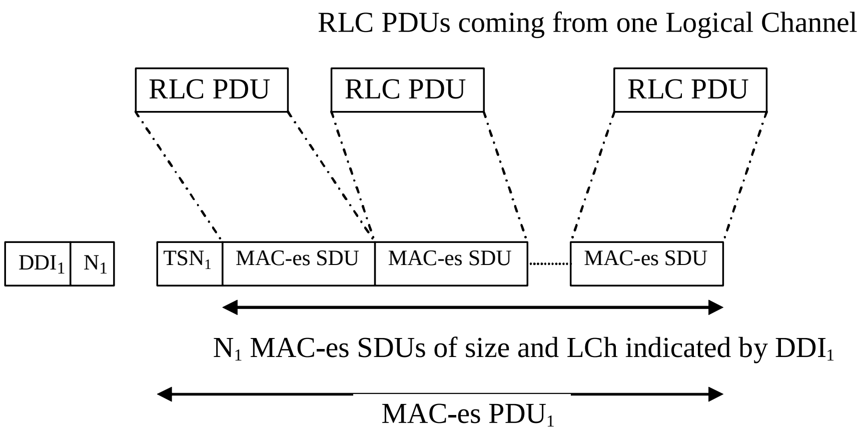


Figure 9.1.5.1: MAC-es PDU

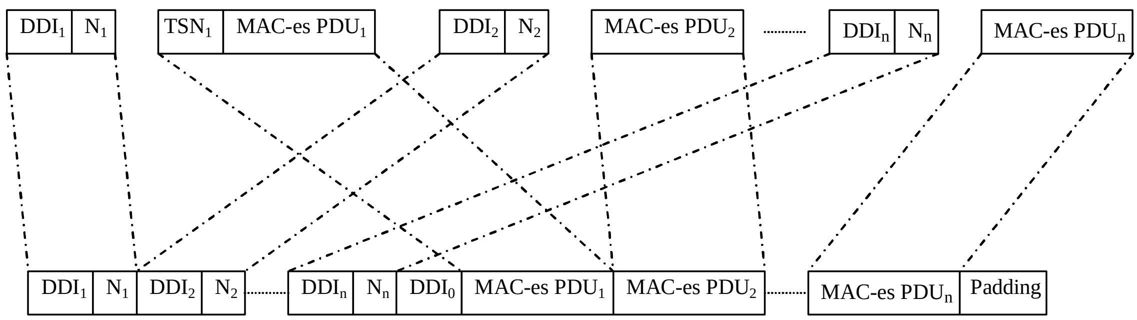


Figure 9.1.5.2: MAC-e PDU

9.2 Formats and parameters

NOTE: MAC header field encodings as specified in this clause with designation "Reserved" are forbidden to be used by a sender in this version of the protocol.

9.2.1 MAC PDU: Parameters of the MAC PDU header (not HS-DSCH or E-DCH) and MAC-d PDU header (HS-DSCH and E-DCH)

The following fields are defined for the MAC header for transport channels other than HS-DSCH and for the MAC-d PDU header for HS-DSCH:

- Target Channel Type Field
  The TCTF field is a flag that provides identification of the logical channel class on FACH and RACH transport channels, i.e. whether it carries BCCH, CCCH, CTCH, SHCCH, MCCH, MTCH, MSCH or dedicated logical channel information. The size and coding of TCTF for FDD and TDD are shown in tables 9.2.1.1, 9.2.1.2, 9.2.1.3, 9.2.1.4 and 9.2.1.5. Note that the size of the TCTF field of FACH for FDD is 2,4 or 8 bits and for TDD is either 3 or 5 bits depending on the value of the 3 most significant bits. The TCTF of the RACH for TDD is either 2 or 4 bits depending on the value of the 2 most significant bits.

Table 9.2.1.1: Coding of the Target Channel Type Field on FACH for TDD

TCTF	Designation
000	BCCH
001	CCCH
010	CTCH
01100	DCCH or DTCH over FACH
01101	MCCH
01110	MTCH
01111	MSCH
100	SHCCH
101-111	Reserved (PDUs with this coding will be discarded by this version of the protocol)

Table 9.2.1.2: Coding of the Target Channel Type Field on FACH for FDD

TCTF	Designation
00	BCCH
01000000	CCCH
01000001-01001111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
01010000	MCCH
01010001-01011110	Reserved (PDUs with this coding will be discarded by this version of the protocol)
01011111	MSCH
0110	MTCH
0111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
10000000	CTCH
10000001-10111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	DCCH or DTCH over FACH

Table 9.2.1.3: Coding of the Target Channel Type Field on USCH or DSCH (TDD only)

TCTF	Designation
0	SHCCH
1	DCCH or DTCH over USCH or DSCH

Table 9.2.1.4: Coding of the Target Channel Type Field on RACH for FDD

TCTF	Designation
00	CCCH
01	DCCH or DTCH over RACH
10-11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

Table 9.2.1.5: Coding of the Target Channel Type Field on RACH for TDD

TCTF	Designation
00	CCCH
0100	DCCH or DTCH Over RACH
0101-0111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
10	SHCCH
11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

- C/T field
  The C/T field provides identification of the logical channel instance when multiple logical channels are carried on the same transport channel (other than HS-DSCH) or same MAC-d flow (HS-DSCH). The C/T field is used also to provide identification of the logical channel type on dedicated transport channels and on FACH and RACH when used for user data transmission. The size of the C/T field is fixed to 4 bits for both common transport channels and dedicated transport channels. Table 9.2.1.5a shows the 4-bit C/T field.

Table 9.2.1.5a: Structure of the C/T field

C/T field	Designation
0000	Logical channel 1
0001	Logical channel 2
...	...
1110	Logical channel 15
1111	Reserved (PDUs with this coding will be discarded by this version of the protocol)

- UE-Id
  The UE-Id field provides an identifier of the UE on common transport channels. The following types of UE-Id used on MAC are defined:

  - UTRAN Radio Network Temporary Identity (U-RNTI) may be used in the MAC header of DCCH using RLC UM (SRB1), when mapped onto common transport channels in downlink direction; the U-RNTI is never used in uplink direction;

  - Cell Radio Network Temporary Identity (C-RNTI) is used on DTCH and DCCH in uplink, and may be used on DCCH in downlink and is used on DTCH in downlink when mapped onto common transport channels, except when mapped onto DSCH transport channel in TDD;

  - ~~In FDD, DSCH Radio Network Temporary Identity (DSCH-RNTI) is used on DTCH and DCCH in downlink when mapped onto DSCH transport channel;- the UE id to be used by MAC is configured through the MAC control SAP. The lengths of the UE-id field of the MAC header are given in table 9.2.1.6.~~

Table 9.2.1.6: Lengths of UE Id field

UE Id type	Length of UE Id field
U-RNTI	32 bits
C-RNTI	16 bits
~~DSCH-RNTI~~	~~16 bits~~

- UE-Id Type
  The UE-Id Type field is needed to ensure correct decoding of the UE-Id field in MAC Headers.

Table 9.2.1.7: UE-Id Type field definition

UE-Id Type field 2 bits	UE-Id Type
00	U-RNTI
01	C-RNTI~~ or DSCH-RNTI~~
10	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

- MBMS-Id
  The MBMS-Id field provides an identifier of MTCH for an MBMS service carried on FACH. The MBMS-Id is used in the MAC header of MTCH mapped onto FACH in downlink direction; the MBMS-Id is never used in uplink direction. The MBMS Id to be used by MAC is configured through the MAC control SAP. The length of the MBMS-Id field is 4 bits. Table 9.2.1.7a shows the 4-bit MBMS-Id field.

Table 9.2.1.8: Structure of the MBMS-Id field

MBMS-Id field	Designation
0000	MBMS service 1
0001	MBMS service 2
...	...
1110	MBMS service 15
1111	Reserved (PDUs with this coding will be discarded by this version of the protocol)

9.2.1.1 MAC header for DTCH and DCCH (not mapped on HS-DSCH or E-DCH)

a) DTCH or DCCH mapped to DCH, no multiplexing of dedicated channels on MAC:

- no MAC header is required.

b) DTCH or DCCH mapped to DCH, with multiplexing of dedicated channels on MAC:

- C/T field is included in MAC header.

c) DTCH or DCCH mapped to RACH/FACH:

- TCTF field, C/T field, UE-Id type field and UE-Id are included in the MAC header. For FACH, the UE-Id type field used is the C-RNTI or U-RNTI. For RACH, the UE-Id type field used is the C-RNTI.

d) DTCH or DCCH mapped to DSCH or USCH:

- the TCTF field is included in the MAC header~~ for TDD only. The UE-Id type and UE-Id are included in the MAC header for FDD only. The UE-Id type field used is the DSCH-RNTI~~. The C/T field is included if multiplexing on MAC is applied.

e) DTCH or DCCH mapped to DSCH or USCH where DTCH or DCCH are the only logical channels:

- ~~the UE-Id type and UE-Id are included in the MAC header for FDD only. The UE-Id type field used is the DSCH-RNTI.~~ The C/T field is included in the MAC header if multiplexing on MAC is applied.

f) DTCH or DCCH mapped to CPCH:

- UE-Id type field and UE-Id are included in the MAC header. The C/T field is included in the MAC header if multiplexing on MAC is applied. The UE-Id type field used is the C-RNTI.

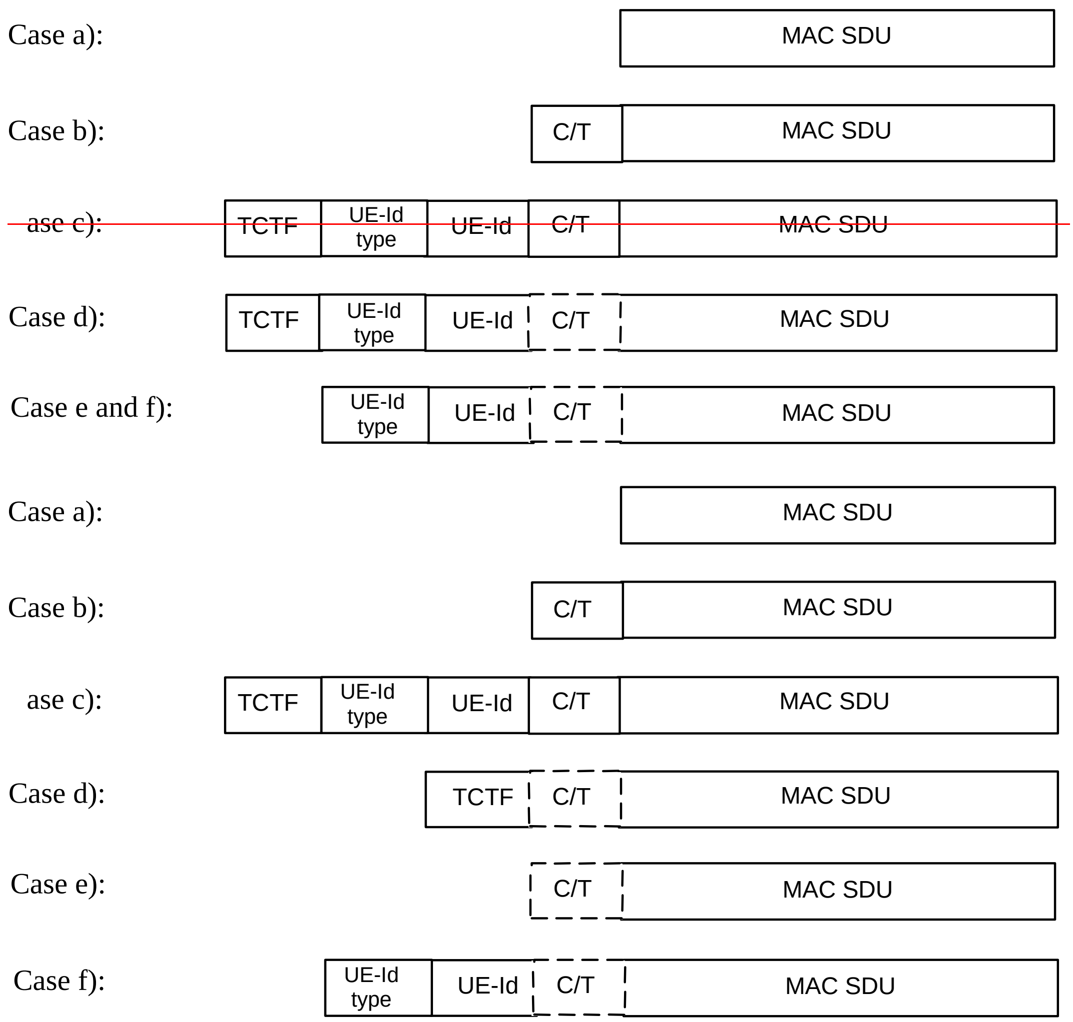


Figure 9.2.1.1.1: MAC PDU formats for DTCH and DCCH

9.2.1.1a MAC-d Header for DTCH and DCCH (mapped on HS-DSCH)

The MAC-d PDU header for DTCH and DCCH mapped on HS-DSCH is as shown in figure 9.2.1.1a.1.

- C/T field is included in the MAC-d PDU header if multiplexing on MAC is applied.

Figure 9.2.1.1a.1 MAC-d PDU format for DTCH and DCCH mapped on HS-DSCH

9.2.1.1b MAC-d Header for DTCH and DCCH (mapped on E-DCH)

For DTCH and DCCH mapped on E-DCH there is no need for a MAC-d header. Therefore, the MAC-d PDUs will be as shown in figure 9.2.1.1a.1.

MAC SDU

Figure 9.2.1.1b.1 MAC-d PDU format for DTCH and DCCH mapped on E-DCH

9.2.1.2 MAC header for BCCH

a) BCCH mapped to BCH:

- no MAC header is included.

b) BCCH mapped to FACH:

- the TCTF field is included in MAC header.

Case a):

MAC SDU

Case b):

TCTF	MAC SDU

Figure 9.2.1.2.1: MAC PDU formats for BCCH

9.2.1.3 MAC header for PCCH

There is no MAC header for PCCH.

9.2.1.4 MAC header for CCCH

CCCH mapped to RACH/FACH:

- TCTF field is included in MAC header.

TCTF	MAC SDU

Figure 9.2.1.4.1: MAC PDU formats for CCCH

9.2.1.5 MAC Header for CTCH

The TCTF field is included as MAC header for CTCH as shown in figure 9.2.1.5.1.

TCTF	MAC SDU

Figure 9.2.1.5.1: MAC PDU format for CTCH

9.2.1.6 MAC Header for SHCCH

The MAC header for SHCCH is as shown in figure 9.2.1.6.1.

a) SHCCH mapped to RACH and USCH/FACH and DSCH:

- TCTF has to be included.

b) SHCCH mapped to RACH and USCH/FACH and DSCH, where SHCCH is the only channel.

Case a):	**TCTF**	MAC SDU
Case b):		MAC SDU

Figure 9.2.1.6.1: MAC PDU format for SHCCH

9.2.1.7 MAC Header for MCCH

The MAC PDU format for MCCH is as shown in figure 9.2.1.7.1.

a) If the MAC header for MCCH is not configured through the MAC control SAP:

- there is no MAC header for MCCH.

b) If the MAC header for MCCH is configured through the MAC control SAP:

- TCTF field is included in the MAC header for MCCH.

NOTE: If MCCH is not the only channel on the FACH, the MAC header shall be configured for the MCCH.

Case a):		MAC SDU
Case b):	TCTF	MAC SDU

Figure 9.2.1.7.1: MAC PDU format for MCCH

9.2.1.8 MAC Header for MTCH

The TCTF field and MBMS-Id field are included in the MAC header for MTCH as shown in figure 9.2.1.8.1.

TCTF	MBMS-Id	MAC SDU

Figure 9.2.1.8.1: MAC PDU format for MTCH

9.2.1.9 MAC Header for MSCH

The MAC PDU format for MSCH is as shown in figure 9.2.1.9.1.

a) If the MAC header for MSCH is not configured through the MAC control SAP:

- there is no MAC header for MSCH.

b) If the MAC header for MSCH is configured through the MAC control SAP:

- TCTF field is included in the MAC header for MSCH.

NOTE: If MSCH is not the only channel on the FACH, the MAC header shall be configured for the MSCH.

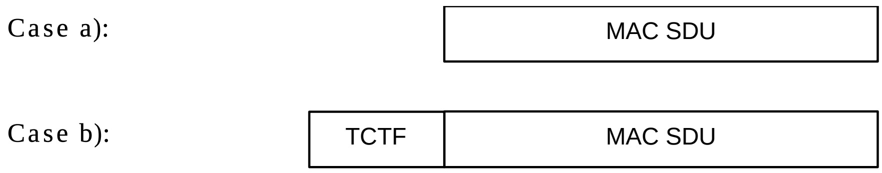


Figure 9.2.1.9.1: MAC PDU format for MSCH

3GPP TSG-RAN2 Meeting #47
Athens, Greece, Mai 9th to 13th 2005

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CR-Form-v7.1

CHANGE REQUEST

⌘	**25.331**	**CR**	**2586**	⌘**rev**	**-**	⌘	Current version:	**6.5.0**	⌘

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

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

Title:	⌘	Feature Clean-up: Removal of DSCH (FDD)		
Source:	⌘	RAN WG2		
Work item code:	⌘	TEI5	***Date:*** ⌘	09/05/2005
Category:	⌘	**C** *Use one of the following categories:* ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	***Release:*** ⌘	Rel-6 *Use one of the following releases:* *Ph2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *Rel-4 (Release 4)* *Rel-5 (Release 5)* *Rel-6 (Release 6)* *Rel-7 (Release 7)*

Reason for change: ⌘ Removal of DSCH for FDD

Summary of change: ⌘ Removal of the IEs and their associated handling for FDD:

- "PDSCH code mapping"
- "PDSCH with SHO DCH Info"
- "New DSCH-RNTI"
- "TFCI combining indicator"
- "TFCI FIELD 2 Information"
- "PDSCH with SHO DCH Info"
- "PDSCH code mapping"
- "Downlink PDSCH information"
- "Support of PDSCH"
- "Simultaneous reception of SCCPCH, DPCH and PDSCH"
- "TFCS Information for DSCH (TFCI range method)"

Specifying that in the case the IE "RB mapping info" is set to "DCH+DSC"H or "DSCH" the UE behaviour is unspecified.

Removal of unnecessary calculation of the TB size for FDD DSCH.

Renaming of the IE "Max no DPCH/PDSCH codes" into Max no DPCH codes.

Specifying that the UE behaviour in the case the transport channel type in the IE "Added or Reconfigured DL TrCH information" or "Deleted DL TrCH information" is set to "DSCH" is unspecified.

		Removal of the TFCS split mode.
Consequences if not approved:	⌘	DSCH for FDD mode will remain specified

Clauses affected:	⌘	8.2.2.3, 8.2.11.3, 8.3.4.3, 8.5.21, 8.6.3.1, 8.6.3.9a, 8.6.4.8, 8.6.5.1, 8.6.5.12, 8.6.5.14, 8.6.6.9, 8.6.6.10, 10.2.8, 10.2.16a, 10.2.22, 10.2.27, 10.2.30, 10.2.33, 10.2.50, 10.3.3.9a, 10.3.3.25, 10.3.4.21, 10.3.5.1, 10.3.5.4, 10.3.5.12, 10.3.5.13, 10.3.5.14, 10.3.5.20, 10.3.6.27, 10.3.6.30, 10.3.6.31, 10.3.6.43, 10.3.6.47, 10.3.6.68, 10.3.6.81, 10.3.10, 11.1, 11.2, 11.3, 11.4, 11.5, 13.4.3a, B.3.1				
		Y	**N**			
Other specs	⌘	**Y**		Other core specifications	⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
affected:		**Y**		Test specifications		34.108, 34.123
			N	O&M Specifications		
Other comments:	⌘					

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

8.2 Radio Bearer control procedures

8.2.1 Radio bearer establishment

See subclause 8.2.2 Reconfiguration procedures.

8.2.2 Reconfiguration procedures

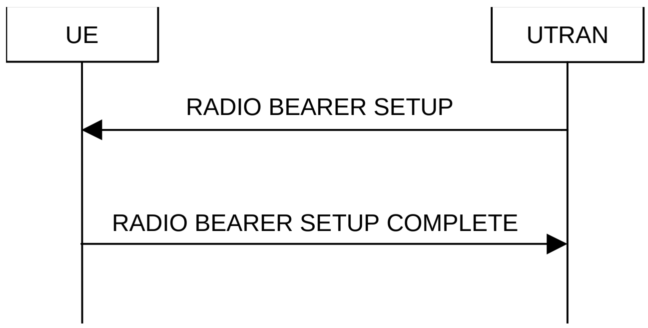

Figure 8.2.2-1: Radio Bearer Establishment, normal case

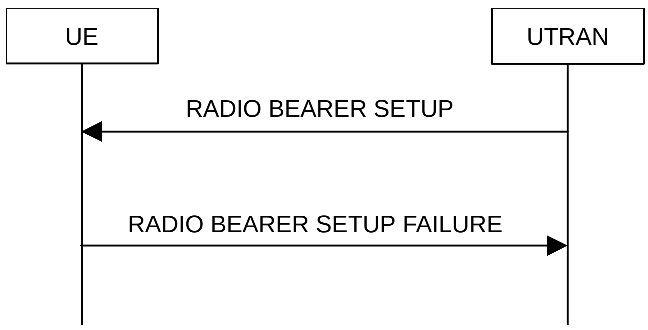

Figure 8.2.2-2: Radio Bearer Establishment, failure case

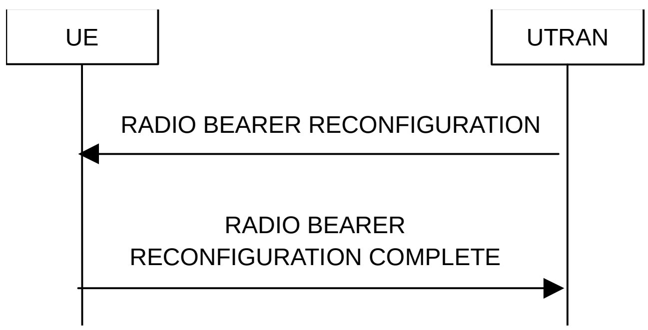

Figure 8.2.2-3: Radio bearer reconfiguration, normal flow

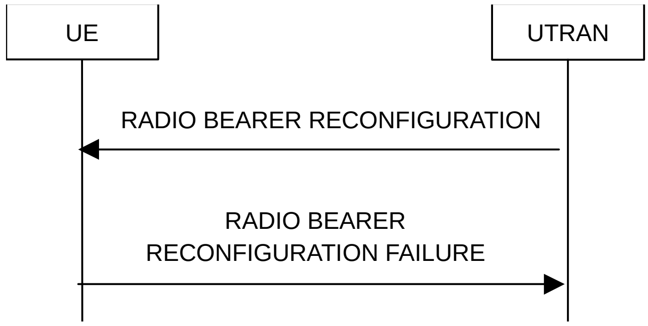

Figure 8.2.2-4: Radio bearer reconfiguration, failure case

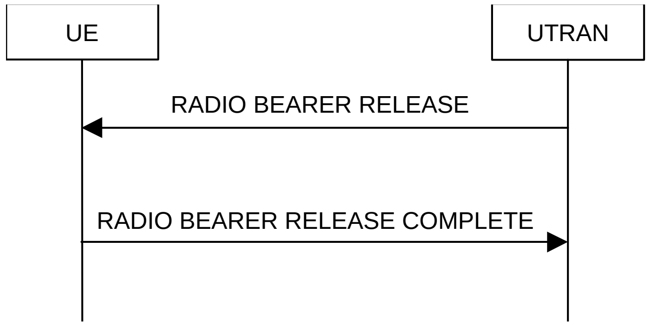

Figure 8.2.2-5: Radio Bearer Release, normal case

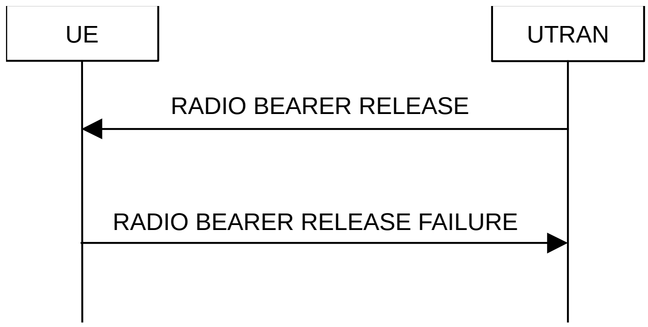

Figure 8.2.2-6: Radio Bearer Release, failure case

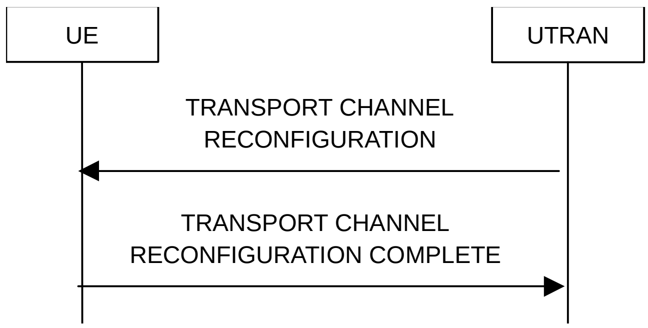

Figure 8.2.2-7: Transport channel reconfiguration, normal flow

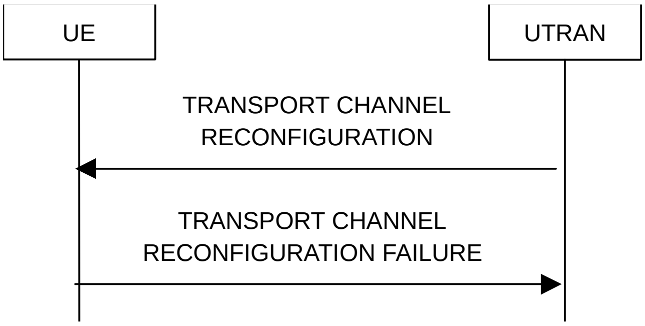

Figure 8.2.2-8: Transport channel reconfiguration, failure case

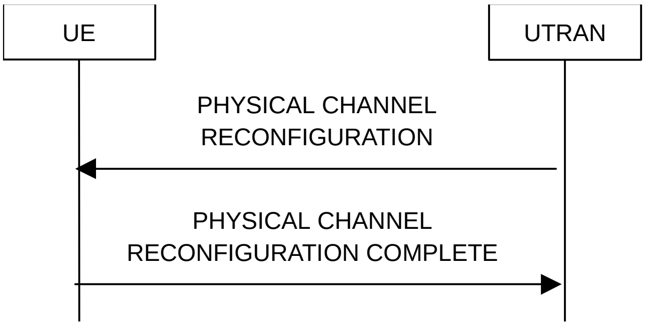

Figure 8.2.2-9: Physical channel reconfiguration, normal flow

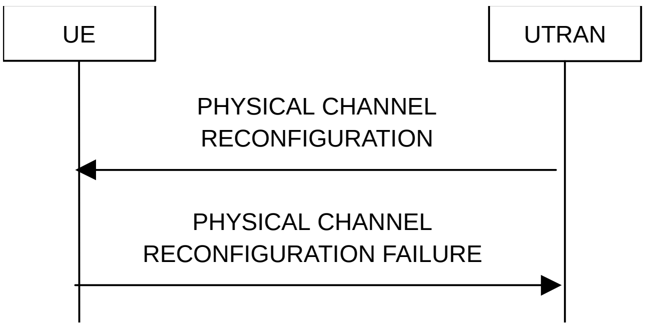

Figure 8.2.2-10: Physical channel reconfiguration, failure case

8.2.2.1 General

Reconfiguration procedures include the following procedures:

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

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

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

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

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

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

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

8.2.2.2 Initiation

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

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

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

1> for a radio bearer establishment procedure:

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

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

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

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

1> for a radio bearer reconfiguration procedure:

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

1> for a radio bearer release procedure:

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

1> for a transport channel reconfiguration procedure:

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

1> for a physical channel reconfiguration procedure:

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

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

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

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

2> else:

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

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

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

2> use the downlink DCCH using AM RLC.

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

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

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

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

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

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

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

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

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

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

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

8.2.2.2a Initiation of handover from GERAN *Iu mode*

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

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

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

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

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

The UE shall:

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

2> RADIO BEARER SETUP message; or

2> RADIO BEARER RECONFIGURATION message; or

2> RADIO BEARER RELEASE message; or

2> TRANSPORT CHANNEL RECONFIGURATION message; or

2> PHYSICAL CHANNEL RECONFIGURATION message;

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

In case the reconfiguration procedure is used to remove all existing RL(s) in the active set while new RL(s) are established the UE shall:

1> if the UE has a pending "TGPS reconfiguration CFN" at the activation time received in the reconfiguration message and the reconfiguration requests a timing re-initialised hard handover (see subclause 8.3.5.1), the UE may:

2> abort the pending CM activation;

2> set the CM_PATTERN_ACTIVATION_ABORTED to TRUE.

1> otherwise:

2> set the CM_PATTERN_ACTIVATION_ABORTED to FALSE.

If the UE receives:

- a RADIO BEARER SETUP message; or

- a RADIO BEARER RECONFIGURATION message; or

- a RADIO BEARER RELEASE message; or

- a TRANSPORT CHANNEL RECONFIGURATION message; or

- a PHYSICAL CHANNEL RECONFIGURATION message:

it shall:

1> set the variable ORDERED_RECONFIGURATION to TRUE;

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

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

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

The UE may:

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

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

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

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

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

1> enter a state according to subclause 8.6.3.3.

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

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

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

In case the UE receives a RADIO BEARER RECONFIGURATION message with the IE "Specification mode" set to "Preconfiguration" while the message is not sent through GERAN *Iu mode*, the UE behaviour is unspecified.

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

1> in FDD; or

1> in TDD when "Primary CCPCH Info" is included indicating a new target cell and "New C-RNTI" is not specified:

2> remove any C-RNTI from MAC;

2> clear the variable C_RNTI.

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

1> clear any stored IE "Downlink HS-PDSCH information";

1> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25;

1> clear any stored IE "E-DCH information";

1> determine the value for the E_DCH_TRANSMISSION variable and take the corresponding actions as described in subclause 8.5.28.

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

~~1> remove any DSCH-RNTI from MAC;~~

~~1> clear the variable DSCH_RNTI.~~

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

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

1> in TDD:

2> if "Primary CCPCH Info" is included indicating a new target cell and "New C-RNTI" is not specified:

3> remove any C-RNTI from MAC;

3> clear the variable C_RNTI.

2> if "Primary CCPCH Info" is included indicating a new target cell and "New H-RNTI" is not specified:

3> remove any H-RNTI from MAC;

3> clear the variable H_RNTI;

3> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25.

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

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

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

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

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

4> set the variable INVALID_CONFIGURATION to TRUE.

3> and the procedure ends.

2> adjust the radio link timing accordingly.

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

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

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

2> if the UE finds a suitable UTRA cell on that frequency:

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

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

4> when the cell update procedure completed successfully:

5> 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" and proceed as below.

2> else, if the UE can not find a suitable UTRA cell on that frequency but it finds a suitable UTRA cell on another frequency:

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

3> when the cell update procedure completed successfully:

4> 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" and proceed as below.

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

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

2> if the UE finds a suitable UTRA cell on the current frequency:

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

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

4> when the cell update procedure completed successfully:

5> 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" and proceed as below.

2> else, if the UE can not find a suitable UTRA cell on the current frequency but it finds a suitable UTRA cell on another frequency:

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

3> when the cell update procedure completed successfully:

4> 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" and proceed as below.

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

1> select PRACH according to subclause 8.5.17;

1> select Secondary CCPCH according to subclause 8.5.19;

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

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

2> ignore that IE and stop using DRX.

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

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

2> when the cell update procedure completed successfully:

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

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

4> proceed as below.

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

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

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

2> if the UE finds a suitable UTRA cell on that frequency:

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

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

4> when the cell update procedure completed successfully:

5> 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" and proceed as below.

2> else, if the UE can not find a suitable UTRA cell on that frequency but it finds a suitable UTRA cell on another frequency:

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

3> when the cell update procedure completed successfully:

4> 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" and proceed as below.

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

2> if the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD) is included the UE shall either:

3> ignore the content of the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD) and proceed as below;

2> or:

3> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CPCH info" (for TDD), and it is different from the current cell:

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

4> when the cell update procedure completed successfully:

5> 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" and proceed as below.

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

1> stop timer T305.

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

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

2> set the variable INVALID_CONFIGURATION to TRUE.

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

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

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

2> if the variable PDCP_SN_INFO is empty:

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

2> else:

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

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

2> re-establish the RLC entity for RB2;

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

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

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

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

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

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

5> initialise the HFN component of the uplink COUNT-C and downlink COUNT-C of SRB2 as indicated in subclause 8.1.12.3.1.

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

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

5> initialise the HFN component of the uplink COUNT-C and downlink COUNT-C of SRB2 to the most recently transmitted IE "START list" or IE "START" for the

LATEST_CONFIGURED_CN_DOMAIN at the reception of the previous SECURITY MODE COMMAND.

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

3> else:

4> continue using the current ciphering configuration.

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

2> increment by one the downlink and uplink values of the HFN of COUNT-C for RB2;

2> calculate the START value according to subclause 8.5.9;

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

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

2> if the variable START_VALUE_TO_TRANSMIT is set:

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

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

3> calculate the START value according to subclause 8.5.9;

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

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

3> calculate the START value according to subclause 8.5.9;

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

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

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

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

2> if the reconfiguration message is not used to perform SRNS relocation with change of ciphering algorithm:

3> the UE behaviour is not specified.

2> if the message is used to perform a timing re-initialised hard handover:

3> if IE "Ciphering activation time for DPCH" is included:

4> the UE behaviour is not specified.

2> else:

3> if the reconfiguration message is used to setup radio bearer(s) using RLC-TM; or

3> if radio bearer(s) using RLC-TM already exist:

4> if IE "Ciphering activation time for DPCH" is not included:

5> the UE behaviour is not specified.

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

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

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

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

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

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

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

1> clear that entry;

1> if the variable PDCP_SN_INFO is not empty:

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

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

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

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

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

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

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

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

2> if the UE can not find a suitable UTRA cell on that frequency but it finds a suitable UTRA cell on another frequency:

3> proceed as below.

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

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

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C_RNTI;

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

1> select Secondary CCPCH according to subclause 8.5.19;

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

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

1> if the criteria for URA update caused by "URA reselection" according to subclause 8.3.1 are fulfilled after cell selection:

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

2> when the URA update procedure is successfully completed:

3> the procedure ends.

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

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

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

2> if the UE finds a suitable UTRA cell on that frequency:

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

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

4> proceed as below.

2> else, if the UE can not find a suitable UTRA cell on that frequency but it finds a suitable UTRA cell on another frequency:

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

3> proceed as below.

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

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

2> if the UE finds a suitable UTRA cell on the current frequency:

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

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

4> proceed as below.

2> else, if the UE can not find a suitable UTRA cell on the current frequency but it finds a suitable UTRA cell on another frequency:

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

3> proceed as below.

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C_RNTI;

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

1> select Secondary CCPCH according to subclause 8.5.19;

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

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

1> the procedure ends.

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

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

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

2> if the UE finds a suitable UTRA cell on that frequency:

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

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

4> proceed as below.

2> else, if the UE can not find a suitable UTRA cell on that frequency but it finds a suitable UTRA cell on another frequency:

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

3> proceed as below.

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

2> if the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD) is included the UE shall either:

3> ignore the content of the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD) and proceed as below;

2> or:

3> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CPCH info" (for TDD), and it is different from the current cell:

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

4> proceed as below.

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C_RNTI;

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

1> select Secondary CCPCH according to subclause 8.5.19;

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

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

1> the procedure ends.

***** Next modified section *****

8.2.11.3 ~~Runtime error due to overlapping compressed mode configuration and PDSCH reception~~Void

~~If UE is scheduled to receive a PDSCH frame at the same time instant as a compressed mode gap, UE shall perform the measurements according to the measurement purpose of the pattern sequence.~~

***** Next modified section *****

8.3.4 Active set update

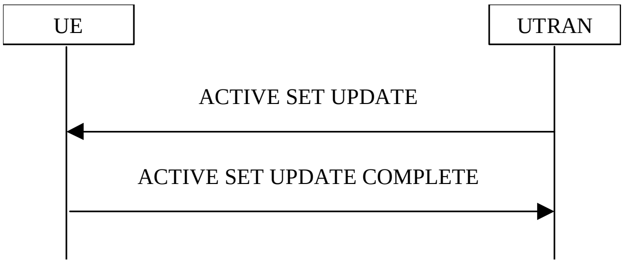

Figure 8.3.4-1: Active Set Update procedure, successful case

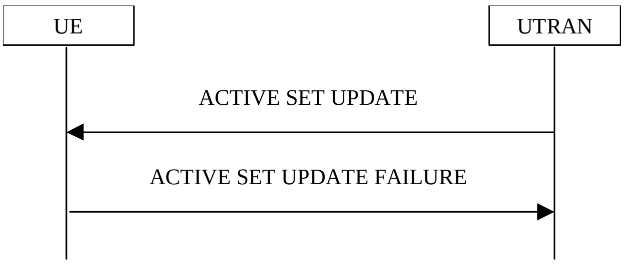

Figure 8.3.4-2: Active Set Update procedure, failure case

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:

1> prepare new additional radio link(s) in the UTRAN prior to the command to the UE.

In all cases, UTRAN should:

1> send an ACTIVE SET UPDATE message on downlink DCCH using AM or UM RLC;

1> create active sets that contain at least one common radio link across a DPCH or F-DPCH frame boundary as the result of one or multiple (parallel) active set update procedures.

UTRAN should include the following information:

1> 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;

1> 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.

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

The UE may:

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

The UE shall:

1> first add the RLs indicated in the IE "Radio Link Addition Information";

1> 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;

1> perform the physical layer synchronisation procedure B as specified in [29];

~~1> if the IE "TFCI combining indicator" associated with a radio link to be added is set to TRUE:~~

~~2> if a DSCH transport channel is assigned and there is a 'hard' split in the TFCI field:~~

~~3> configure Layer 1 to soft-combine TFCI (field 2) of this new link with those links already in the TFCI (field 2) combining set.~~

1> if the radio link currently considered to be the serving HS-DSCH radio link is indicated in the IE "Radio Link Removal Information":

2> no longer consider any radio link as the serving HS-DSCH radio link;

2> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25.

1> if the radio link currently considered to be the serving E-DCH radio link is indicated in the IE "Radio Link Removal Information":

2> no longer consider any radio link as the serving E-DCH radio link;

2> determine the value for the E_DCH_TRANSMISSION variable and take the corresponding actions as described in subclause 8.5.28.

1> 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

1> clear that entry;

1> transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC without waiting for the completion of the Physical Layer synchronisation B, as specified in [29];

1> the procedure ends on the UE side.

**** Next modified section ****

8.5.21 Actions related to Radio Bearer mapping

When the UE receives the IE "RB mapping info" and/or the IE "Transport format set", when transport channels, MAC-d flows or E-DCH MAC-d flows are added or deleted, when the UE performs a cell reselection or a state transition, or when the UE releases a RB, the UE shall for each of the configured Radio Bearers:

1> upon moving to CELL_FACH state from CELL_DCH state to initiate a cell update procedure and upon subsequent cell reselections until the first successfully completed cell update procedure, perform the actions defined in the remainder of this subclause only for SRB1, SRB2, SRB3 and SRB4;

1> for FDD, select the multiplexing option according to the following:

2> if the UE is in CELL_FACH state:

3> if the RB has a multiplexing option with transport channel type "FACH" for the DL and transport channel type "RACH" for the UL:

4> select this multiplexing option.

2> if the UE is in CELL_DCH state:

3> if the RB has a multiplexing option with transport channel type "DCH + HS-DSCH" for the DL, and both the corresponding DCH transport channel and MAC-d flow are configured, and with transport channel type "E-DCH" for the UL, and the corresponding E-DCH MAC-d flow is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "DCH + HS-DSCH" for the DL, and both the corresponding DCH transport channel and MAC-d flow are configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "DCH + DSCH" for the DL~~, and both the corresponding DCH and DSCH transport channels are configured, and with transport channel type "E-DCH" for the UL, and the corresponding E-DCH MAC-d flow is configured~~:

4> the UE behaviour is unspecified~~select this multiplexing option~~; else

~~3> if the RB has a multiplexing option with transport channel type "DCH + DSCH" for the DL, and both the corresponding DCH and DSCH transport channels are configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:~~

~~4> select this multiplexing option; else~~

3> if the RB has a multiplexing option with transport channel type "HS-DSCH" for the DL, and the corresponding MAC-d flow is configured, and with transport channel type "E-DCH" for the UL, and the corresponding E-DCH MAC-d flow is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "HS-DSCH" for the DL, and the corresponding MAC-d flow is configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "DSCH" for the DL~~, and the corresponding DSCH transport channel is configured, and with transport channel type "E-DCH" for the UL, and the corresponding E-DCH MAC-d flow is configured~~:

4> the UE behaviour is unspecified~~select this multiplexing option~~; else

3> if the RB has a multiplexing option with transport channel type "DSCH" for the DL, and the corresponding DSCH transport channel is configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "DCH" for the DL, and the corresponding DCH transport channel is configured, and with transport channel type "E-DCH" for the UL, and the corresponding E-DCH MAC-d flow is configured:

4> select this multiplexing option.

3> if the RB has a multiplexing option with transport channel type "DCH" for the DL, and the corresponding DCH transport channel is configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option.

1> for TDD, select the multiplexing option according to the following:

2> if the UE is in CELL_FACH state:

3> if the RB has the multiplexing options with the transport channel types "FACH" and "DSCH" for the DL, and the corresponding FACH and DSCH transport channels are configured, and with the transport channel types "RACH" and "USCH" for the UL, and the corresponding RACH and USCH transport channels are configured:

4> if both PUSCH and PDSCH are allocated:

5> select the multiplexing option "DSCH" for DL and "USCH" for UL; else

4> if only PUSCH is allocated:

5> select the multiplexing option "FACH" for DL and "USCH" for UL; else

4> if only PDSCH is allocated:

5> select the multiplexing option "DSCH" for DL and "RACH" for UL; else

4> if neither PUSCH nor PDSCH is allocated:

5> select the multiplexing option "FACH" for DL and "RACH" for UL.

3> if the RB has a single multiplexing option with the transport channel type "FACH" for the DL and the transport channel type "RACH" for the UL:

4> select this multiplexing option; else

3> if the RB has a single multiplexing option with the transport channel type "DSCH" for the DL, and the corresponding DSCH tranfsport channel is configured, and with the transport channel type "USCH" for the UL, and the corresponding USCH transport channel is configured:

4> select this multiplexing option; else

2> if the UE is in CELL_DCH state:

3> if the RB has a multiplexing option with transport channel type "DCH + HS-DSCH" for the DL, and both the corresponding DCH transport channel and MAC-d flow are configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "DCH + DSCH" for the DL, and both the corresponding DCH and DSCH transport channels are configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "HS-DSCH" for the DL, and the corresponding MAC-d flow is configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "DCH" for the DL, and the corresponding DCH transport channel is configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if theRB has a multiplexing option with transport channel type "DSCH" for the DL, and the corresponding DSCH transport channel is configured, and with transport channel "USCH" for the UL, and the corresponding USCH transport channel is configured:

4> select this multiplexing option.

1> configure the MAC with the appropriate transport format set (with computed transport block sizes) for the transport channel used by that RB;

1> in case the selected multiplexing option is a multiplexing option on E-DCH:

2> the set of RLC sizes that apply to the logical channel used by that RB consists of all RLC PDU sizes listed in the IE "RLC PDU size list" in the RB mapping info for E-DCH.

1> else:

2> determine the sets of RLC sizes that apply to the logical channels used by that RB, based on the IEs "RLC size list" and/or the IEs "Logical Channel List" included in the applicable "Transport format set" (either the ones received in the same message or the ones stored if none were received);

1> in case the selected multiplexing option is a multiplexing option on RACH:

2> ignore the RLC size indexes that do not correspond to any RLC size within the Transport Format Set stored for RACH.

2> if there is no remaining RLC size index corresponding to an RLC size within the Transport Format Set stored for RACH:

3> set the variable INVALID_CONFIGURATION to TRUE.

1> if RACH is the transport channel to be used on the uplink, if that RB has a multiplexing option on RACH and if it is using AM:

2> apply the largest size amongst the ones derived according to the previous bullet for the RLC size (or RLC sizes in case the RB is realised using two logical channels) for the corresponding RLC entity.

NOTE: The IE "RB mapping info" is only included in the IE "Predefined RB configurations" in system information when used for Inter-RAT handover to UTRAN and there is no AM RLC size change involved in this case.

1> if that RB is using AM and the RLC size applicable to the uplink logical channel transporting data PDUs is different from the one derived from the previously stored configuration; and

1> none of the following conditions is met:

- the RLC size change is caused by a CELL UPDATE CONFIRM and the CELL UPDATE CONFIRM message includes the IE "Downlink counter synchronisation info".

- the RLC size change is caused by a reconfiguration message, and a cell update procedure occurs during the reconfiguration procedure and the CELL UPDATE CONFIRM message includes the IE "Downlink counter synchronisation info".

- the RLC size change is caused by a reconfiguration message, and a cell update procedure occurs during this reconfiguration procedure and the CELL UPDATE CONFIRM message includes the IE "RLC re-establish indicator" being set to TRUE for the corresponding radio bearer.

2> if the RLC size change is caused by a reconfiguration message or a CELL UPDATE CONFIRM; and

2> the IE "one sided RLC re-establishment" is included in that message and is set to TRUE:

3> re-establish the transmitting side of the corresponding RLC entity.

2> else:

3> re-establish the corresponding RLC entity.

2> configure the corresponding RLC entity with the new uplink RLC size;

2> for each AM RLC radio bearer in the CN domain as indicated in the IE "CN domain identity" in the IE "RAB info" in the variable ESTABLISHED_RABS whose RLC size is changed; and

2> for each AM RLC signalling radio bearer in the CN domain as indicated in the IE "CN domain identity" in the variable LATEST_CONFIGURED_CN_DOMAIN whose RLC size is changed:

3> if the IE "Status" in the variable CIPHERING_STATUS of this CN domain is set to "Started":

4> if the information causing the RLC re-establishment was included in system information:

5> set the HFN values for the corresponding RLC entity equal to the value of the IE "START" for this CN domain that will be included in the CELL UPDATE message following cell reselection.

NOTE: Since the UE cannot predict the START value at the time of the next CELL UPDATE transmission in the future, UTRAN should desist from changing the RLC size for a signalling radio bearer within a cell. Other than this case the change in RLC size for a signalling radio bearer is known to the UE when reading system information following cell reselection.

4> if the RLC re-establishment is caused by a CELL UPDATE CONFIRM:

5> if the whole RLC entity was re-established:

6> set the HFN values for the corresponding RLC entity in uplink and downlink equal to the value of the IE "START" included in the latest transmitted CELL UPDATE message for this CN domain.

5> if only the transmitting side of the RLC entity was re-established:

6> set the HFN value for the corresponding RLC entity in the uplink equal to the value of the IE "START" included in the latest transmitted CELL UPDATE message for this CN domain.

4> if the RLC re-establishment is caused by a reconfiguration message:

5> if the whole RLC entity was re-established:

6> set the HFN values for the corresponding RLC entity in uplink and downlink equal to the value of the IE "START" that will be included in the reconfiguration complete message for this CN domain.

5> if only the transmitting side of the RLC entity was re-established:

6> set the HFN value for the corresponding RLC entity in the direction uplink equal to the value of the IE "START" that will be included in the reconfiguration complete message for this CN domain.

NOTE1: If the UTRAN modifies the RLC size for RB2 on any reconfiguration message or Cell Update Confirm message, the UE behaviour is unspecified in this version of the specification.

NOTE2: The UE cannot rely on the configured Transport Formats to determine the RLC sizes to be used in downlink for a particular logical channel. This size can be signalled explicitly in the RLC Info IE.

1> if that RB is using UM:

2> indicate the largest RLC size applicable for uplink to the corresponding RLC entity.

1> configure MAC multiplexing according to the selected multiplexing option (MAC multiplexing shall only be configured for a logical channel if the transport channel it is mapped on according to the selected multiplexing option is the same as the transport channel another logical channel is mapped on according to the multiplexing option selected for it);

1> configure the MAC with the logical channel priorities according to selected multiplexing option;

1> configure the MAC with the set of applicable RLC Sizes for each of the logical channels used for that RB;

1> if there is no multiplexing option applicable for the transport channels and MAC-d flows to be used:

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if there is more than one multiplexing option applicable for the transport channels or MAC-d flows to be used:

2> set the variable INVALID_CONFIGURATION to TRUE.

If upon cell re-selection or upon moving to CELL_FACH state from CELL_DCH state to initiate cell update procedure the UE sets variable INVALID_CONFIGURATION to TRUE as a result of the actions defined in this subclause, the UE should:

1> move to idle mode;

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

1> perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2.

**** Next modified section ****

8.6.3.1 Activation time

If the UE receives a message in which presence is needed for the IE "Activation time", and the value is other than the default value "Now", the UE shall:

1> let the "reference CCTrCH" be defined as the CCTrCh that includes any transport channel or is associated with any physical channel which is being added, re-configured or removed, or, in the case of ~~DSCH (FDD only) or~~ HS-DSCH, the CCTrCh including the associated DCH;

1> if the frame boundary immediately before the frame with the CFN (Connection Frame Number) value indicated by the IE "Activation Time" is at the TTI boundary common to all the transport channels that are multiplexed onto the reference CCTrCh:

2> select that frame boundary as the activation time T.

1> else:

2> select the next TTI boundary, which is common to all the transport channels that are multiplexed onto the reference CCTrCh, after the frame with the CFN (Connection Frame Number) value indicated by the IE "Activation Time", as the activation time T.

1> at the activation time T:

2> for a physical channel reconfiguration other than an HS-DSCH related reconfiguration, caused by the received message:

3> release the physical channel configuration, which was present before T;

3> initiate the establishment of the physical channel configuration as specified for the physical channel information elements in the received message as specified elsewhere.

2> for an HS-DSCH related reconfiguration in FDD or 1.28 Mcps TDD caused by the received message:

3> select the HS-SCCH subframe boundary immediately before the first HS-SCCH subframe, which entirely falls within the 10 ms frame following T;

3> start using, at that HS-SCCH subframe boundary, the new HS-DSCH configuration in the received message, replacing any old HS-DSCH configuration.

2> for an HS-DSCH related reconfiguration in 3.84 Mcps TDD caused by the received message:

3> start using, at activation time T, the new HS-DSCH configuration in the received message, replacing any old HS-DSCH configuration.

2> for actions, other than a physical channel reconfiguration, caused by the received message:

3> perform the actions for the information elements in the received message as specified elsewhere.

NOTE: In FDD an "HS-DSCH related reconfiguration" includes, in particular, reconfigurations that need to be time-aligned with the 2ms subframe of the HS-SCCH, HS-PDSCH and/or HS-DPCCH. For example, start and stop of HS-SCCH reception and serving HS-DSCH cell change.

If the UE receives a message in which presence is needed for the IE "Activation time", and the value is the default value "Now", the UE shall:

1> choose an activation time T as soon as possible after the reception of the message, respecting the performance requirements in subclause 13.5;

1> at the activation time T:

2> perform the actions for the information elements in the received message as specified elsewhere.

NOTE: In FDD, if the UE was in idle mode or CELL_FACH state upon reception of the message, regardless of the state the UE enters after reception of the message, and the value of the IE "Activation time" in the received message is different from "Now", the UE behaviour is unspecified. In TDD, if the UE was in idle mode or CELL_FACH state upon reception of the message, the value of the IE "Activation time" in the received message is relative to the CFN associated with the cell from which the message was received.

**** Next modified section ****

8.6.3.9a New DSCH-RNTI

In TDD i~~I~~f the IE "New DSCH-RNTI" is included, the UE shall:

~~1> in FDD:~~

~~2> if the UE will be in CELL_DCH at the end of the procedure where the received message included this IE:~~

~~3> if the UE supports DSCH as indicated in the IE "Physical Channel Capability" included in the IE "UE Radio Access Capability":~~

~~4> store the value in the variable DSCH_RNTI, replacing any old stored value;~~

~~4> use that DSCH-RNTI when using common transport channels of type DSCH in the current cell.~~

~~1> in TDD:~~

~~2~~1> if the UE will be in CELL_DCH or CELL_FACH at the end of the procedure where the received message included this IE:

~~3~~2> if the UE supports DSCH or USCH as indicated in the IE "Physical Channel Capability" included in the IE "UE Radio Access Capability":

~~4~~3> store the value in the variable DSCH_RNTI, replacing any old stored value;

~~4~~3> use that DSCH-RNTI when using SHCCH signalling in the current cell.

**** Next modified section ****

8.6.4.8 RB mapping info

If the IE "RB mapping info" is included, the UE shall:

1> for each multiplexing option of the RB:

2> if a multiplexing option that maps a logical channel corresponding to a TM-RLC entity onto RACH, CPCH, FACH, USCH, DSCH (only for TDD), HS-DSCH or E-DCH is included:

3> set the variable INVALID_CONFIGURATION to TRUE.

2> if the multiplexing option realises the radio bearer on the uplink (resp. on the downlink) using two logical channels with different values of the IE "Uplink transport channel type" (resp. of the IE "Downlink transport channel type"):

3> set the variable INVALID_CONFIGURATION to TRUE.

2> if that RB is using TM and the IE "Segmentation indication" is set to TRUE and, based on the multiplexing configuration resulting from this message, the logical channel corresponding to it is mapped onto the same transport channel as another logical channel:

3> set the variable INVALID_CONFIGURATION to TRUE.

2> if the transport channel considered in that multiplexing option is different from RACH and if that RB is using AM and the set of RLC sizes applicable to the uplink logical channel transferring data PDUs has more than one element not equal to zero:

3> set the variable INVALID_CONFIGURATION to TRUE.

2> if that RB is using UM or TM and the multiplexing option realises it using two logical channels:

3> set the variable INVALID_CONFIGURATION to TRUE.

2> for each logical channel in that multiplexing option:

3> if the value of the IE "RLC size list" is set to "Explicit list":

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is included in the same message, and the value (index) of any IE "RLC size index" in the IE "Explicit list" does not correspond to an "RLC size" in the IE transport format set of that transport channel given in the message; or

4> if the transport channel this logical channel is mapped on in this multiplexing option is different from RACH, and 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 "Explicit list" does not correspond to an "RLC size" in the stored transport format set of that transport channel; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is included in the same message, and the value of any IE "Logical channel list" in the transport format set is not set to "Configured"; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is not included in the same message, and the value of any IE "Logical channel list" in the stored transport format set of that transport channel is not set to "Configured":

5> set the variable INVALID_CONFIGURATION to TRUE.

3> if the value of the IE "RLC size list" is set to "All":

4> if the transport channel this logical channel is mapped on is RACH; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is included in the same message, and the value of any IE "Logical channel list" in the transport format set is not set to "Configured"; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is not included in the same message, and the value of any IE "Logical channel list" in the stored transport format set of that transport channel is not set to "Configured":

5> set the variable INVALID_CONFIGURATION to TRUE.

3> if the value of the IE "RLC size list" is set to "Configured":

4> if the transport channel this logical channel is mapped on is RACH; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is included in the same message, and for none of the RLC sizes defined for that transport channel in the "Transport format set", the "Logical Channel List" is set to "All" or given as an "Explicit List" which contains this logical channel; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is not included in the same message, and for none of the RLC sizes defined in the transport format set stored for that transport channel, the "Logical Channel List" is set to "All" or given as an "Explicit List" which contains this logical channel:

5> set the variable INVALID_CONFIGURATION to TRUE.

1> if, as a result of the message this IE is included in, several radio bearers can be mapped onto the same transport channel, and the IE "Logical Channel Identity" was not included in the RB mapping info of any of those radio bearers for a multiplexing option on that transport channel or the same "Logical Channel Identity" was used more than once in the RB mapping info of those radio bearers for the multiplexing options on that transport channel:

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if the "RB mapping info" is considered as valid according to the rules above:

2> delete all previously stored multiplexing options for that radio bearer;

2> store each new multiplexing option for that radio bearer;

2> perform the actions as specified in subclause 8.5.21;

2> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25;

2> determine the value for the E_DCH_TRANSMISSION variable and take the corresponding actions as described in subclause 8.5.28.

1> if the IE "Uplink transport channel type" is set to the value "RACH":

2> in FDD:

3> refer the IE "RLC size index" to the RACH Transport Format Set of the first PRACH received in the IE "PRACH system information list" received in System Information Block 5, System Information Block 5bis or System Information Block 6.

2> in TDD:

3> use the first Transport Format of the PRACH of the IE "PRACH system information list" at the position equal to the value in the IE "RLC size index".

In case IE "RLC info" includes IE "Downlink RLC mode" ("DL RLC logical channel info" is mandatory present) but IE "Number of downlink RLC logical channels" is absent in the corresponding IE "RB mapping info", 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
USCH	DSCH

If ciphering is applied, UTRAN should not map Transparent Mode RBs of different CN domains on the same transport channel and it should not map transparent mode SRBs and RBs onto the same transport channel. In such cases the UE behaviour is not specified.

**** Next modified section ****

8.6.5.1 Transport Format Set

If the IE "Transport format set" is included, the UE shall:

1> if the transport format set is a RACH TFS received in System Information Block type 5 or 6, and CHOICE "Logical Channel List" has a value different from "Configured":

2> ignore that System Information Block.

1> if the transport format set for a downlink transport channel is received in a System Information Block, and CHOICE "Logical Channel List" has a value different from 'ALL':

2> ignore that System Information Block.

1> if the transport format set for a downlink transport channel is received in a message on a DCCH, and CHOICE "Logical Channel List" has a value different from 'ALL':

2> keep the transport format set if this exists for that transport channel;

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if the value 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); or

1> if the "Logical Channel List" for any of the RLC sizes defined for that transport channel is set to "Configured" while it is set to "All" or given as an "Explicit List" for any other RLC size; or

1> if the "Logical Channel List" for any of the RLC sizes defined for that transport channel is set to "All" and for any logical channel mapped to this transport channel, the value of the "RLC size list" (either provided in the IE "RB mapping info" if included in the same message, or stored) is not set to "Configured"; or

1> if the "Logical Channel List" for any of the RLC sizes defined for that transport channel is given as an "Explicit List" that contains a logical channel for which the value of the "RLC size list" (either provided in the IE "RB mapping info" if included in the same message, or stored) is not set to "Configured"; or

1> if the "Logical Channel List" for all the RLC sizes defined for that transport channel are given as "Explicit List" and if one of the logical channels mapped onto this transport channel is not included in any of those lists; or

1> if the "Logical Channel List" for the RLC sizes defined for that transport channel is set to "Configured" and for any logical channel mapped onto that transport channel, the value of the "RLC size list" (either provided in the IE "RB mapping info" if included in the same message, or stored) is also set to "Configured"; or

1> if the IE "Transport Format Set" was not received within the IE "PRACH system information list" and if the "Logical Channel List" for the RLC sizes defined for that transport channel is set to "Configured" and for any logical channel mapped onto that transport channel, the "RLC size list" (either provided in the IE "RB mapping info" if included in the same message, or stored) is given as an "Explicit List" that includes an "RLC size index" that does not correspond to any RLC size in this "Transport Format Set"; or

1> if the IE "Transport Format Set" was not received within the IE "PRACH system information list", and if that RB is using AM and the set of RLC sizes applicable to the logical channel transferring data PDUs has more than one element not equal to zero:

2> keep the transport format set if this exists for that transport channel;

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if the total number of configured transport formats for the transport channel exceeds maxTF:

2> keep the transport format set if this exists for that transport channel;

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if the IE "Transport format set" is considered as valid according to the rules above:

2> remove a previously stored transport format set if this exists for that transport channel;

2> store the transport format set for that transport channel;

2> consider the first instance of the parameter *Number of TBs and TTI List* within the *Dynamic transport format information* to correspond to transport format 0 for this transport channel, the second to transport format 1 and so on;

2> if the IE "Transport format Set" has the choice "Transport channel type" set to "Dedicated transport channel":

3> calculate the transport block size for all transport formats in the TFS using the following

TB size = RLC size + MAC header size if "RLC size" <> 0,
TB size = 0 if "RLC size" = 0,

where:

- MAC header size is calculated according to [15] if MAC multiplexing is used. Otherwise it is 0 bits;

- 'RLC size' reflects the RLC PDU size.

2> if the IE "Transport format Set" has the choice "Transport channel type" set to "Common transport channel":

3> ~~in FDD:~~

~~4> for transport channels other than DSCH~~ calculate the transport block size for all transport formats in the TFS using the following:

TB size = RLC size.

~~4> for DSCH transport channels calculate the transport block size for all transport formats in the TFS using the following:~~

~~TB size = RLC size + MAC header size if "RLC size" <> 0,~~
~~TB size = 0 if "RLC size" = 0,~~

~~where:~~

~~- MAC header size is calculated according to [15];~~

- 'RLC size' reflects the RLC PDU size.

~~3> for TDD calculate the transport block size for all transport formats in the TFS using the following:~~

~~TB size = RLC size.~~

2> if the IE "Number of Transport blocks" <> 0 and IE "RLC size" = 0, no RLC PDU data exists but only parity bits exist for that transport format;

2> if the IE "Number of Transport blocks" = 0, neither RLC PDU neither data nor parity bits exist for that transport format;

2> perform the actions as specified in subclause 8.5.21.

For configuration restrictions on Blind Transport Format Detection, see [27].

**** Next modified section ****

8.6.5.12 TFCS Reconfiguration/Addition Information

If the IE "TFCS Reconfiguration/Addition Information" is included the UE shall:

1> store the TFCs to be reconfigured/added indicated in the IE "CTFC information" as specified below;

1> if the IE "Power offset information" is included:

2> perform actions as specified in [29].

In order to identify the TFCs included in this IE the UE shall calculate the CTFC as specified in subclause 14.10 ~~and~~

~~1> if the IE "TFCS Reconfiguration/Addition Information" was included in the IE "TFCI Field 1 Information":~~

~~2> ignore for the CTFC calculation any DSCH transport channel that may be assigned.~~

~~1> if the IE "TFCS Reconfiguration/Addition Information" was included in the IE "TFCI Field 2 Information":~~

~~2> 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:

1> remove a previously stored transport format combination set if this exists;

1> consider the first instance of the IE "CTFC information" as Transport Format Combination 0 in FDD (TFCI=0) and 1 in TDD (TFCI=1), the second instance as Transport Format Combination 1 in FDD (TFCI=1) and 2 in TDD (TFCI=2) and so on. In TDD the TFCI value = 0 is reserved for physical layer use.

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 ascending TFCI order in the TFCS.

8.6.5.13 TFCS Removal Information

If the IE "TFCS Removal Information" is included the UE shall:

1> remove the TFC indicated by the IE "TFCI" from the current TFCS, and regard this position (TFCI) in the TFCS as vacant.

8.6.5.14 ~~TFCI Field 2 Information~~Void

~~If the IE "TFCI Field 2 Information" is included the UE shall:~~

~~1> if the IE choice "Signalling method" is set to 'TFCI range':~~

~~2> for the first group in the IE "TFCI(field 2) range":~~

~~3> 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".~~

~~2> for the following groups in the IE "TFCI(field 2) range":~~

~~3> 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".~~

~~1> if the IE choice "Signalling method" is set to 'Explicit':~~

~~2> perform actions for the IE "TFCS explicit configuration" as specified in subclause 8.6.5.15.~~

8.6.5.15 TFCS Explicit Configuration

If the IE " TFCS Explicit Configuration" is included the UE shall:

1> if the IE choice "TFCS representation" is set to 'complete reconfiguration':

2> perform the actions for the IE "TFCS Reconfiguration/Addition Information" as specified in subclause 8.6.5.12.

1> if the IE choice "TFCS representation" is set to 'addition':

2> perform the actions for the IE "TFCS Reconfiguration/Addition Information" as specified in subclause 8.6.5.12.

1> if the IE choice "TFCS representation" is set to 'removal':

2> perform the actions for the IE "TFCS Removal Information" as specified in subclause 8.6.5.13.

1> if the IE choice "TFCS representation" is set to 'replace':

2> perform first the actions for the IE "TFCS Removal Information" as specified in subclause 8.6.5.13; and then

2> perform the actions for the IE "TFCS Reconfiguration/Addition Information" as specified in subclause 8.6.5.12.

**** Next modified section ****

**** Next modified section ****

8.6.6.9 ~~PDSCH with SHO DCH Info (FDD only)~~Void

~~If the IE "PDSCH with SHO DCH Info" is included, the UE shall:~~

~~1> if the variable DSCH_RNTI is empty:~~

~~2> set the variable INVALID_CONFIGURATION to TRUE.~~

~~1> configure itself to receive the PDSCH from the specified radio link within the active set identified by the IE "DSCH radio link identifier";~~

~~1> if the TFCI has a 'hard' split:~~

~~2> if the IE "TFCI(field2) combining set" is included:~~

~~3> configure the Layer 1 to combine soft only 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".~~

~~2> if the IE "TFCI(field2) combining set" is not included:~~

~~3> configure the L1 to combine soft the DPCCH TFCI(field 2) of all radio links within the active set.~~

8.6.6.10 ~~PDSCH code mapping (FDD only)~~Void

~~If the IE "PDSCH code mapping" is included, the UE shall:~~

~~1> if the variable DSCH_RNTI is empty:~~

~~2> set the variable INVALID_CONFIGURATION to TRUE.~~

~~1> use the scrambling code defined by the IE "DL Scrambling Code" to receive the PDSCH;~~

~~1> if the IE choice "signalling method" is set to 'code range':~~

~~2> map the TFCI(field2) values to PDSCH codes in the following way:~~

~~2> for the first group of the IE "PDSCH code mapping":~~

~~3> if the value of the IE "multi-code info" equals 1:~~

~~4> 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";~~

~~4> 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;~~

~~4> 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".~~

~~3> if the value of the IE "multi-code info" is greater than 1:~~

~~4> if the value of the difference between the IE "Code number (for PDSCH code) start" and the IE "Code number (for PDSCH code) stop" + 1 is not a multiple of the value of the IE "multi-code info":~~

~~5> set the variable INVALID_CONFIGURATION to TRUE.~~

~~4> 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";~~

~~4> 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";~~

~~4> 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".~~

~~2> for each of the next groups included in the IE "PDSCH code mapping":~~

~~3> 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.~~

~~2> 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):~~

~~3> consider this as defining the mapping between the channelisation code and a single TFCI (i.e., TFCI(field 2) shall not be incremented twice).~~

~~1> if the IE choice "signalling method" is set to 'TFCI range':~~

~~2> map the TFCI(field2) values to PDSCH codes in the following way:~~

~~2> for the first group of the IE "DSCH mapping":~~

~~3> 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)".~~

~~2> for each of the next groups included in the IE "DSCH mapping":~~

~~3> 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)".~~

~~2> if the value of the IE "multi-code info" is greater than 1:~~

~~3> 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".~~

~~1> if the IE choice "signalling method" is set to 'Explicit'~~

~~2> map the TFCI(field2) values to PDSCH codes in the following way:~~

~~2> for the first instance on the IE "PDSCH code info":~~

~~3> 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.~~

~~2> for the second instance of the IE "PDSCH code info":~~

~~3> 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.~~

~~2> continue in a similar way for each next instance of the IE "PDSCH code info";~~

~~2> if the value of the IE "multi-code info" is greater than 1, then~~

~~3> 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".~~

~~1> if the IE choice "signalling method" is set to 'Replace':~~

~~2> map the TFCI(field2) values to PDSCH codes in the following way:~~

~~2> for each instance of the IE "Replaced PDSCH code":~~

~~3> 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)".~~

~~2> if the value of the IE "multi-code info" is greater than 1:~~

~~3> 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".~~

**** Next modified section ****

10.2.8 CELL UPDATE CONFIRM

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

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
U-RNTI	CV-*CCCH*		U-RNTI 10.3.3.47		
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation or a cell reselection from GERAN *Iu mode*	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing either an SRNS relocation or a cell reselection from GERAN *Iu mode*, and a change in ciphering algorithm.	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
New E-RNTI	OP		E-RNTI 10.3.3.10a		REL-6
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
RLC re-establish indicator (RB2, RB3 and RB4)	MP		RLC re-establish indicator 10.3.3.35	Should not be set to TRUE if IE "Downlink counter synchronisation info" is included in message.	
RLC re-establish indicator (RB5 and upwards)	MP		RLC re-establish indicator 10.3.3.35	Should not be set to TRUE if IE "Downlink counter synchronisation info" is included in message.	
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		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
RB information to reconfigure list	OP	1 to <maxRB>			
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.18		
RB information to be affected list	OP	1 to <maxRB>			
>RB information to be affected	MP		RB information to be affected 10.3.4.17		
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5		
Added or Reconfigured TrCH 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*	MP				
>FDD					
>>CPCH set ID	OP		CPCH set ID 10.3.5.3		
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH>			
>>>DRAC static information	MP		DRAC static information 10.3.5.7		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>TDD				(no data)	
Downlink transport channels					
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88.		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
E-DCH Info	OP		E-DCH Info 10.3.6.97		REL-6
Downlink radio resources					
~~CHOICE *mode*~~	~~MP~~				
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS_PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link to be set-up	
>Downlink information for each radio link	MP		Downlink information		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			for each radio link 10.3.6.27		
MBMS PL Service Restriction Information	OP		Enumerated (TRUE)	Absence means that on the MBMS Preferred Layer (PL) no restrictions apply concerning the use of non-MBMS services i.e. the PL is not congested	REL-6

Condition	Explanation
CCCH	This IE is mandatory present when CCCH is used and ciphering is not required and not needed otherwise.

**** Next modified section ****

10.2.16a HANDOVER TO UTRAN COMMAND

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

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

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

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
New U-RNTI	MP		U-RNTI Short 10.3.3.48	
Ciphering algorithm	OP		Ciphering algorithm 10.3.3.4	
CHOICE *specification mode*	MP			
>Complete specification				
RB information elements				
>>Signalling RB information to setup list	MP	1 to <maxSRBsetup>		For each signalling radio bearer established
>>>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
>>RAB information to setup list	OP	1 to <maxRABsetup>		For each RAB established
>>>RAB information for setup	MP		RAB information for setup 10.3.4.10	
Uplink transport channels				
>>UL Transport channel information common for all transport channels	MP		UL Transport channel information common for	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			all transport channels 10.3.5.24	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH>		
>>>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
Downlink transport channels				
>>DL Transport channel information common for all transport channels	MP		DL Transport channel information common for all transport channels 10.3.5.6	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH>		
>>>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
Uplink radio resources				
>>Uplink DPCH info	MP		Uplink DPCH info 10.3.6.88	
~~>>CHOICE *mode*~~	~~MP~~			
~~>>>FDD~~				
~~>>>>CPCH SET Info~~	~~OP~~		~~CPCH SET Info 10.3.6.13~~	
Downlink radio resources				
~~>>>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~	
~~>>>TDD~~				~~(no data)~~
>>Downlink information common for all radio links	MP		Downlink information common for all radio links 10.3.6.24	
>>Downlink information per radio link	MP	1 to <maxRL>		
>>>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	
>Preconfiguration				
>>CHOICE *Preconfiguration mode*	MP			
>>>Predefined configuration	MP		Predefined configuration identity 10.3.4.5	
>>>Default configuration				
>>>>Default configuration mode	MP		Enumerated (FDD, TDD)	Indicates whether the FDD or TDD version of the default configuration shall be used

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>>>Default configuration identity	MP		Default configuration identity 10.3.4.0	
>>RAB info	OP		RAB info Post 10.3.4.9	One RAB is established
>>Uplink DPCH info	MP		Uplink DPCH info Post 10.3.6.89	
Downlink radio resources				
>>Downlink information common for all radio links	MP		Downlink information common for all radio links Post 10.3.6.25	
>>Downlink information per radio link	MP	1 to <maxRL>		Send downlink information for each radio link to be set-up. In TDD MaxRL is 1.
>>>Downlink information for each radio link	MP		Downlink information for each radio link Post 10.3.6.28	
>>CHOICE *mode*	MP			
>>>FDD				(no data)
>>>TDD				
>>>>Primary CCPCH Tx Power	MP		Primary CCPCH Tx Power 10.3.6.59	
Frequency info	MP		Frequency info 10.3.6.36	
Maximum allowed UL TX power	MP		Maximum allowed UL TX power 10.3.6.39	

**** Next modified section ****

10.2.22 PHYSICAL CHANNEL RECONFIGURATION

This message is used by UTRAN to assign, replace or release a set of physical channels used by a UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
New E-RNTI	OP		E-RNTI 10.3.3.10a		REL-6
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB information elements					
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing value of the maximum allowed UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
>CPCH set ID			CPCH set ID 10.3.5.3		
E-DCH Info	OP		E-DCH Info 10.3.6.97		REL-6
Downlink radio resources					
~~CHOICE *mode*~~	~~MP~~				
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS_PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		
MBMS PL Service Restriction Information	OP		Enumerated (TRUE)	Absence means that on the MBMS Preferred Layer (PL) no restrictions apply concerning the use of non-MBMS services i.e. the PL is not congested	REL-6

**** Next modified section ****

10.2.27 RADIO BEARER RECONFIGURATION

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

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

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

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation or a handover from GERAN *Iu mode*	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing either an SRNS relocation or a handover from GERAN *Iu mode* and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
New E-RNTI	OP		E-RNTI 10.3.3.10a		REL-6
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN information elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
CHOICE specification mode	MP				REL-5
>Complete specification					
RB information elements					

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>>RAB information to reconfigure list	OP	1 to < maxRABsetup >			
>>>RAB information to reconfigure	MP		RAB information to reconfigure 10.3.4.11		
>>RB information to reconfigure list	MP	1to <maxRB>		Although this IE is not always required, need is MP to align with ASN.1	
	OP				REL-4
>>>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.18		
>>RB information to be affected list	OP	1 to <maxRB>			
>>>RB information to be affected	MP		RB information to be affected 10.3.4.17		
>>RB with PDCP context relocation info list	OP	1 to <maxRBallRABs>		This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
>>>PDCP context relocation info	MP		PDCP context relocation info 10.3.4.1a		REL-5
TrCH Information Elements					
Uplink transport channels					
>>UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		
>>Deleted TrCH information list	OP	1 to <maxTrCH>			
>>>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5		
>>Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>>>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2		
>>CHOICE *mode*	OP				
>>>FDD					
>>>>CPCH set ID	OP		CPCH set ID 10.3.5.3		
>>>>Added or Reconfigured	OP	1 to			

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
TrCH information for DRAC list		<maxTrCH>			
>>>>>DRAC static information	MP		DRAC static information 10.3.5.7		
>>>TDD				(no data)	
Downlink transport channels					
>>DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6		
>>Deleted TrCH information list	OP	1 to <maxTrCH>			
>>>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
>>Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>>>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
>Preconfiguration					REL-5
>>CHOICE *Preconfiguration mode*	MP			This value only applies in case the message is sent through GERAN *Iu mode*	
>>>Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5		
>>>Default configuration					
>>>>Default configuration mode	MP		Enumerated (FDD, TDD)	Indicates whether the FDD or TDD version of the default configuration shall be used	
>>>>Default configuration identity	MP		Default configuration identity 10.3.4.0		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			10.3.6.13		
E-DCH Info	OP		E-DCH Info 10.3.6.97		REL-6
Downlink radio resources					
~~CHOICE *mode*~~	~~MP~~				
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	MP	1 to <maxRL>		Although this IE is not always required, need is MP to align with ASN.1	
	OP				REL-4
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		
MBMS PL Service Restriction Information	OP		Enumerated (TRUE)	Absence means that on the MBMS Preferred Layer (PL) no restrictions apply concerning the use of non-MBMS services i.e. the PL is not congested	REL-6

**** Next modified section ****

10.2.30 RADIO BEARER RELEASE

This message is used by UTRAN to release a radio bearer. It can also include modifications to the configurations of transport channels and/or physical channels. It can simultaneously indicate release of a signalling connection when UE is connected to more than one CN domain.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation.	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm.	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
New E-RNTI	OP		E-RNTI 10.3.3.10a		REL-6
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
Signalling Connection release indication	OP		CN domain identity 10.3.1.1		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB Information Elements					
RAB information to reconfigure list	OP	1 to < maxRABsetup >			
>RAB information to reconfigure	MP		RAB information to reconfigure 10.3.4.11		
RB information to release list	MP	1 to <maxRB>			
>RB information to release	MP		RB information to release 10.3.4.19		
RB information to be affected list	OP	1 to <maxRB>			
>RB information to be affected	MP		RB information to be		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			affected 10.3.4.17		
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>RB with PDCP context relocation info list	OP	1 to <maxRBallRABs>			REL-5
>>PDCP context relocation info	MP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured UL TrCH information	MP		Added or 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		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
E-DCH Info	OP		E-DCH Info 10.3.6.97		REL-6
Downlink radio resources					
~~CHOICE *mode*~~	~~MP~~				
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link to be set-up	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		
MBMS PL Service Restriction Information	OP		Enumerated (TRUE)	Absence means that on the MBMS Preferred Layer (PL) no restrictions apply concerning the use of non-MBMS services i.e. the PL is not congested	REL-6
MBMS RB list released to change transfer mode	OP	1 to <maxRB>			REL-6

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>RB information to release	MP		RB information to release 10.3.4.19		REL-6

**** Next modified section ****

10.2.33 RADIO BEARER SETUP

This message is sent by UTRAN to the UE to establish new radio bearer(s). It can also include modifications to the configurations of transport channels and/or physical channels.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
New E-RNTI	OP		E-RNTI 10.3.3.10a		REL-6
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB Information Elements					
Signalling RB information to setup list	OP	1 to <maxSRBsetup>		For each signalling radio bearer established	
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24		
RAB information to setup list	OP	1 to <maxRABsetup>		For each RAB established	
>RAB information for setup	MP		RAB information for setup 10.3.4.10		
RB information to be affected list	OP	1 to <maxRB>			
>RB information to be affected	MP		RB information to be affected 10.3.4.17		
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5		
Added or Reconfigured TrCH	OP	1 to			

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
information list		<maxTrCH >			
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2		
CHOICE *mode*	OP				
>FDD					
>>CPCH set ID	OP		CPCH set ID 10.3.5.3		
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH >			
>>>DRAC static information	MP		DRAC static information 10.3.5.7		
>TDD				(no data)	
Downlink transport channels					
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels10.3.5.6		
Deleted TrCH information list	OP	1 to <maxTrCH >			
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH >			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
E-DCH Info	OP		E-DCH Info 10.3.6.97		REL-6
Downlink radio resources					
~~CHOICE *mode*~~	~~MP~~				

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		
MBMS PL Service Restriction Information	OP		Enumerated (TRUE)	Absence means that on the MBMS Preferred Layer (PL) no restrictions apply concerning the use of non-MBMS services i.e. the PL is not congested	REL-6

**** Next modified section ****

10.2.50 TRANSPORT CHANNEL RECONFIGURATION

This message is used by UTRAN to configure the transport channel of a UE. This also includes a possible reconfiguration of physical channels. The message can also be used to assign a TFC subset and reconfigure physical channel.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
				SRNS relocation	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
New E-RNTI	OP		E-RNTI 10.3.3.10a		REL-6
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB information elements					
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
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		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
E-DCH Info	OP		E-DCH Info 10.3.6.97		REL-6
Downlink radio resources					
~~CHOICE *mode*~~	~~MP~~				
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		
MBMS PL Service Restriction Information	OP		Enumerated (TRUE)	Absence means that on the MBMS Preferred Layer (PL) no restrictions apply concerning the use of non-MBMS services i.e. the PL is not congested	REL-6

**** Next modified section ****

10.3.3.9a DSCH-RNTI

~~In FDD, the DSCH-RNTI identifies a UE in CELL_DCH using a DSCH within a cell.~~ In TDD, the DSCH-RNTI identifies a UE in CELL_DCH or CELL_FACH using a DSCH or USCH within the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DSCH-RNTI	MP		bit string(16)	

**** Next modified section ****

10.3.3.25 Physical channel capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
Downlink physical channel capability information elements					
FDD downlink physical channel capability	CH-*fdd_req_sup*				
>Max no DPCH~~/PDSCH~~ codes	MP		Integer (1..8)	Maximum number of DPCH~~/PDSCH~~ codes to be simultaneously received	
>Max no physical channel bits received	MP		Integer (1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200,	Maximum number of physical channel bits received in any 10 ms interval (DPCH, ~~PDSCH,~~ S-CCPCH)	

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
			76800)		
>Support for SF 512	MP		Boolean	TRUE means supported	
~~>Support of PDSCH~~	~~MP~~		~~Boolean~~	~~TRUE means supported~~	
>CHOICE *Support of HS-PDSCH*	CV-*not_iRAT_HoInfo*				REL-5
>>Supported					REL-5
>>>HS-DSCH physical layer category	MP		Integer (1..64)		REL-5
>>>Support of dedicated pilots for channel estimation of HS-DSCH	MP		Boolean	TRUE means supported	REL-5
>>>Simultaneous reception of SCCPCH, DPCH and HS-PDSCH	MP		Boolean	TRUE means supported. This IE shall only be set to TRUE in the case the IE “Simultaneous reception of SCCPCH and DPCH” is set to TRUE	REL-5
>>Unsupported				(no data)	REL-5
>Simultaneous reception of SCCPCH and DPCH	MP		Boolean	TRUE means supported	
~~>Simultaneous reception of SCCPCH, DPCH and PDSCH~~	~~CV-*if_sim_rec_pdsch_sup*~~		~~Boolean~~	~~TRUE means supported~~	
>Max no of S-CCPCH RL	CV-*if_sim_rec*		Integer(1)	Maximum number of simultaneous S-CCPCH radio links	
>Support of dedicated pilots for channel estimation	MD		Enumerated (true)	Presence of this element means supported and absence not supported. This IE shall be set to TRUE in this version of the protocol.	
3.84 Mcps TDD downlink physical channel capability	CH-*3.84_Mcps_tdd_req_sup*				Name changed in REL-4
>Maximum number of timeslots per frame	MP		Integer (1..14)		
>Maximum number of physical channels per frame	MP		Integer (5..224)		
>Minimum SF	MP		Integer (1, 16)		
>Support of PDSCH	MP		Boolean	TRUE means supported	
>CHOICE *Support of HS-PDSCH*	CV-*not_iRAT_HoInfo*				REL-5
>>Supported					REL-5
>>>HS-DSCH physical layer category	MP		Integer (1..64)		REL-5
>>Unsupported				(no data)	REL-5
>Maximum number of physical	MP		Integer		

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
channels per timeslot			(5..16)		
1.28 Mcps TDD downlink physical channel capability	CH-*1.28_Mcps_tdd_req_sup*				REL-4
>Maximum number of timeslots per subframe	MP		Integer (1..6)		REL-4
>Maximum number of physical channels per subframe	MP		Integer (1..96)		REL-4
>Minimum SF	MP		Integer (1, 16)		REL-4
>Support of PDSCH	MP		Boolean	TRUE means supported	REL-4
>CHOICE *Support of HS-PDSCH*	CV-*not_iRAT_HoInfo*				REL-5
>>Supported					REL-5
>>>HS-DSCH physical layer category	MP		Integer (1..64)		REL-5
>>Unsupported				(no data)	REL-5
>Maximum number of physical channels per timeslot	MP		Integer (1..16)		REL-4
>Support of 8PSK	MP		Boolean	TRUE means supported	REL-4
Uplink physical channel capability information elements					
FDD uplink physical channel capability	CH-*fdd_req_sup*				
>Maximum number of DPDCH bits transmitted per 10 ms	MP		Integer (600, 1200, 2400, 4800. 9600, 19200. 28800, 38400, 48000, 57600)		
>Support of PCPCH	MP		Boolean	TRUE means supported	
3.84 Mcps TDD uplink physical channel capability	CH-*3.84_Mcps_tdd_req_sup*				Name changed in REL-4
>Maximum Number of timeslots per frame	MP		Integer (1..14)		
>Maximum number of physical channels per timeslot	MP		Integer (1, 2)		
>Minimum SF	MP		Integer (1, 2, 4, 8)		
>Support of PUSCH	MP		Boolean	TRUE means supported	
1.28 Mcps TDD uplink physical channel capability	CH-*1.28_Mcps_tdd_req_sup*				REL-4
>Maximum Number of timeslots per subframe	MP		Integer (1..6)		REL-4
>Maximum number of physical channels per timeslot	MP		Integer (1, 2)		REL-4
>Minimum SF	MP		Integer (1, 2, 4, 8, 16)		REL-4
>Support of PUSCH	MP		Boolean	TRUE means supported	REL-4

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
>Support of 8PSK	MP		Boolean	TRUE means supported	REL-4

Condition	Explanation
if_sim_rec_pdsch_sup	The IE is mandatory present if the IE "Simultaneous reception of SCCPCH and DPCH" = True and IE Support of PDSCH = True. Otherwise this field is not needed in the message.
if_sim_rec	The IE is mandatory present if the IE "capability Simultaneous reception of SCCPCH and DPCH" = True. Otherwise this field is not needed in the message.
3.84_Mcps_tdd_req_sup	The IE is mandatory present if the IE "TDD RF capability" is present with the IE "Chip rate capability" set to "3.84 Mcps" and a 3.84 Mcps TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
1.28_Mcps_tdd_req_sup	The IE is mandatory present if the IE "TDD RF capability" is present with the IE "Chip rate capability" set to "1.28 Mcps" and a 1.28 Mcps TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
fdd_req_sup	The IE is mandatory present if the IE "Multi-mode capability" has the value "FDD" or "FDD/TDD" and a FDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
not_iRAT_HoInfo	The CHOICE *Support of HS-PDSCH* is not needed in the INTER RAT HANDOVER INFO message. Otherwise, it is mandatory present.

**** Next modified section ****

10.3.4.21 RB mapping info

A multiplexing option for each possible transport channel MAC-d flow or E-DCH MAC-d flow this RB can be multiplexed on.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Information for each multiplexing option	MP	1 to <maxRBMuxOptions>			
>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 this release and shall be set to TRUE.	
>Number of uplink RLC logical	CV-*UL-*	1 to		1 or 2 logical	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
channels	*RLC info*	MaxLoCHperRLC		channels per RLC entity or radio bearer RLC [16]	
>>Uplink transport channel type	MP		Enumerated(DCH,RACH, CPCH,USCH	CPCH is FDD only USCH is TDD only	
			, E-DCH)	Note 2	REL-6
>>CHOICE *Uplink transport channel type*					REL-6
>>>DCH, RACH, CPCH, USCH					REL-6
>>>>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	
>>>E-DCH					REL-6
>>>>E-DCH MAC-d flow identity	MP		E-DCH MAC-d flow identity 10.3.5.7e		REL-6
>>>>DDI	MP		Integer (0..62)	If more than 1 UL RLC PDU size is configured for this RB, the different sizes will use subsequent DDI	REL-6

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
				values starting from this DDI value. Value “0x3F” is reserved	
>>>>RLC PDU size list	MP	1 to <maxRLCPDUsizePerLogChan>			REL-6
>>>>>RLC PDU size	MP		Integer(16..5000 by step of 8)	Unit is bits	REL-6
>>MAC logical channel priority	MP		Integer(1..8)	This is priority between a user's different RBs (or logical channels). [15]	
>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 [16] 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,DCH+DSCH	Note 3	
			, HS-DSCH, DCH + HS-DSCH)	Note 1	REL-5
>>>DL DCH Transport channel identity	CV-*DL-DCH*		Transport channel identity 10.3.5.18		
>>>DL DSCH Transport channel identity	CV-*DL-DSCH*		Transport channel identity 10.3.5.18		
>>>DL HS-DSCH MAC-d flow identity	*CV-DL-HS-DSCH*		MAC-d flow identity 10.3.5.7c		REL-5
>>>Logical channel identity	OP		Integer(1..15)	16 is reserved	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Note 1: The IE "Downlink transport channel type" values "HS-DSCH" and "DCH + HS-DSCH" are not used in the RRC CONNECTION SETUP message.					
Note 2: The IE "Uplink transport channel type" value E-DCH is not used in the RRC CONNECTION SETUP message.					
Note 3: The IE "Downlink transport channel type" values " DSCH" and "DCH+DSCH " should not be used for FDD. If received the UE behaviour is unspecified.					

Condition	Explanation
UL-RLC info	If "CHOICE *Uplink RLC mode*" in the IE "RLC info" that applies for that RB (i.e. either the one stored or received in the same message for the RB for which the "RB mapping info" was received, or the one stored or received in the same message for the RB pointed at in the IE "Same as RB" in the IE "RB information to setup" stored or received in the same message) is present this IE is mandatory present. Otherwise the IE is not needed.
DL-RLC info	If "CHOICE *Downlink RLC mode*" in the IE "RLC info" that applies for that RB (i.e. either the one stored or received in the same message for the RB for which the "RB mapping info" was received, or the one stored or received in the same message for the RB pointed at in the IE "Same as RB" in the IE "RB information to setup" stored or received in the same message) is present this IE is mandatory present. Otherwise the IE is not needed.
UL-RLCLogicalChannels	If "Number of uplink RLC logical channels" in IE "RB mapping info" is 2, then this IE is mandatory 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 mandatory present. Otherwise the IE is not needed.
DL-DCH	If IE "Downlink transport channel type" is equal to "DCH", "DCH+DSCH" or "DCH + HS-DSCH" this IE is mandatory present. Otherwise the IE is not needed.
DL-DSCH	If IE "Downlink transport channel type" is equal to "DSCH" or "DCH+DSCH" this IE is mandatory present. Otherwise the IE is not needed.
DL-HS-DSCH	If IE "Downlink transport channel type" is equal to "HSDSCH" or "DCH + HS-DSCH" this IE is mandatory present. Otherwise the IE is not needed.

**** Next modified section ****

10.3.5.1 Added or Reconfigured DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Downlink transport channel type	MP		Enumerated(DCH,DSCH	Note 2	
			,HS-DSCH)	Note 1	REL-5
DL Transport channel identity	MP		Transport channel identity 10.3.5.18		
	CV-*not HS-DSCH*				REL-5
CHOICE *DL parameters*					
>Explicit					
>>TFS	MP		Transport Format Set 10.3.5.23		
>SameAsUL					

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>>Uplink transport channel type	MP		Enumerated(DCH,USCH)	USCH is TDD only	
>>UL TrCH identity	MP		Transport channel identity 10.3.5.18	Same TFS applies as specified for indicated UL TrCH	
>HS-DSCH				Note 1	REL-5
>>HARQ Info	OP		HARQ info 10.3.5.7a		REL-5
>>Added or reconfigured MAC-d flow	OP		Added or reconfigured MAC-d flow 10.3.5.1a		REL-5
DCH quality target	OP		Quality target 10.3.5.10		
Note 1: The IE "Downlink transport channel type" value "HS-DSCH" is not used in the RRC CONNECTION SETUP message, nor is the CHOICE *DL parameters* = "HS-DSCH".					
Note 2: The IE "Downlink transport channel type" value " DSCH " should not be used for FDD. If received the UE behaviour is unspecified.					

Condition	Explanation
NotHS-DSCH	If the downlink transport channel type is DCH or DSCH then this IE is mandatory otherwise it is not needed.

****** Next modified section ******

10.3.5.4 Deleted DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Downlink transport channel type	MP		Enumerated(DCH,DSCH	Note 1	
			,HS-DSCH)		REL-5
DL Transport channel identity	MP		Transport channel identity 10.3.5.18		
	CV-*notHS-DSCH*				REL-5
DL HS-DSCH MAC-d flow identity	CV-*HS-DSCH*		MAC-d flow identity 10.3.5.7c		REL-5
Note 1: The IE "Downlink transport channel type" value " DSCH " should not be used for FDD. If received the UE behaviour is unspecified.					

Condition	Explanation
NotHS-DSCH	If the downlink transport channel type is DCH or DSCH then this IE is mandatory otherwise it is not needed.
HS-DSCH	If the downlink transport channel type is HSDSCH then this IE is mandatory otherwise it is not needed.

****** Next modified section ******

10.3.5.12 ~~TFCI Field 2 Information~~Void

~~This IE is used for signalling the mapping between TFCI (field 2) values and the corresponding TFC.~~

~~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~~	

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)~~Void

~~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)~~	

**** Next modified section ****

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, TFCI (field1) and TFCI (field2), are used and they are block coded separately.~~

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 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.~~

**** Next modified section ****

10.3.6.27 Downlink information for each radio link

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Choice mode	MP				
>FDD					
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60		
>>Cell ID	OP		Cell ID 10.3.2.2		REL-4

~~>>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~~		
>>Serving HS-DSCH radio link indicator	CV-*not_rrcConnectionSetup*		Boolean	The value "TRUE" indicates that this radio link is the serving HS-DSCH radio link	REL-5
>> Serving E-DCH radio link	CV-*not_rrcConnectionSetup*		Boolean	The value "TRUE" indicates that this radio link is the serving E-DCH radio link	REL-6
>TDD					
>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.57		
CHOICE *DPCH info*	OP				REL-6
>Downlink DPCH info for each RL	MP		Downlink DPCH info for each RL 10.3.6.21		
>Downlink F-DPCH info for each RL	MP		Downlink F-DPCH info for each RL 10.3.6.23ob		REL-6
SCCPCH Information for FACH	OP		SCCPCH Information for FACH 10.3.6.70		
E-AGCH Info	CV-*not_rrcConnectionSetup*		E-AGCH Info 10.3.6.100		REL-6
E-HICH Information	CV-*not_rrcConnectionSetup*		E-HICH Info 10.3.6.101		REL-6
E-RGCH Information	CV-*not_rrcConnectionSetup*		E-RGCH Info 10.3.6.102		REL-6

Condition	Explanation
not_rrcConnectionSetup	This IE is not needed in the RRC CONNECTION SETUP message. Otherwise it is mandatory present.

**** Next modified section ****

10.3.6.30 ~~Downlink PDSCH information~~Void

~~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.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Restricted TrCH information	OP	1 to <maxTrCH>		
>Downlink transport channel type	MP		Enumerated(DCH~~,DSCH~~)	
>Restricted DL TrCH identity	MP		Transport channel identity 10.3.5.18	
>Allowed TFIs	MP	1 to <maxTF>		
>>Allowed TFI	MP		Integer(0..31)	

**** Next modified section ****

10.3.6.43 ~~PDSCH code mapping~~Void

~~NOTE: Only for FDD.~~

~~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~~			

~~Information Element/Group name~~	~~Need~~	~~Multi~~	~~Type and reference~~	~~Semantics description~~
~~>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)~~	
~~>>>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)~~	
~~>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)~~	
~~>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~~	~~MP~~		~~Integer(0..Sp~~	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~code)~~			~~reading factor-1)~~	
~~>>>multi-code info~~	~~MP~~		~~Integer(1..16)~~	

**** Next modified section ****

10.3.6.47 ~~PDSCH with SHO DCH Info~~Void

~~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~~	~~This parameter indicates on which radio link the user will be allocated resource on the DSCH.~~
~~TFCI(field2) Combining set~~	~~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.~~
~~>Radio link identifier~~	~~MP~~		~~Primary CPICH info 10.3.6.60~~	

**** Next modified section ****

10.3.6.68 Radio link addition information

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Primary CPICH info	MP		Primary CPICH info 10.3.6.60		
Cell ID	OP		Cell ID 10.3.2.2		REL-4
CHOICE *DPCH info*	MP				REL-6
>Downlink DPCH info for each RL	MP		Downlink DPCH info for each RL 10.3.6.21		
>Downlink F-DPCH info for each RL	MP		Downlink F-DPCH info for each RL 10.3.6.23ob		REL-6
~~TFCI combining indicator~~	~~MP~~		~~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.

**** Next modified section ****

10.3.6.81 ~~TFCI Combining Indicator~~Void

~~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 is relevant only 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, FALSE means that TFCI is not combined or that this IE is not applicable to the added radio link.~~

**** Next modified section ****

10.3.10 Multiplicity values and type constraint values

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

Constant	Explanation	Value	Version
CN information			
maxCNdomains	Maximum number of CN domains	4	
UTRAN mobility information			
maxRAT	Maximum number or Radio Access Technologies	maxOtherRAT + 1	
maxOtherRAT	Maximum number or other Radio Access Technologies	15	
maxURA	Maximum number of URAs in a cell	8	
maxInterSysMessages	Maximum number of Inter System Messages	4	
maxRABsetup	Maximum number of RABs to be established	16	
UE information			
maxtransactions	Maximum number of parallel RRC transactions in downlink	25	
maxPDCPalgoType	Maximum number of PDCP algorithm types	8	
maxDRACclasses	Maximum number of UE classes which would require different DRAC parameters	8	
maxFreqBandsFDD	Maximum number of frequency bands supported by the UE as defined in [21]	8	
maxFreqBandsTDD	Maximum number of frequency bands supported by the UE as defined in [22]	4	
maxFreqBandsGSM	Maximum number of frequency bands supported by the UE as defined in [45]	16	
maxPage1	Number of UEs paged in the Paging Type 1 message	8	
maxSystemCapability	Maximum number of system specific capabilities that can be requested in one message.	16	
MaxURNTIgroup	Maximum number of U-RNTI groups in one message	8	REL-5
RB information			
maxPredefConfig	Maximum number of predefined configurations	16	
maxRB	Maximum number of RBs	32	
maxSRBsetup	Maximum number of signalling RBs to be	8	

Constant	Explanation	Value	Version
	established		
maxRBperRAB	Maximum number of RBs per RAB	8	
maxRBallRABs	Maximum number of non signalling RBs	27	
maxRBperTrCh	Maximum number of RB per TrCh	16	REL-6
maxRBMuxOptions	Maximum number of RB multiplexing options	8	
maxLoCHperRLC	Maximum number of logical channels per RLC entity	2	
maxRLCPDUsizePerLogChan	Maximum number of RLC PDU sizes per logical channel	FFS	REL-6
MaxROHC-PacketSizes	Maximum number of packet sizes that are allowed to be produced by ROHC.	16	
MaxROHC-Profiles	Maximum number of profiles supported by ROHC on a given RB.	8	
maxRFC 3095-CID	Maximum number of available CID values per radio bearer	16384	REL-5
TrCH information			
maxE-DCHMACdFlow	Maximum number of E-DCH MAC-d flows	FFS	REL-6
maxHarqRTT	Maximum number of E-DCH HARQ processes	FFS	REL-6
MaxHProcesses	Maximum number of H-ARQ processes	8	REL-5
MaxHSDSCH_TB_index	Maximum number of TB set size configurations for the HS-DSCH.	64 (FDD and 1.28 MCPS TDD); 512 (3.84 Mcps TDD)	REL-5
maxMACdPDUSizes	Maximum number of MAC-d PDU sizes per queue permitted for MAC-hs	8	REL-5
maxTrCH	Maximum number of transport channels used in one direction (UL or DL)	32	
maxTrCHpreconf	Maximum number of preconfigured Transport channels, per direction	16	
maxCCTrCH	Maximum number of CCTrCHs	8	
maxQueueID	Maximum number of Mac-hs queues	8	REL-5
MaxTF	Maximum number of different transport formats that can be included in the Transport format set for one transport channel	32	
maxTF-CPCH	Maximum number of TFs in a CPCH set	16	
maxTFC	Maximum number of Transport Format Combinations	1024	
maxTFCsub	Maximum number of Transport Format Combinations Subset	1024	
~~maxTFCI-1-Combs~~	~~Maximum number of TFCI (field 1) combinations~~	~~512~~	
~~maxTFCI-2-Combs~~	~~Maximum number of TFCI (field 2) combinations~~	~~512~~	
maxCPCHsets	Maximum number of CPCH sets per cell	16	
maxSIBperMsg	Maximum number of complete system information blocks per SYSTEM INFORMATION message	16	
maxSIB	Maximum number of references to other system information blocks.	32	
maxSIB-FACH	Maximum number of references to system information blocks on the FACH	8	
PhyCH information			
maxHSSCCHs	Maximum number of HSSCCH codes that can be assigned to a UE	4	REL-5
maxPCPCH-APsubCH	Maximum number of available sub-channels for AP signature on PCPCH	12	
maxPCPCH-CDsubCH	Maximum number of available sub-channels for CD signature on PCPCH	12	
maxPCPCH-APsig	Maximum number of available signatures for AP on PCPCH	16	
maxPCPCH-CDsig	Maximum number of available signatures for CD on PCPCH	16	
maxAC	Maximum number of access classes	16	
maxASC	Maximum number of access service classes	8	
maxASCmap	Maximum number of access class to access service classes mappings	7	
maxASCpersist	Maximum number of access service classes for which persistence scaling factors are specified	6	

Constant	Explanation	Value	Version
maxPRACH	Maximum number of PRACHs in a cell	16	
MaxPRACH_FPACH	Maximum number of PRACH / FPACH pairs in a cell (1.28 Mcps TDD)	8	REL-4
maxFACHPCH	Maximum number of FACHs and PCHs mapped onto one secondary CCPCHs	8	
maxTrChperSCCPCH	Maximum number of TrCh per S-CCPCH	8	REL-6
maxRL	Maximum number of radio links	8	
maxSCCPCH	Maximum number of secondary CCPCHs per cell	16	
maxDPDCH-UL	Maximum number of DPDCHs per cell	6	
maxDPCH-DLchan	Maximum number of channelisation codes used for DL DPCH	8	
maxPUSCH	Maximum number of PUSCHs	(8)	
maxPDSCH	Maximum number of PDSCHs	8	
~~maxPDSCHcodes~~	~~Maximum number of codes for PDSCH~~	~~16~~	
~~maxPDSCH-TFCIgroups~~	~~Maximum number of TFCI groups for PDSCH~~	~~256~~	
~~maxPDSCHcodeGroups~~	~~Maximum number of code groups for PDSCH~~	~~256~~	
maxPCPCHs	Maximum number of PCPCH channels in a CPCH Set	64	
maxPCPCH-SF	Maximum number of available SFs on PCPCH	7	
maxTS	Maximum number of timeslots used in one direction (UL or DL)	14 (3.84 Mcps TDD)	
		6 (1.28 Mcps TDD)	REL-4
hiPUSCHidentities	Maximum number of PUSCH Identities	64	
hiPDSCHidentities	Maximum number of PDSCH Identities	64	
Measurement information			
maxTGPS	Maximum number of transmission gap pattern sequences	6	
maxAdditionalMeas	Maximum number of additional measurements for a given measurement identity	4	
maxMeasEvent	Maximum number of events that can be listed in measurement reporting criteria	8	
maxMeasParEvent	Maximum number of measurement parameters (e.g. thresholds) per event	2	
maxMeasIntervals	Maximum number of intervals that define the mapping function between the measurements for the cell quality Q of a cell and the representing quality value	1	
maxCellMeas	Maximum number of cells to measure	32	
maxReportedGSMCells	Maximum number of GSM cells to be reported	8	
maxFreq	Maximum number of frequencies to measure	8	
maxSat	Maximum number of satellites to measure	16	
maxSatAlmanacStorage	Maximum number of satellites for which to store GPS Almanac information	32	
HiRM	Maximum number that could be set as rate matching attribute for a transport channel	256	
Frequency information			
MaxFDDFreqList	Maximum number of FDD carrier frequencies to be stored in USIM	4	
MaxTDDFreqList	Maximum number of TDD carrier frequencies to be stored in USIM	4	
MaxFDDFreqCellList	Maximum number of neighbouring FDD cells to be stored in USIM	32	
MaxTDDFreqCellList	Maximum number of neighbouring TDD cells to be stored in USIM	32	
MaxGSMCellList	Maximum number of GSM cells to be stored in USIM	32	
Other information			
MaxGERANSI	Maximum number of GERAN SI blocks that can be provided as part of NACC information	8	REL-5
maxNumGSMFreqRanges	Maximum number of GSM Frequency Ranges to store	32	
MaxNumFDDFreqs	Maximum number of FDD centre frequencies to	8	

Constant	Explanation	Value	Version
	store		
MaxNumTDDFreqs	Maximum number of TDD centre frequencies to store	8	
maxNumCDMA200Freqs	Maximum number of CDMA2000 centre frequencies to store	8	
maxGSMTargetCells	Maximum number of GSM target cells	32	REL-6
MBMS information			
maxMBMS-CommonCCTrCh	Maximum number of CCTrCh configurations included in the MBMS COMMON P-T-M RB INFORMATION message	32	REL-6
maxMBMS-CommonPhyCh	Maximum number of PhyCh configurations included in the MBMS COMMON P-T-M RB INFORMATION message	32	REL-6
maxMBMS-CommonRB	Maximum number of RB configurations included in the MBMS COMMON P-T-M RB INFORMATION message	32	REL-6
maxMBMS-CommonTrCh	Maximum number of TrCh configurations included in the MBMS COMMON P-T-M RB INFORMATION message	32	REL-6
maxMBMS-Freq	Maximum number of MBMS preferred frequencies	4	REL-6
maxMBMS-L1CP	Maximum number of periods in which layer 1 combining applies	4	REL-6
maxMBMSservCount	Maximum number of MBMS services in a Access Info message	4	REL-6
maxMBMSservDedic	Maximum number of MBMS services in a dedicated notification/ Paging type 2 message	4	REL-6
maxMBMSservModif	Maximum number of MBMS services in a MBMS MODIFIED SERVICES INFORMATION message	4	REL-6
maxMBMSservSched	Maximum number of MBMS services in a MBMS SCHEDULING INFORMATION message	16	REL-6
maxMBMSservUnmodif	Maximum number of MBMS services in a MBMS UNMODIFIED SERVICES INFORMATION message	32	REL-6
maxMBMSTransmis	Maximum number of transmissions for which scheduling information is provided within a scheduling period	4	REL-6

**** Next modified section ****

11.1 General message structure

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

BEGIN

IMPORTS

    ActiveSetUpdate,
    ActiveSetUpdateComplete,
    ActiveSetUpdateFailure,
    AssistanceDataDelivery,
    CellChangeOrderFromUTRAN,
    CellChangeOrderFromUTRANFailure,
    CellUpdate,
    CellUpdateConfirm-CCCH,
    CellUpdateConfirm,
    CounterCheck,
    CounterCheckResponse,
```

```
    DownlinkDirectTransfer,
    HandoverToUTRANComplete,
    InitialDirectTransfer,
    HandoverFromUTRANCommand-GERANIu,
    HandoverFromUTRANCommand-GSM,
    HandoverFromUTRANCommand-CDMA2000,
    HandoverFromUTRANFailure,
    MBMSAccessInformation,
    MBMSCommonPTMRBInformation,
    MBMSCurrentCellPTMRBInformation,
    MBMSGeneralInformation,
    MBMSModificationRequest,
    MBMSModifiedServicesInformation,
    MBMSNeighbouringCellPTMRBInformation,
    MBMSSchedulingInformation,
    MBMSUnmodifiedServicesInformation,
    MeasurementControl,
    MeasurementControlFailure,
    MeasurementReport,
    PagingType1,
    PagingType2,
    PhysicalChannelReconfiguration,
    PhysicalChannelReconfigurationComplete,
    PhysicalChannelReconfigurationFailure,
    PhysicalSharedChannelAllocation,
    PUSCHCapacityRequest,
    RadioBearerReconfiguration,
    RadioBearerReconfigurationComplete,
    RadioBearerReconfigurationFailure,
    RadioBearerRelease,
    RadioBearerReleaseComplete,
    RadioBearerReleaseFailure,
    RadioBearerSetup,
    RadioBearerSetupComplete,
    RadioBearerSetupFailure,
    RRCConnectionReject,
    RRCConnectionRelease,
    RRCConnectionRelease-CCCH,
    RRCConnectionReleaseComplete,
    RRCConnectionRequest,
    RRCConnectionSetup,
    RRCConnectionSetupComplete,
    RRCStatus,
    SecurityModeCommand,
    SecurityModeComplete,
    SecurityModeFailure,
    SignallingConnectionRelease,
    SignallingConnectionReleaseIndication,
    SystemInformation-BCH,
    SystemInformation-FACH,
    SystemInformationChangeIndication,
    TransportChannelReconfiguration,
    TransportChannelReconfigurationComplete,
    TransportChannelReconfigurationFailure,
    TransportFormatCombinationControl,
    TransportFormatCombinationControlFailure,
    UECapabilityEnquiry,
    UECapabilityInformation,
    UECapabilityInformationConfirm,
    UplinkDirectTransfer,
    UplinkPhysicalChannelControl,
    URAUpdate,
    URAUpdateConfirm,
    URAUpdateConfirm-CCCH,
    UTRANMobilityInformation,
    UTRANMobilityInformationConfirm,
    UTRANMobilityInformationFailure
FROM PDU-definitions

-- User Equipment IEs :
    IntegrityCheckInfo
FROM InformationElements;

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

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

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

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

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

UL-DCCH-MessageType ::= CHOICE {
    activeSetUpdateComplete             ActiveSetUpdateComplete,
    activeSetUpdateFailure              ActiveSetUpdateFailure,
    cellChangeOrderFromUTRANFailure     CellChangeOrderFromUTRANFailure,
    counterCheckResponse                CounterCheckResponse,
    handoverToUTRANComplete             HandoverToUTRANComplete,
    initialDirectTransfer               InitialDirectTransfer,
    handoverFromUTRANFailure            HandoverFromUTRANFailure,
    measurementControlFailure           MeasurementControlFailure,
    measurementReport                   MeasurementReport,
    physicalChannelReconfigurationComplete
                                        PhysicalChannelReconfigurationComplete,
    physicalChannelReconfigurationFailure
                                        PhysicalChannelReconfigurationFailure,
    radioBearerReconfigurationComplete  RadioBearerReconfigurationComplete,
    radioBearerReconfigurationFailure   RadioBearerReconfigurationFailure,
    radioBearerReleaseComplete          RadioBearerReleaseComplete,
    radioBearerReleaseFailure           RadioBearerReleaseFailure,
    radioBearerSetupComplete            RadioBearerSetupComplete,
    radioBearerSetupFailure             RadioBearerSetupFailure,
    rrcConnectionReleaseComplete        RRCConnectionReleaseComplete,
    rrcConnectionSetupComplete          RRCConnectionSetupComplete,
    rrcStatus                           RRCStatus,
    securityModeComplete                SecurityModeComplete,
    securityModeFailure                 SecurityModeFailure,
    signallingConnectionReleaseIndication
```

```
                                    SignallingConnectionReleaseIndication,
    transportChannelReconfigurationComplete
                                    TransportChannelReconfigurationComplete,
    transportChannelReconfigurationFailure
                                    TransportChannelReconfigurationFailure,
    transportFormatCombinationControlFailure
                                    TransportFormatCombinationControlFailure,
    ueCapabilityInformation         UECapabilityInformation,
    uplinkDirectTransfer            UplinkDirectTransfer,
    utranMobilityInformationConfirm UTRANMobilityInformationConfirm,
    utranMobilityInformationFailure UTRANMobilityInformationFailure,
    mbmsModificationRequest         MBMSModificationRequest,
    spare1                          NULL
}

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

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

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

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

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

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

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

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

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

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

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

```
}

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

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

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

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


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

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

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

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

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

--**************************************************************
--
-- MCCH messages
--
--**************************************************************

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

MCCH-MessageType ::= CHOICE {
	mbmsAccessInformation				MBMSAccessInformation,
	mbmsCommonPTMRBInformation			MBMSCommonPTMRBInformation,
	mbmsCurrentCellPTMRBInformation		MBMSCurrentCellPTMRBInformation,
	mbmsGeneralInformation				MBMSGeneralInformation,
	mbmsModifiedServicesInformation		MBMSModifiedServicesInformation,
	mbmsNeighbouringCellPTMRBInformation
										MBMSNeighbouringCellPTMRBInformation,
	mbmsUnmodifiedServicesInformation	MBMSUnmodifiedServicesInformation,
	spare9								NULL,
	spare8								NULL,
	spare7								NULL,
	spare6								NULL,
	spare5								NULL,
	spare4								NULL,
	spare3								NULL,
	spare2								NULL,
	spare1								NULL
```

```
}

--***************************************************************
--
-- MSCH messages
--
--***************************************************************

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

MSCH-MessageType ::= CHOICE {
    mbmsSchedulingInformation           MBMSSchedulingInformation,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

END
```

11.2 PDU definitions

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

PDU-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

IMPORTS

-- Core Network IEs :
    CN-DomainIdentity,
    CN-InformationInfo,
    CN-InformationInfoFull,
    NAS-Message,
    PagingRecordTypeID,
    PLMN-Identity,
-- UTRAN Mobility IEs :
    CellIdentity,
    CellIdentity-PerRL-List,
    URA-Identity,
-- User Equipment IEs :
    UE-RadioAccessCapabBandFDDList2,
    UE-RadioAccessCapabBandFDDList-ext,
    AccessStratumReleaseIndicator,
    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CapabilityUpdateRequirement-r4,
    CapabilityUpdateRequirement-r4-ext,
    CapabilityUpdateRequirement-r5,
    CellUpdateCause,
    CellUpdateCause-ext,
    CipheringAlgorithm,
    CipheringModeInfo,
    DSCH-RNTI,
    E-RNTI,
    EstablishmentCause,
    FailureCauseWithProtErr,
    FailureCauseWithProtErrTrId,
    GroupReleaseInformation,
    H-RNTI,
    UESpecificBehaviourInformation1idle,
```

```
	UESpecificBehaviourInformation1interRAT,
	InitialUE-Identity,
	IntegrityProtActivationInfo,
	IntegrityProtectionModeInfo,
	N-308,
	PagingCause,
	PagingRecordList,
	PagingRecord2List-r5,
	ProtocolErrorIndicator,
	ProtocolErrorIndicatorWithMoreInfo,
	RadioFrequencyBandTDDList,
	Rb-timer-indicator,
	RedirectionInfo,
	RedirectionInfo-r6,
	RejectionCause,
	ReleaseCause,
	RF-CapabilityComp,
	RRC-StateIndicator,
	RRC-TransactionIdentifier,
	SecurityCapability,
	START-Value,
	STARTList,
	SystemSpecificCapUpdateReq-v590ext,
	U-RNTI,
	U-RNTI-Short,
	UE-RadioAccessCapability,
	UE-RadioAccessCapability-v370ext,
	UE-RadioAccessCapability-v380ext,
	UE-RadioAccessCapability-v3a0ext,
	UE-RadioAccessCapability-v3g0ext,
	UE-RadioAccessCapability-v4b0ext,
	UE-RadioAccessCapability-v590ext,
	UE-RadioAccessCapability-v5c0ext,
	UE-RadioAccessCapability-v650ext,
	UE-RadioAccessCapabilityComp,
	DL-PhysChCapabilityFDD-v380ext,
	UE-ConnTimersAndConstants,
	UE-ConnTimersAndConstants-v3a0ext,
	UE-ConnTimersAndConstants-r5,
	UE-SecurityInformation,
	URA-UpdateCause,
	UTRAN-DRX-CycleLengthCoefficient,
	WaitTime,
-- Radio Bearer IEs :
	DefaultConfigIdentity,
	DefaultConfigIdentity-r4,
	DefaultConfigIdentity-r5,
	DefaultConfigMode,
	DL-CounterSynchronisationInfo,
	DL-CounterSynchronisationInfo-r5,
	PredefinedConfigIdentity,
	PredefinedConfigStatusList,
	PredefinedConfigStatusListComp,
	PredefinedConfigSetWithDifferentValueTag,
	RAB-Info,
	RAB-Info-Post,
	RAB-InformationList,
	RAB-InformationReconfigList,
	RAB-InformationSetupList,
	RAB-InformationSetupList-r4,
	RAB-InformationSetupList-r5,
	RAB-InformationSetupList-r6-ext,
	RAB-InformationSetupList-r6,
	RB-ActivationTimeInfoList,
	RB-COUNT-C-InformationList,
	RB-COUNT-C-MSB-InformationList,
	RB-IdentityList,
	RB-InformationAffectedList,
	RB-InformationAffectedList-r5,
	RB-InformationAffectedList-r6,
	RB-InformationReconfigList,
	RB-InformationReconfigList-r4,
	RB-InformationReconfigList-r5,
	RB-InformationReconfigList-r6,
	RB-InformationReleaseList,
	RB-PDCPContextRelocationList,
	SRB-InformationSetupList,
	SRB-InformationSetupList-r5,
```

```
    SRB-InformationSetupList-r6,
    SRB-InformationSetupList2,
    UL-CounterSynchronisationInfo,
-- Transport Channel IEs:
    CPCH-SetID,
    DL-AddReconfTransChInfo2List,
    DL-AddReconfTransChInfoList,
    DL-AddReconfTransChInfoList-r4,
    DL-AddReconfTransChInfoList-r5,
    DL-CommonTransChInfo,
    DL-CommonTransChInfo-r4,
    DL-DeletedTransChInfoList,
    DL-DeletedTransChInfoList-r5,
    DRAC-StaticInformationList,
    TFC-Subset,
    TFCS-Identity,
    UL-AddReconfTransChInfoList,
    UL-AddReconfTransChInfoList-r6,
    UL-CommonTransChInfo,
    UL-CommonTransChInfo-r4,
    UL-DeletedTransChInfoList,
    UL-DeletedTransChInfoList-r6,
-- Physical Channel IEs :
    Alpha,
    BEACON-PL-Est,
    CCTrCH-PowerControlInfo,
    CCTrCH-PowerControlInfo-r4,
    CCTrCH-PowerControlInfo-r5,
    ConstantValue,
    ConstantValueTdd,
    CPCH-SetInfo,
    DL-CommonInformation,
    DL-CommonInformation-r4,
    DL-CommonInformation-r5,
    DL-CommonInformation-r6,
    DL-CommonInformationPost,
    DL-HSPDSCH-Information,
    DL-InformationPerRL-List,
    DL-InformationPerRL-List-r4,
    DL-InformationPerRL-List-r5,
    DL-InformationPerRL-List-r5bis,
    DL-InformationPerRL-List-r6,
    DL-InformationPerRL-ListPostFDD,
    DL-InformationPerRL-PostTDD,
    DL-InformationPerRL-PostTDD-LCR-r4,
    DL-PDSCH-Information,
    DL-TPC-PowerOffsetPerRL-List,
    DPC-Mode,
    DPCH-CompressedModeStatusInfo,
    FrequencyInfo,
    FrequencyInfoFDD,
    FrequencyInfoTDD,
    HARQ-Preamble-Mode,
    HS-SICH-Power-Control-Info-TDD384,
    MaxAllowedUL-TX-Power,
    OpenLoopPowerControl-IPDL-TDD-r4,
    PDSCH-CapacityAllocationInfo,
    PDSCH-CapacityAllocationInfo-r4,
    PDSCH-Identity,
    PrimaryCPICH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-CapacityAllocationInfo,
    PUSCH-CapacityAllocationInfo-r4,
    PUSCH-Identity,
    PUSCH-SysInfoList-HCR-r5,
    PDSCH-SysInfoList-HCR-r5,
    RL-AdditionInformationList,
    RL-AdditionInformationList-r6,
    RL-RemovalInformationList,
    SpecialBurstScheduling,
    SSDT-Information,
    SSDT-Information-r4,
    TFC-ControlDuration,
    SSDT-UL,
    TimeslotList,
    TimeslotList-r4,
    TX-DiversityMode,
    UL-ChannelRequirement,
```

```
    UL-ChannelRequirement-r4,
    UL-ChannelRequirement-r5,
    UL-ChannelRequirement-r6,
    UL-ChannelRequirementWithCPCH-SetID,
    UL-ChannelRequirementWithCPCH-SetID-r4,
    UL-ChannelRequirementWithCPCH-SetID-r5,
    UL-ChannelRequirementWithCPCH-SetID-r6,
    UL-DPCH-Info,
    UL-DPCH-Info-r4,
    UL-DPCH-Info-r5,
    UL-DPCH-Info-r6,
    UL-DPCH-InfoPostFDD,
    UL-DPCH-InfoPostTDD,
    UL-DPCH-InfoPostTDD-LCR-r4,
    UL-EDCH-Information-r6,
    UL-SynchronisationParameters-r4,
    UL-TimingAdvance,
    UL-TimingAdvanceControl,
    UL-TimingAdvanceControl-r4,
-- Measurement IEs :
    AdditionalMeasurementID-List,
    DeltaRSCP,
    Frequency-Band,
    EventResults,
    Inter-FreqEventCriteriaList-v590ext,
    Intra-FreqEventCriteriaList-v590ext,
    IntraFreqReportingCriteria-1b-r5,
    IntraFreqEvent-1d-r5,
    InterFreqEventResults-LCR-r4-ext,
    InterRATCellInfoIndicator,
    InterRAT-TargetCellDescription,
    MeasuredResults,
    MeasuredResults-v390ext,
    MeasuredResults-v590ext,
    MeasuredResultsList,
    MeasuredResultsList-LCR-r4-ext,
    MeasuredResultsOnRACH,
    MeasurementCommand,
    MeasurementCommand-r4,
    MeasurementIdentity,
    MeasurementReportingMode,
    PrimaryCCPCH-RSCP,
    SFN-Offset-Validity,
    TimeslotListWithISCP,
    TrafficVolumeMeasuredResultsList,
    UE-Positioning-GPS-AssistanceData,
    UE-Positioning-Measurement-v390ext,
    UE-Positioning-OTDOA-AssistanceData,
    UE-Positioning-OTDOA-AssistanceData-r4ext,
    UE-Positioning-OTDOA-AssistanceData-UEB,
-- Other IEs :
    BCCH-ModificationInfo,
    CDMA2000-MessageList,
    GSM-TargetCellInfoList,
    GERANIu-MessageList,
    GERAN-SystemInformation,
    GSM-MessageList,
    InterRAT-ChangeFailureCause,
    InterRAT-HO-FailureCause,
    InterRAT-UE-RadioAccessCapabilityList,
    InterRAT-UE-RadioAccessCapability-v590ext,
    InterRAT-UE-SecurityCapList,
    IntraDomainNasNodeSelector,
    ProtocolErrorMoreInformation,
    Rplmn-Information,
    Rplmn-Information-r4,
    SegCount,
    SegmentIndex,
    SFN-Prime,
    SIB-Data-fixed,
    SIB-Data-variable,
    SIB-Type,
-- MBMS IEs:
    MBMS-CellGroupIdentity-r6,
    MBMS-CommonRBInformationList-r6,
    MBMS-CurrentCell-SCCPCHList-r6,
    MBMS-JoinedInformation-r6,
    MBMS-MICHConfigurationInfo-r6,
    MBMS-ModifedServiceList-r6,
```

```
	MBMS-MSCHConfigurationInfo-r6,
	MBMS-NeighbouringCellSCCPCHList-r6,
	MBMS-PhyChInformationList-r6,
	MBMS-PL-ServiceRestrictInfo-r6,
	MBMS-PreferredFreqRequest-r6,
	MBMS-PreferredFrequencyList-r6,
	MBMS-ServiceAccessInfoList-r6,
	MBMS-ServiceSchedulingInfoList-r6,
	MBMS-SIBType5-SCCPCHList-r6,
	MBMS-TimersAndCouneters-r6,
	MBMS-TranspChInfoForEachCCTrCh-r6,
	MBMS-TranspChInfoForEachTrCh-r6,
	MBMS-UnmodifiedServiceList-r6
FROM InformationElements

	maxSIBperMsg,
	maxURNTI-Group
FROM Constant-definitions;

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

ActiveSetUpdate ::= CHOICE {
	r3								SEQUENCE {
		activeSetUpdate-r3				ActiveSetUpdate-r3-IEs,
		laterNonCriticalExtensions		SEQUENCE {
			-- Container for additional R99 extensions
			activeSetUpdate-r3-add-ext		BIT STRING		OPTIONAL,
			v4b0NonCriticalExtensions		SEQUENCE {
				activeSetUpdate-v4b0ext		ActiveSetUpdate-v4b0ext-IEs,
				v590NonCriticalExtensions		SEQUENCE {
					activeSetUpdate-v590ext			ActiveSetUpdate-v590ext-IEs,
					v6xyNonCriticalExtensions		SEQUENCE {
						activeSetUpdate-v6xyext			ActiveSetUpdate-v6xyext-IEs,
						nonCriticalExtensions			SEQUENCE {} OPTIONAL
					}	OPTIONAL
				}	OPTIONAL
			} OPTIONAL
		} OPTIONAL
	},
	later-than-r3					SEQUENCE {
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
		criticalExtensions				CHOICE {
			r6								SEQUENCE {
				activeSetUpdate-r6				ActiveSetUpdate-r6-IEs,
				nonCriticalExtensions			SEQUENCE {}		OPTIONAL
			},
			criticalExtensions				SEQUENCE {}
		}
	}
}

ActiveSetUpdate-r3-IEs ::= SEQUENCE {
	-- User equipment IEs
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
		-- dummy and dummy2 are not used in this version of the specification, they should
		-- not be sent and if received they should be ignored.
		dummy						IntegrityProtectionModeInfo			OPTIONAL,
		dummy2						CipheringModeInfo					OPTIONAL,
		activationTime					ActivationTime						OPTIONAL,
		newU-RNTI						U-RNTI								OPTIONAL,
	-- Core network IEs
		cn-InformationInfo				CN-InformationInfo					OPTIONAL,
	-- Radio bearer IEs
		-- dummy3 is not used in this version of the specification, it should
		-- not be sent and if received it should be ignored.
		dummy3						DL-CounterSynchronisationInfo		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
}
```

```
ActiveSetUpdate-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information. FDD only.
        ssdt-UL-r4                          SSDT-UL                             OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE RL-AdditionInformationList included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List             OPTIONAL
}

ActiveSetUpdate-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dpc-Mode                            DPC-Mode,
        dl-TPC-PowerOffsetPerRL-List        DL-TPC-PowerOffsetPerRL-List            OPTIONAL
}

ActiveSetUpdate-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity               PLMN-Identity                       OPTIONAL
}

ActiveSetUpdate-r6-IEs ::= SEQUENCE {
    -- User equipment IEs
        activationTime                  ActivationTime                      OPTIONAL,
        newU-RNTI                       U-RNTI                              OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        rl-AdditionInformationList      RL-AdditionInformationList-r6       OPTIONAL,
        rl-RemovalInformationList       RL-RemovalInformationList           OPTIONAL,
        tx-DiversityMode                TX-DiversityMode                    OPTIONAL,
        ssdt-Information                SSDT-Information-r4                 OPTIONAL,
        dpc-Mode                        DPC-Mode
}

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

ActiveSetUpdateComplete ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        -- dummy is not used in this version of the specification, it should
        -- not be sent and if received it should be ignored.
        dummy                       IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        -- dummy2 and dummy3 are not used in this version of the specification, they should
        -- not be sent and if received they should be ignored.
        dummy2                      RB-ActivationTimeInfoList           OPTIONAL,
        dummy3                      UL-CounterSynchronisationInfo       OPTIONAL,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            activeSetUpdateComplete-r3-add-ext      BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {} OPTIONAL
        }   OPTIONAL
}

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

ActiveSetUpdateFailure ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        failureCause                    FailureCauseWithProtErr,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            activeSetUpdateFailure-r3-add-ext       BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {} OPTIONAL
    }   OPTIONAL
}

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

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

AssistanceDataDelivery ::= CHOICE {
    r3                              SEQUENCE {
        assistanceDataDelivery-r3       AssistanceDataDelivery-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            assistanceDataDelivery-v3a0ext  AssistanceDataDelivery-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                assistanceDataDelivery-r3-add-ext       BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    assistanceDataDelivery-v4b0ext
                                                    AssistanceDataDelivery-v4b0ext-IEs,
                    nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

AssistanceDataDelivery-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
    rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    -- Measurement Information Elements
    ue-positioning-GPS-AssistanceData           UE-Positioning-GPS-AssistanceData
    OPTIONAL,
    ue-positioning-OTDOA-AssistanceData-UEB     UE-Positioning-OTDOA-AssistanceData-UEB
    OPTIONAL
}

AssistanceDataDelivery-v3a0ext ::= SEQUENCE {
    sfn-Offset-Validity                 SFN-Offset-Validity     OPTIONAL
}

AssistanceDataDelivery-v4b0ext-IEs ::= SEQUENCE {
    ue-Positioning-OTDOA-AssistanceData-r4ext   UE-Positioning-OTDOA-AssistanceData-r4ext   OPTIONAL
}

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

CellChangeOrderFromUTRAN ::= CHOICE {
    r3                              SEQUENCE {
        cellChangeOrderFromUTRAN-IEs        CellChangeOrderFromUTRAN-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            cellChangeOrderFromUTRAN-r3-add-ext     BIT STRING      OPTIONAL,
            v590NonCriticalExtensions           SEQUENCE {
                cellChangeOrderFromUTRAN-v590ext    CellChangeOrderFromUTRAN-v590ext-IEs,
                nonCriticalExtensions           SEQUENCE {} OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

CellChangeOrderFromUTRAN-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        -- dummy is not used in this version of the specification, it should
        -- not be sent and if received it should be ignored.
        dummy                           IntegrityProtectionModeInfo         OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        -- the IE rab-InformationList is not used in this version of the specification, it should
        -- not be sent and if received it should be ignored. The IE may be used in a later
        -- version of the protocol and hence it is not changed into a dummy
```

```
        rab-InformationList             RAB-InformationList                 OPTIONAL,
        interRAT-TargetCellDescription  InterRAT-TargetCellDescription
}

CellChangeOrderFromUTRAN-v590ext-IEs ::= SEQUENCE {
        geran-SystemInfoType                CHOICE  {
            sI                                  GERAN-SystemInformation,
            pSI                                 GERAN-SystemInformation
        }       OPTIONAL
}

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

CellChangeOrderFromUTRANFailure ::= CHOICE {
    r3                              SEQUENCE {
        cellChangeOrderFromUTRANFailure-r3
                                        CellChangeOrderFromUTRANFailure-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            cellChangeOrderFromUTRANFailure-r3-add-ext      BIT STRING  OPTIONAL,
            nonCriticalExtensions           SEQUENCE {} OPTIONAL
        }   OPTIONAL
    },
    -- dummy is not used in this version of the specification and it
    -- should be ignored.
    dummy                           SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

CellChangeOrderFromUTRANFailure-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        -- dummy is not used in this version of the specification, it should
        -- not be sent and if received it should be ignored.
        dummy                           IntegrityProtectionModeInfo         OPTIONAL,
        interRAT-ChangeFailureCause     InterRAT-ChangeFailureCause
}

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

CellUpdate ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        startList       STARTList,
        am-RLC-ErrorIndicationRb2-3or4      BOOLEAN,
        am-RLC-ErrorIndicationRb5orAbove    BOOLEAN,
        cellUpdateCause                 CellUpdateCause,
        -- TABULAR: RRC transaction identifier is nested in FailureCauseWithProtErrTrId
        failureCause                    FailureCauseWithProtErrTrId         OPTIONAL,
        rb-timer-indicator              Rb-timer-indicator,
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            cellUpdate-r3-add-ext           BIT STRING  OPTIONAL,
            v590NonCriticalExtensions   SEQUENCE {
                cellUpdate-v590ext  CellUpdate-v590ext,
                v6xyNonCriticalExtensions       SEQUENCE {
                    cellUpdate-v6xyext              CellUpdate-v6xyext-IEs,
                    nonCriticalExtensions           SEQUENCE {} OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }   OPTIONAL
}

CellUpdate-v590ext ::= SEQUENCE {
    establishmentCause              EstablishmentCause  OPTIONAL
}
```

```
CellUpdate-v6xyext-IEs ::=          SEQUENCE {
    -- User equipment IEs
        cellUpdateCause-ext             CellUpdateCause-ext                 OPTIONAL
}

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

CellUpdateConfirm ::= CHOICE {
    r3                              SEQUENCE {
        cellUpdateConfirm-r3            CellUpdateConfirm-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            cellUpdateConfirm-v3a0ext       CellUpdateConfirm-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                cellUpdateConfirm-r3-add-ext    BIT STRING  OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    cellUpdateConfirm-v4b0ext       CellUpdateConfirm-v4b0ext-IEs,
                    v590NonCriticalExtenstions      SEQUENCE {
                        cellUpdateConfirm-v590ext       CellUpdateConfirm-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            cellUpdateConfirm-v6xyext       CellUpdateConfirm-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {} OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                cellUpdateConfirm-r4            CellUpdateConfirm-r4-IEs,
                v4d0NonCriticalExtensions       SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    cellUpdateConfirm-r4-add-ext    BIT STRING      OPTIONAL,
                    v590NonCriticalExtenstions      SEQUENCE {
                        cellUpdateConfirm-v590ext       CellUpdateConfirm-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            cellUpdateConfirm-v6xyext       CellUpdateConfirm-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    cellUpdateConfirm-r5            CellUpdateConfirm-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    cellUpdateConfirm-r5-add-ext    BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        cellUpdateConfirm-v6xyext       CellUpdateConfirm-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                },
                criticalExtensions              CHOICE {
                    r6                              SEQUENCE {
                        cellUpdateConfirm-r6            CellUpdateConfirm-r6-IEs,
                        -- Container for adding non critical extensions after freezing REL-7
                        cellUpdateConfirm-r6-add-ext    BIT STRING      OPTIONAL,
                        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-Re-establishIndicatorRb2-3or4       BOOLEAN,
        rlc-Re-establishIndicatorRb5orAbove     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,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo        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 {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dummydl-PDSCH-Information           DL-PDSCH-Information         OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                 OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List             OPTIONAL
}

CellUpdateConfirm-v3a0ext ::= SEQUENCE {
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
    new-DSCH-RNTI               DSCH-RNTI                                OPTIONAL
}

CellUpdateConfirm-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                          SSDT-UL                              OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List              OPTIONAL
}

CellUpdateConfirm-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List         OPTIONAL
}

CellUpdateConfirm-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo          OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                    OPTIONAL,
        activationTime                  ActivationTime                       OPTIONAL,
        new-U-RNTI                      U-RNTI                               OPTIONAL,
        new-C-RNTI                      C-RNTI                               OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                            OPTIONAL,
```

```
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-Re-establishIndicatorRb2-3or4       BOOLEAN,
        rlc-Re-establishIndicatorRb5orAbove 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-r4       OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dummy~~dl-PDSCH-Information~~           DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

CellUpdateConfirm-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-Re-establishIndicatorRb2-3or4       BOOLEAN,
        rlc-Re-establishIndicatorRb5orAbove 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-r5       OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList-r5       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
```

```
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}

CellUpdateConfirm-r6-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        new-E-RNTI                      E-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
        rlc-Re-establishIndicatorRb2-3or4       BOOLEAN,
        rlc-Re-establishIndicatorRb5orAbove     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-r6       OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList-r6       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList-r6        OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList-r6      OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r6            OPTIONAL,
        ul-EDCH-Information             UL-EDCH-Information-r6              OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r6             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6
}

CellUpdateConfirm-v6xyext-IEs ::=   SEQUENCE {
```

```
	-- Core network IEs
		primary-plmn-Identity			PLMN-Identity						OPTIONAL,
	-- Physical channel IEs
		harq-Preamble-Mode				HARQ-Preamble-Mode					OPTIONAL,
		beaconPLEst						BEACON-PL-Est						OPTIONAL,
	-- MBMS IEs
		mbms-PL-ServiceRestrictInfo		MBMS-PL-ServiceRestrictInfo-r6		OPTIONAL
}

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

CellUpdateConfirm-CCCH ::= 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,
			laterNonCriticalExtensions		SEQUENCE {
				-- Container for additional R99 extensions
				cellUpdateConfirm-CCCH-r3-add-ext			BIT STRING	OPTIONAL,
				v4b0NonCriticalExtensions		SEQUENCE {
					cellUpdateConfirm-v4b0ext		CellUpdateConfirm-v4b0ext-IEs,
					v590NonCriticalExtensions		SEQUENCE {
						cellUpdateConfirm-v590ext		CellUpdateConfirm-v590ext-IEs,
						v6xyNonCriticalExtensions		SEQUENCE {
							cellUpdateConfirm-v6xyext		CellUpdateConfirm-v6xyext-IEs,
							nonCriticalExtensions			SEQUENCE {} OPTIONAL
						}	OPTIONAL
					}	OPTIONAL
				}	OPTIONAL
			}	OPTIONAL
	},
	later-than-r3					SEQUENCE {
		u-RNTI							U-RNTI,
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
		criticalExtensions				CHOICE {
			r4								SEQUENCE {
				-- The rest of the message is identical to the one sent on DCCH.
				cellUpdateConfirm-r4			CellUpdateConfirm-r4-IEs,
				v4d0NonCriticalExtensions			SEQUENCE {
					-- Container for adding non critical extensions after freezing REL-5
					cellUpdateConfirm-CCCH-r4-add-ext		BIT STRING		OPTIONAL,
					v590NonCriticalExtensions		SEQUENCE {
						cellUpdateConfirm-v590ext		CellUpdateConfirm-v590ext-IEs,
						v6xyNonCriticalExtensions		SEQUENCE {
							cellUpdateConfirm-v6xyext		CellUpdateConfirm-v6xyext-IEs,
							nonCriticalExtensions			SEQUENCE {}		OPTIONAL
						}	OPTIONAL
					}	OPTIONAL
				}	OPTIONAL
			},
			criticalExtensions				CHOICE {
				r5								SEQUENCE {
					cellUpdateConfirm-r5			CellUpdateConfirm-r5-IEs,
					cellUpdateConfirm-CCCH-r5-add-ext		BIT STRING		OPTIONAL,
					v6xyNonCriticalExtensions		SEQUENCE {
						cellUpdateConfirm-v6xyext		CellUpdateConfirm-v6xyext-IEs,
						nonCriticalExtensions			SEQUENCE {}		OPTIONAL
					}	OPTIONAL
				},
				criticalExtensions				CHOICE {
					r6								SEQUENCE {
						cellUpdateConfirm-r6			CellUpdateConfirm-r6-IEs,
						cellUpdateConfirm-r6-add-ext	BIT STRING		OPTIONAL,
						nonCriticalExtensions			SEQUENCE {}		OPTIONAL
					},
					criticalExtensions				SEQUENCE {}
				}
			}
		}
	}
}

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

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

CounterCheck ::= CHOICE {
    r3                              SEQUENCE {
        counterCheck-r3                 CounterCheck-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            counterCheck-r3-add-ext     BIT STRING  OPTIONAL,
            nonCriticalExtensions       SEQUENCE {} OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        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,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            counterCheckResponse-r3-add-ext     BIT STRING  OPTIONAL,
            nonCriticalExtensions               SEQUENCE {} OPTIONAL
        }   OPTIONAL
}

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

DownlinkDirectTransfer ::= CHOICE {
    r3                              SEQUENCE {
        downlinkDirectTransfer-r3       DownlinkDirectTransfer-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            downlinkDirectTransfer-r3-add-ext       BIT STRING  OPTIONAL,
            nonCriticalExtensions           SEQUENCE {} OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        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 ::= CHOICE {
    r3                          SEQUENCE {
        handoverToUTRANCommand-r3       HandoverToUTRANCommand-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions          CHOICE {
        r4                          SEQUENCE {
            handoverToUTRANCommand-r4       HandoverToUTRANCommand-r4-IEs,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        },
        criticalExtensions          CHOICE {
            r5                          SEQUENCE {
                handoverToUTRANCommand-r5       HandoverToUTRANCommand-r5-IEs,
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            },
            criticalExtensions          CHOICE {
                r6                          SEQUENCE {
                    handoverToUTRANCommand-r6       HandoverToUTRANCommand-r6-IEs,
                    nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                },
                criticalExtensions          SEQUENCE {}
            }
        }
    }
}

HandoverToUTRANCommand-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        -- dummy is not used in this version of specification, it should
        -- not be sent and if received it should be ignored.
        dummy                           ActivationTime                      OPTIONAL,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
    -- 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 {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                        dl-PDSCH-Informationdummy       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.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
                        defaultConfigIdentity           DefaultConfigIdentity
                    }
                },
                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-CommonInformationPost            DL-CommonInformationPost,
                        dl-InformationPerRL                 DL-InformationPerRL-PostTDD,
                        frequencyInfo                       FrequencyInfoTDD,
                        primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power
                    }
                }
            }
        },
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power
}

HandoverToUTRANCommand-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                srb-InformationSetupList        SRB-InformationSetupList,
                rab-InformationSetupList        RAB-InformationSetupList-r4         OPTIONAL,
                ul-CommonTransChInfo            UL-CommonTransChInfo-r4,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
                dl-CommonTransChInfo            DL-CommonTransChInfo-r4,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4,
                ul-DPCH-Info                    UL-DPCH-Info-r4,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                        ~~dl-PDSCH-Information~~dummy              DL-PDSCH-Information OPTIONAL,
                        cpch-SetInfo                        CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
                },
                dl-CommonInformation            DL-CommonInformation-r4,
                dl-InformationPerRL-List        DL-InformationPerRL-List-r4,
                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.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
                        defaultConfigIdentity           DefaultConfigIdentity-r4
                    }
                },
                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                             CHOICE {
                        tdd384                          SEQUENCE {
                            ul-DPCH-Info                    UL-DPCH-InfoPostTDD,
                            dl-InformationPerRL             DL-InformationPerRL-PostTDD,
                            frequencyInfo                   FrequencyInfoTDD,
                            primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power
                        },
                        tdd128                          SEQUENCE {
                            ul-DPCH-Info                    UL-DPCH-InfoPostTDD-LCR-r4,
                            dl-InformationPerRL             DL-InformationPerRL-PostTDD-LCR-r4,
                            frequencyInfo                   FrequencyInfoTDD,
                            primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power
                        }
                    }
                }
            }
```

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

HandoverToUTRANCommand-r5-IEs ::= SEQUENCE {
	-- User equipment IEs
		new-U-RNTI					U-RNTI-Short,
		cipheringAlgorithm			CipheringAlgorithm				OPTIONAL,
	-- Radio bearer IEs
	-- Specification mode information
		specificationMode			CHOICE {
			complete					SEQUENCE {
				srb-InformationSetupList		SRB-InformationSetupList-r5,
				rab-InformationSetupList		RAB-InformationSetupList-r5		OPTIONAL,
				ul-CommonTransChInfo			UL-CommonTransChInfo-r4,
				ul-AddReconfTransChInfoList		UL-AddReconfTransChInfoList,
				dl-CommonTransChInfo			DL-CommonTransChInfo-r4,
				dl-AddReconfTransChInfoList		DL-AddReconfTransChInfoList-r5,
				ul-DPCH-Info					UL-DPCH-Info-r5,
				modeSpecificInfo				CHOICE {
					fdd								SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
						dl-PDSCH-Informationdummy			DL-PDSCH-Information OPTIONAL,
						cpch-SetInfo					CPCH-SetInfo		OPTIONAL
					},
					tdd								NULL
				},
				dl-CommonInformation			DL-CommonInformation-r4,
				dl-InformationPerRL-List		DL-InformationPerRL-List-r5,
				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.
				preConfigMode					CHOICE {
					predefinedConfigIdentity		PredefinedConfigIdentity,
					defaultConfig					SEQUENCE {
						defaultConfigMode				DefaultConfigMode,
						defaultConfigIdentity			DefaultConfigIdentity-r5
					}
				},
				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								CHOICE {
						tdd384							SEQUENCE {
							ul-DPCH-Info					UL-DPCH-InfoPostTDD,
							dl-InformationPerRL				DL-InformationPerRL-PostTDD,
							frequencyInfo					FrequencyInfoTDD,
							primaryCCPCH-TX-Power			PrimaryCCPCH-TX-Power
						},
						tdd128							SEQUENCE {
							ul-DPCH-Info					UL-DPCH-InfoPostTDD-LCR-r4,
							dl-InformationPerRL				DL-InformationPerRL-PostTDD-LCR-r4,
							frequencyInfo					FrequencyInfoTDD,
							primaryCCPCH-TX-Power			PrimaryCCPCH-TX-Power
						}
					}
				}
			}
		},
	-- Physical channel IEs
		maxAllowedUL-TX-Power			MaxAllowedUL-TX-Power
}

HandoverToUTRANCommand-r6-IEs ::= SEQUENCE {
	-- User equipment IEs
		new-U-RNTI					U-RNTI-Short,
		cipheringAlgorithm			CipheringAlgorithm				OPTIONAL,
	-- Radio bearer IEs
```

```
	-- Specification mode information
		specificationMode				CHOICE {
			complete						SEQUENCE {
				srb-InformationSetupList		SRB-InformationSetupList-r6,
				rab-InformationSetupList		RAB-InformationSetupList-r6		OPTIONAL,
				ul-CommonTransChInfo			UL-CommonTransChInfo-r4,
				ul-AddReconfTransChInfoList		UL-AddReconfTransChInfoList-r6,
				dl-CommonTransChInfo			DL-CommonTransChInfo-r4,
				dl-AddReconfTransChInfoList		DL-AddReconfTransChInfoList-r5,
				ul-DPCH-Info					UL-DPCH-Info-r6,
				~~modeSpecificInfo				CHOICE {~~
					~~fdd							SEQUENCE {~~
						~~dl-PDSCH-Information			DL-PDSCH-Information		OPTIONAL,~~
						~~cpch-SetInfo					CPCH-SetInfo				OPTIONAL~~
					~~},~~
					~~tdd							NULL~~
				~~},~~
				dl-CommonInformation			DL-CommonInformation-r4,
				dl-InformationPerRL-List		DL-InformationPerRL-List-r6,
				frequencyInfo					FrequencyInfo
			}
			-- For the 'preconfiguration' specificationMode the r5 message is used.
		},
	-- 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: startList is conditional on history.
		startList						STARTList								OPTIONAL,
	-- Radio bearer IEs
		count-C-ActivationTime			ActivationTime							OPTIONAL,
		laterNonCriticalExtensions		SEQUENCE {
			-- Container for additional R99 extensions
			handoverToUTRANComplete-r3-add-ext		BIT STRING	OPTIONAL,
			nonCriticalExtensions			SEQUENCE {}		OPTIONAL
		}	OPTIONAL
}

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

InitialDirectTransfer ::= SEQUENCE {
	-- Core network IEs
		cn-DomainIdentity				CN-DomainIdentity,
		intraDomainNasNodeSelector		IntraDomainNasNodeSelector,
		nas-Message						NAS-Message,
	-- Measurement IEs
		measuredResultsOnRACH			MeasuredResultsOnRACH					OPTIONAL,
		v3a0NonCriticalExtensions		SEQUENCE {
		initialDirectTransfer-v3a0ext	InitialDirectTransfer-v3a0ext,
		laterNonCriticalExtensions		SEQUENCE {
			-- Container for additional R99 extensions
			initialDirectTransfer-r3-add-ext		BIT STRING	OPTIONAL,
				v590NonCriticalExtensions		SEQUENCE {
					initialDirectTransfer-v590ext	InitialDirectTransfer-v590ext,
					v6xyNonCriticalExtensions		SEQUENCE {
						initialDirectTransfer-v6xyext	InitialDirectTransfer-v6xyext-IEs,
						nonCriticalExtensions			SEQUENCE {}		OPTIONAL
					}		OPTIONAL
				}		OPTIONAL
			}		OPTIONAL
		}	OPTIONAL
}

InitialDirectTransfer-v3a0ext ::= SEQUENCE {
	-- start-value shall always be included in this version of the protocol
```

```
    start-Value                     START-Value                         OPTIONAL
}
InitialDirectTransfer-v590ext ::= SEQUENCE {
    establishmentCause      EstablishmentCause  OPTIONAL
}

InitialDirectTransfer-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        plmn-Identity                   PLMN-Identity                       OPTIONAL,
    -- MBMS IEs
        mbms-JoinedInformation          MBMS-JoinedInformation-r6           OPTIONAL
}

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

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

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

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

```
        }
    }
}

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

HandoverFromUTRANCommand-CDMA2000 ::= CHOICE {
    r3                              SEQUENCE {
        handoverFromUTRANCommand-CDMA2000-r3
                                        HandoverFromUTRANCommand-CDMA2000-r3-IEs,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            handoverFromUTRANCommand-CDMA2000-r3-add-ext
                                                BIT STRING      OPTIONAL,
            nonCriticalExtensions               SEQUENCE {}     OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

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

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

HandoverFromUTRANFailure ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    -- Other IEs
        interRAT-HO-FailureCause        InterRAT-HO-FailureCause            OPTIONAL,
        -- In case the interRATMessage to be transferred is for GERAN Iu mode, the
        -- message should be placed in the HandoverFromUtranFailure-v590ext-IEs
        -- non-critical extension container.
        interRATMessage                 CHOICE {
            gsm                             SEQUENCE {
                gsm-MessageList                     GSM-MessageList
            },
            cdma2000                            SEQUENCE {
                cdma2000-MessageList                CDMA2000-MessageList
            }
        }               OPTIONAL,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
```

```
            handoverFromUTRANFailure-r3-add-ext     BIT STRING  OPTIONAL,
            v590NonCriticalExtensions       SEQUENCE {
                handoverFromUTRANFailure-v590ext    HandoverFromUtranFailure-v590ext-IEs,
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
}

HandoverFromUtranFailure-v590ext-IEs ::= SEQUENCE {
    geranIu-MessageList                     GERANIu-MessageList         OPTIONAL
}

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

InterRATHandoverInfo ::= SEQUENCE {
    -- This structure is defined for historical reasons, backward compatibility with 04.18
    predefinedConfigStatusList      CHOICE {
        absent                          NULL,
        present                         PredefinedConfigStatusList
    },
    uE-SecurityInformation          CHOICE {
        absent                          NULL,
        present                         UE-SecurityInformation
    },
    ue-CapabilityContainer          CHOICE {
        absent                          NULL,
        -- present is an octet aligned string containing IE UE-RadioAccessCapabilityInfo
        present                         OCTET STRING (SIZE (0..63))
    },
    -- Non critical extensions
    v390NonCriticalExtensions       CHOICE {
        absent                          NULL,
        present                         SEQUENCE {
            interRATHandoverInfo-v390ext    InterRATHandoverInfo-v390ext-IEs,
            v3a0NonCriticalExtensions       SEQUENCE  {
                interRATHandoverInfo-v3a0ext    InterRATHandoverInfo-v3a0ext-IEs,
                laterNonCriticalExtensions      SEQUENCE {
                    interRATHandoverInfo-v3d0ext    InterRATHandoverInfo-v3d0ext-IEs,
                    -- Container for additional R99 extensions
                    interRATHandoverInfo-r3-add-ext     BIT STRING  OPTIONAL,
                    v3g0NonCriticalExtensions           SEQUENCE {
                        interRATHandoverInfo-v3g0ext    InterRATHandoverInfo-v3g0ext-IEs,
                        v4b0NonCriticalExtensions       SEQUENCE {
                            interRATHandoverInfo-v4b0ext    InterRATHandoverInfo-v4b0ext-IEs,
                            v4d0NonCriticalExtensions       SEQUENCE {
                                interRATHandoverInfo-v4d0ext    InterRATHandoverInfo-v4d0ext-IEs,
                                -- Reserved for future non critical extension
                                v590NonCriticalExtensions       SEQUENCE {
                                    interRATHandoverInfo-v590ext
                                                            InterRATHandoverInfo-v590ext-IEs,
                                    nonCriticalExtensions           SEQUENCE {} OPTIONAL
                                }   OPTIONAL
                            }   OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }
    }
}

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

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

InterRATHandoverInfo-v3d0ext-IEs ::= SEQUENCE {
    -- User equipment IEs
```

```
		uESpecificBehaviourInformation1interRAT		UESpecificBehaviourInformation1interRAT
	OPTIONAL
}


InterRATHandoverInfo-v3g0ext-IEs ::= SEQUENCE {
	-- User equipment IEs
		ue-RadioAccessCapability-v3g0ext	UE-RadioAccessCapability-v3g0ext		OPTIONAL
}
InterRATHandoverInfo-v4b0ext-IEs ::= SEQUENCE {
	-- User equipment IEs
		accessStratumReleaseIndicator		AccessStratumReleaseIndicator
}

InterRATHandoverInfo-v4d0ext-IEs ::= SEQUENCE {
	-- User equipment IEs
	tdd128-RF-Capability				RadioFrequencyBandTDDList		OPTIONAL
}

InterRATHandoverInfo-v590ext-IEs ::= SEQUENCE {
	-- User equipment IEs
		predefinedConfigStatusListComp		PredefinedConfigStatusListComp			OPTIONAL,
		ue-RadioAccessCapabilityComp		UE-RadioAccessCapabilityComp			OPTIONAL
}

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

MeasurementControl ::= CHOICE {
	-- The Rel-4 functionality of UE Positioning OTDOA AssistanceData TDD is only available
	-- in the later-than-r3 branch of this message (i.e. through the use of the IE
	-- ue-Positioning-OTDOA-AssistanceData-r4)
	r3								SEQUENCE {
		measurementControl-r3			MeasurementControl-r3-IEs,
		v390nonCriticalExtensions		SEQUENCE {
			measurementControl-v390ext		MeasurementControl-v390ext,
			v3a0NonCriticalExtensions			SEQUENCE {
				measurementControl-v3a0ext			MeasurementControl-v3a0ext,
				laterNonCriticalExtensions		SEQUENCE {
					-- Container for additional R99 extensions
					measurementControl-r3-add-ext		BIT STRING	OPTIONAL,
					v4b0NonCriticalExtensions			SEQUENCE{
						-- The content of the v4b0 non-critical extension has been removed. If sent
						-- to a UE of AS release 4, the UE behaviour is unspecified. A UE of AS
						-- release 5 onward shall comply with the v4b0 and later extensions in this
						-- branch of the message.
						v590NonCriticalExtensions		SEQUENCE {
							measurementControl-v590ext		MeasurementControl-v590ext-IEs,
							v5b0NonCriticalExtensions		SEQUENCE {
								measurementControl-v5b0ext		MeasurementControl-v5b0ext-IEs,
								nonCriticalExtensions			SEQUENCE {}		OPTIONAL
							}						OPTIONAL
						}						OPTIONAL
					}						OPTIONAL
				}						OPTIONAL
			}						OPTIONAL
		}						OPTIONAL
	},
	later-than-r3					SEQUENCE {
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
		criticalExtensions				CHOICE {
			r4								SEQUENCE {
				measurementControl-r4			MeasurementControl-r4-IEs,
				v4d0NonCriticalExtensions			SEQUENCE {
					-- Container for adding non critical extensions after freezing REL-5
					measurementControl-r4-add-ext		BIT STRING		OPTIONAL,
					v590NonCriticalExtensions		SEQUENCE{
						measurementControl-v590ext		MeasurementControl-v590ext-IEs,
						v5b0NonCriticalExtensions		SEQUENCE {
							measurementControl-v5b0ext		MeasurementControl-v5b0ext-IEs,
							nonCriticalExtensions			SEQUENCE {}		OPTIONAL
						}	OPTIONAL
					}	OPTIONAL
				}	OPTIONAL
			},
```

```
            criticalExtensions              SEQUENCE {}
        }
    }
}

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

MeasurementControl-v390ext ::= SEQUENCE {
        ue-Positioning-Measurement-v390ext      UE-Positioning-Measurement-v390ext  OPTIONAL
}

MeasurementControl-v3a0ext ::= SEQUENCE {
    sfn-Offset-Validity             SFN-Offset-Validity     OPTIONAL
}

MeasurementControl-r4-IEs ::= SEQUENCE {
    -- Measurement IEs
        measurementIdentity     MeasurementIdentity,
        -- TABULAR: The measurement type is included in measurementCommand.
        measurementCommand              MeasurementCommand-r4,
        measurementReportingMode        MeasurementReportingMode            OPTIONAL,
        additionalMeasurementList       AdditionalMeasurementID-List        OPTIONAL,
    -- Physical channel IEs
        dpch-CompressedModeStatusInfo   DPCH-CompressedModeStatusInfo       OPTIONAL
}

MeasurementControl-v590ext-IEs ::= SEQUENCE {
    measurementCommand-v590ext          CHOICE {
        -- the choice “intra-frequency” shall be used for the case of intra-frequency measurement,
        -- as well as when intra-frequency events are configured for inter-frequency measurement
        intra-frequency                     Intra-FreqEventCriteriaList-v590ext,
        inter-frequency                     Inter-FreqEventCriteriaList-v590ext
    }       OPTIONAL,
    intraFreqReportingCriteria-1b-r5        IntraFreqReportingCriteria-1b-r5        OPTIONAL,
    intraFreqEvent-1d-r5                    IntraFreqEvent-1d-r5                    OPTIONAL,
    -- most significant part of "RRC transaction identifier" (MSP),
    -- "RRC transaction identifier" = rrc-TransactionIdentifier-MSP-v590ext * 4 +
    -- rrc-TransactionIdentifier
    rrc-TransactionIdentifier-MSP-v590ext   RRC-TransactionIdentifier
}

MeasurementControl-v5b0ext-IEs ::=  SEQUENCE {
    interRATCellInfoIndicator           InterRATCellInfoIndicator           OPTIONAL
}

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

MeasurementControlFailure ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        failureCause                    FailureCauseWithProtErr,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            measurementControlFailure-r3-add-ext        BIT STRING      OPTIONAL,
            v590NonCriticalExtensions       SEQUENCE {
                measurementControlFailure-v590ext       MeasurementControlFailure-v590ext-IEs,
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
}

MeasurementControlFailure-v590ext-IEs ::= SEQUENCE {
    -- most significant part of "RRC transaction identifier" (MSP),
```

```
    -- "RRC transaction identifier" = rrc-TransactionIdentifier-MSP-v590ext * 4 +
    -- rrc-TransactionIdentifier
    -- If the rrc-TransactionIdentifier-MSP-v590ext was not received in the MEASUREMENT CONTROL
    -- message, then the rrc-TransactionIdentifier-MSP-v590ext shall be set to zero
    rrc-TransactionIdentifier-MSP-v590ext   RRC-TransactionIdentifier
}

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

MeasurementReport ::= SEQUENCE {
    -- Measurement IEs
        measurementIdentity     MeasurementIdentity,
        measuredResults                 MeasuredResults                     OPTIONAL,
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
        additionalMeasuredResults       MeasuredResultsList                 OPTIONAL,
        eventResults                    EventResults                        OPTIONAL,
    -- Non-critical extensions
        v390nonCriticalExtensions           SEQUENCE {
            measurementReport-v390ext       MeasurementReport-v390ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                measurementReport-r3-add-ext        BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    measurementReport-v4b0ext       MeasurementReport-v4b0ext-IEs,
                    -- Extension mechanism for non-Rel4 information
                    v590NonCriticalExtensions   SEQUENCE {
                        measurementReport-v590ext       MeasurementReport-v590ext-IEs,
                        v5b0NonCriticalExtensions       SEQUENCE {
                            measurementReport-v5b0ext       MeasurementReport-v5b0ext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

MeasurementReport-v390ext ::= SEQUENCE {
        measuredResults-v390ext         MeasuredResults-v390ext             OPTIONAL
}

MeasurementReport-v4b0ext-IEs ::= SEQUENCE {
    interFreqEventResults-LCR       InterFreqEventResults-LCR-r4-ext        OPTIONAL,
    -- additionalMeasuredResults-LCR shall contain measurement results and additional measurement
    -- results list.
    additionalMeasuredResults-LCR   MeasuredResultsList-LCR-r4-ext          OPTIONAL,
    gsmOTDreferenceCell             PrimaryCPICH-Info                       OPTIONAL
}

MeasurementReport-v590ext-IEs ::= SEQUENCE {
    measuredResults-v590ext             MeasuredResults-v590ext             OPTIONAL
}

MeasurementReport-v5b0ext-IEs ::=   SEQUENCE {
    interRATCellInfoIndicator           InterRATCellInfoIndicator           OPTIONAL
}

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

PagingType1 ::= SEQUENCE {
    -- User equipment IEs
        pagingRecordList                PagingRecordList                    OPTIONAL,
    -- Other IEs
        bcch-ModificationInfo           BCCH-ModificationInfo               OPTIONAL,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            pagingType1-r3-add-ext          BIT STRING      OPTIONAL,
            v590NonCriticalExtensions       SEQUENCE {
                pagingType1-v590ext             PagingType1-v590ext-IEs,
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
```

```
            }   OPTIONAL
        }   OPTIONAL
}

PagingType1-v590ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        pagingRecord2List               PagingRecord2List-r5                OPTIONAL
}

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

PagingType2 ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        pagingCause                     PagingCause,
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,
        pagingRecordTypeID              PagingRecordTypeID,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            pagingType2-r3-add-ext          BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

PhysicalChannelReconfiguration ::= CHOICE {
    r3                              SEQUENCE {
        physicalChannelReconfiguration-r3
                                        PhysicalChannelReconfiguration-r3-IEs,
        v3a0NonCriticalExtensions           SEQUENCE {
            physicalChannelReconfiguration-v3a0ext      PhysicalChannelReconfiguration-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                physicalChannelReconfiguration-r3-add-ext           BIT STRING      OPTIONAL,
                v4b0NonCriticalExtenstions          SEQUENCE {
                    physicalChannelReconfiguration-v4b0ext
                                                PhysicalChannelReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtenstions          SEQUENCE {
                        physicalChannelReconfiguration-v590ext
                                                    PhysicalChannelReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            physicalChannelReconfiguration-v6xyext
                                                        PhysicalChannelReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions                   SEQUENCE {} OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
            criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                physicalChannelReconfiguration-r4
                                                PhysicalChannelReconfiguration-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    physicalChannelReconfiguration-r4-add-ext       BIT STRING      OPTIONAL,
                    v590NonCriticalExtenstions          SEQUENCE {
                        physicalChannelReconfiguration-v590ext
                                                PhysicalChannelReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            physicalChannelReconfiguration-v6xyext
                                                        PhysicalChannelReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
```

```
                } OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    physicalChannelReconfiguration-r5
                                                    PhysicalChannelReconfiguration-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    physicalChannelReconfiguration-r5-add-ext       BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        physicalChannelReconfiguration-v6xyext
                                                        PhysicalChannelReconfiguration-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                },
                criticalExtensions              CHOICE {
                    r6                              SEQUENCE {
                        physicalChannelReconfiguration-r6
                                                        PhysicalChannelReconfiguration-r6-IEs,
                        -- Container for adding non critical extensions after freezing REL-7
                        physicalChannelReconfiguration-r6-add-ext       BIT STRING      OPTIONAL,
                        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
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID     OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

PhysicalChannelReconfiguration-v3a0ext ::= SEQUENCE {
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
    new-DSCH-RNTI               DSCH-RNTI                           OPTIONAL
}

PhysicalChannelReconfiguration-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                          SSDT-UL                         OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List         OPTIONAL
}
```

```
PhysicalChannelReconfiguration-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

PhysicalChannelReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID-r4 contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID-r4  OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

PhysicalChannelReconfiguration-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID-r5 contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID-r5  OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
```

```
}

PhysicalChannelReconfiguration-r6-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        new-E-RNTI                      E-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        plmn-Identity                   PLMN-Identity                       OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID-r6 contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID-r6  OPTIONAL,
        ul-EDCH-Information             UL-EDCH-Information-r6              OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r6             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6
}

PhysicalChannelReconfiguration-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity           PLMN-Identity                       OPTIONAL,
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode                  OPTIONAL,
        beaconPLEst                     BEACON-PL-Est                       OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      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,
        -- dummy is not used in this version of the specification and
        -- it should be ignored by the receiver.
        dummy                           RB-ActivationTimeInfoList           OPTIONAL,
        ul-CounterSynchronisationInfo   UL-CounterSynchronisationInfo       OPTIONAL,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            physicalChannelReconfigurationComplete-r3-add-ext       BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}
```

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

PhysicalChannelReconfigurationFailure ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier           OPTIONAL,
        failureCause                    FailureCauseWithProtErr,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            physicalChannelReconfigurationFailure-r3-add-ext        BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

PhysicalSharedChannelAllocation ::= CHOICE {
    r3                              SEQUENCE {
        physicalSharedChannelAllocation-r3
                                        PhysicalSharedChannelAllocation-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            physicalSharedChannelAllocation-r3-add-ext      BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {} OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        dsch-RNTI                       DSCH-RNTI                           OPTIONAL,
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                physicalSharedChannelAllocation-r4
                                                PhysicalSharedChannelAllocation-r4-IEs,
                v4d0NonCriticalExtensions       SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    physicalSharedChannelAllocation-r4-add-ext      BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        physicalSharedChannelAllocation-v6xyext
                                                        PhysicalSharedChannelAllocation-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            },
            criticalExtensions              SEQUENCE {}
        }
    }
}

PhysicalSharedChannelAllocation-r3-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        dsch-RNTI                       DSCH-RNTI                           OPTIONAL,
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    -- Physical channel IEs
        ul-TimingAdvance                UL-TimingAdvanceControl             OPTIONAL,
        pusch-CapacityAllocationInfo    PUSCH-CapacityAllocationInfo        OPTIONAL,
        pdsch-CapacityAllocationInfo    PDSCH-CapacityAllocationInfo        OPTIONAL,
        -- TABULAR: If confirmRequest is not present, the default value "No Confirm"
        -- shall be used as specified in 10.2.25.
        confirmRequest                  ENUMERATED {
                                            confirmPDSCH, confirmPUSCH }    OPTIONAL,
        trafficVolumeReportRequest      INTEGER (0..255)                    OPTIONAL,
        iscpTimeslotList                    TimeslotList                        OPTIONAL,
        requestPCCPCHRSCP                   BOOLEAN
}

PhysicalSharedChannelAllocation-r4-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- Physical channel IEs
        ul-TimingAdvance                UL-TimingAdvanceControl-r4          OPTIONAL,
        pusch-CapacityAllocationInfo    PUSCH-CapacityAllocationInfo-r4     OPTIONAL,
```

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        pdsch-CapacityAllocationInfo    PDSCH-CapacityAllocationInfo-r4     OPTIONAL,
        -- TABULAR: If confirmRequest is not present, the default value "No Confirm"
        -- shall be used as specified in 10.2.25.
        confirmRequest                  ENUMERATED {
                                            confirmPDSCH, confirmPUSCH }    OPTIONAL,
        trafficVolumeReportRequest      INTEGER (0..255)                    OPTIONAL,
        iscpTimeslotList                TimeslotList-r4                     OPTIONAL,
        requestPCCPCHRSCP               BOOLEAN
}

PhysicalSharedChannelAllocation-v6xyext-IEs ::= SEQUENCE {
    -- Physical Channel IEs
        beaconPLEst                     BEACON-PL-Est                       OPTIONAL
}

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

PUSCHCapacityRequest ::= SEQUENCE {
    -- User equipment IEs
        dsch-RNTI                       DSCH-RNTI                           OPTIONAL,
    -- Measurement IEs
        trafficVolume                   TrafficVolumeMeasuredResultsList    OPTIONAL,
        timeslotListWithISCP            TimeslotListWithISCP                OPTIONAL,
        primaryCCPCH-RSCP               PrimaryCCPCH-RSCP                   OPTIONAL,
        allocationConfirmation          CHOICE {
            pdschConfirmation               PDSCH-Identity,
            puschConfirmation               PUSCH-Identity
        }                                                                   OPTIONAL,
        protocolErrorIndicator          ProtocolErrorIndicatorWithMoreInfo,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            puschCapacityRequest-r3-add-ext     BIT STRING      OPTIONAL,
            v590NonCriticalExtensions       SEQUENCE {
                puschCapacityRequest-v590ext    PUSCHCapacityRequest-v590ext,
                nonCriticalExtensions           SEQUENCE {} OPTIONAL
            }       OPTIONAL
        }   OPTIONAL
}

PUSCHCapacityRequest-v590ext ::= SEQUENCE {
    primaryCCPCH-RSCP-delta             DeltaRSCP           OPTIONAL
}
-- ***************************************************
--
-- RADIO BEARER RECONFIGURATION
--
-- ***************************************************

RadioBearerReconfiguration ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerReconfiguration-r3   RadioBearerReconfiguration-r3-IEs,
        -- Prefix "v3ao" is used (in one instance) to keep alignment with R99
        v3aoNonCriticalExtensions       SEQUENCE {
            radioBearerReconfiguration-v3a0ext  RadioBearerReconfiguration-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                radioBearerReconfiguration-r3-add-ext       BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions           SEQUENCE {
                    radioBearerReconfiguration-v4b0ext
                                                    RadioBearerReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtensions           SEQUENCE {
                        radioBearerReconfiguration-v590ext
                                                        RadioBearerReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerReconfiguration-v6xyext
                                                            RadioBearerReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {} OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
```

```
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
		criticalExtensions				CHOICE {
			r4								SEQUENCE {
				radioBearerReconfiguration-r4	RadioBearerReconfiguration-r4-IEs,
				v4d0NonCriticalExtensions			SEQUENCE {
					-- Container for adding non critical extensions after freezing REL-5
					radioBearerReconfiguration-r4-add-ext		BIT STRING		OPTIONAL,
					v590NonCriticalExtensions			SEQUENCE {
						radioBearerReconfiguration-v590ext
												RadioBearerReconfiguration-v590ext-IEs,
						v6xyNonCriticalExtensions		SEQUENCE {
							radioBearerReconfiguration-v6xyext
													RadioBearerReconfiguration-v6xyext-IEs,
							nonCriticalExtensions			SEQUENCE {}		OPTIONAL
						}	OPTIONAL
					}	OPTIONAL
				}	OPTIONAL
			},
			criticalExtensions				CHOICE {
				r5								SEQUENCE {
					radioBearerReconfiguration-r5		RadioBearerReconfiguration-r5-IEs,
					-- Container for adding non critical extensions after freezing REL-6
					radioBearerReconfiguration-r5-add-ext		BIT STRING		OPTIONAL,
					v6xyNonCriticalExtensions		SEQUENCE {
						radioBearerReconfiguration-v6xyext
												RadioBearerReconfiguration-v6xyext-IEs,
						nonCriticalExtensions			SEQUENCE {}		OPTIONAL
					}	OPTIONAL
				},
				criticalExtensions				CHOICE {
					r6								SEQUENCE {
						radioBearerReconfiguration-r6		RadioBearerReconfiguration-r6-IEs,
						-- Container for adding non critical extensions after freezing REL-7
						radioBearerReconfiguration-r6-add-ext		BIT STRING		OPTIONAL,
						nonCriticalExtensions				SEQUENCE {}		OPTIONAL
					},
					criticalExtensions				SEQUENCE {}
				}
			}
		}
	}
}

RadioBearerReconfiguration-r3-IEs ::= SEQUENCE {
	-- User equipment IEs
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
		integrityProtectionModeInfo		IntegrityProtectionModeInfo			OPTIONAL,
		cipheringModeInfo				CipheringModeInfo					OPTIONAL,
		activationTime					ActivationTime						OPTIONAL,
		new-U-RNTI						U-RNTI								OPTIONAL,
		new-C-RNTI						C-RNTI								OPTIONAL,
		rrc-StateIndicator				RRC-StateIndicator,
		utran-DRX-CycleLengthCoeff		UTRAN-DRX-CycleLengthCoefficient	OPTIONAL,
	-- Core network IEs
		cn-InformationInfo				CN-InformationInfo					OPTIONAL,
	-- UTRAN mobility IEs
		ura-Identity					URA-Identity						OPTIONAL,
	-- Radio bearer IEs
		rab-InformationReconfigList		RAB-InformationReconfigList			OPTIONAL,
		-- NOTE: IE rb-InformationReconfigList should be optional in later versions
		-- of this message
		rb-InformationReconfigList		RB-InformationReconfigList,
		rb-InformationAffectedList		RB-InformationAffectedList			OPTIONAL,
	-- Transport channel IEs
		ul-CommonTransChInfo			UL-CommonTransChInfo				OPTIONAL,
		ul-deletedTransChInfoList		UL-DeletedTransChInfoList			OPTIONAL,
		ul-AddReconfTransChInfoList		UL-AddReconfTransChInfoList			OPTIONAL,
		modeSpecificTransChInfo			CHOICE {
			fdd								SEQUENCE {
				cpch-SetID						CPCH-SetID						OPTIONAL,
				addReconfTransChDRAC-Info		DRAC-StaticInformationList	OPTIONAL
			},
			tdd								NULL
		}																	OPTIONAL,
		dl-CommonTransChInfo			DL-CommonTransChInfo				OPTIONAL,
		dl-DeletedTransChInfoList		DL-DeletedTransChInfoList			OPTIONAL,
		dl-AddReconfTransChInfoList		DL-AddReconfTransChInfo2List		OPTIONAL,
	-- Physical channel IEs
```

```
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        -- NOTE: IE dl-InformationPerRL-List should be optional in later versions
        -- of this message
        dl-InformationPerRL-List        DL-InformationPerRL-List
}

RadioBearerReconfiguration-v3a0ext ::= SEQUENCE {
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
    new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL
}

RadioBearerReconfiguration-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                          SSDT-UL                             OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List             OPTIONAL
}

RadioBearerReconfiguration-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

RadioBearerReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList-r4       OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
```

```
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dummydl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                                NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4            OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4        OPTIONAL
}

RadioBearerReconfiguration-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo        OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                  OPTIONAL,
        activationTime                  ActivationTime                     OPTIONAL,
        new-U-RNTI                      U-RNTI                             OPTIONAL,
        new-C-RNTI                      C-RNTI                             OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                          OPTIONAL,
        new-H-RNTI                      H-RNTI                             OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient   OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                 OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                       OPTIONAL,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
            -- Radio bearer IEs
                rab-InformationReconfigList     RAB-InformationReconfigList        OPTIONAL,
                rb-InformationReconfigList      RB-InformationReconfigList-r5      OPTIONAL,
                rb-InformationAffectedList      RB-InformationAffectedList-r5      OPTIONAL,
                rb-PDCPContextRelocationList    RB-PDCPContextRelocationList       OPTIONAL,
            -- Transport channel IEs
                ul-CommonTransChInfo            UL-CommonTransChInfo-r4            OPTIONAL,
                ul-deletedTransChInfoList       UL-DeletedTransChInfoList          OPTIONAL,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList        OPTIONAL,
                modeSpecificTransChInfo         CHOICE {
                    fdd                             SEQUENCE {
                        cpch-SetID                      CPCH-SetID                 OPTIONAL,
                        addReconfTransChDRAC-Info       DRAC-StaticInformationList OPTIONAL
                    },
                    tdd                             NULL
                }                                                                  OPTIONAL,
                dl-CommonTransChInfo            DL-CommonTransChInfo-r4            OPTIONAL,
                dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5       OPTIONAL,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5     OPTIONAL
            },
            preconfiguration                SEQUENCE {
            -- All IEs that include an FDD/TDD choice are split in two IEs for this message,
            -- one for the FDD only elements and one for the TDD only elements, so that one
            -- FDD/TDD choice in this level is sufficient.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
                        defaultConfigIdentity           DefaultConfigIdentity-r5
                    }
                }
            }
        },
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                      OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power              OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5           OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dummydl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information             OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5            OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5        OPTIONAL
```

```
}

RadioBearerReconfiguration-r6-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        new-E-RNTI                      E-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        plmn-Identity                   PLMN-Identity                       OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
            -- Radio bearer IEs
                rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
                rb-InformationReconfigList      RB-InformationReconfigList-r6       OPTIONAL,
                rb-InformationAffectedList      RB-InformationAffectedList-r6       OPTIONAL,
                rb-PDCPContextRelocationList    RB-PDCPContextRelocationList        OPTIONAL,
            -- Transport channel IEs
                ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
                ul-deletedTransChInfoList       UL-DeletedTransChInfoList-r6        OPTIONAL,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList-r6      OPTIONAL,
                modeSpecificTransChInfo         CHOICE {
                    fdd                             SEQUENCE {
                        cpch-SetID                      CPCH-SetID                  OPTIONAL,
                        addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
                    },
                    tdd                             NULL
                }                                                                   OPTIONAL,
                dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
                dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL
            },
            preconfiguration                SEQUENCE {
            -- All IEs that include an FDD/TDD choice are split in two IEs for this message,
            -- one for the FDD only elements and one for the TDD only elements, so that one
            -- FDD/TDD choice in this level is sufficient.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
                        defaultConfigIdentity           DefaultConfigIdentity-r5
                    }
                }
            }
        },
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r6            OPTIONAL,
        ul-EDCH-Information             UL-EDCH-Information-r6              OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information         OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r6             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6
}

RadioBearerReconfiguration-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity           PLMN-Identity                       OPTIONAL,
```

```
	-- Physical channel IEs
		harq-Preamble-Mode				HARQ-Preamble-Mode					OPTIONAL,
		beaconPLEst						BEACON-PL-Est						OPTIONAL,
	-- MBMS IEs
		mbms-PL-ServiceRestrictInfo		MBMS-PL-ServiceRestrictInfo-r6		OPTIONAL
}

-- ***************************************************
--
-- 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
		count-C-ActivationTime			ActivationTime						OPTIONAL,
		-- dummy is not used in this version of the specification and
		-- it should be ignored by the receiver.
		dummy							RB-ActivationTimeInfoList			OPTIONAL,
		ul-CounterSynchronisationInfo	UL-CounterSynchronisationInfo		OPTIONAL,
		laterNonCriticalExtensions		SEQUENCE {
			-- Container for additional R99 extensions
			radioBearerReconfigurationComplete-r3-add-ext		BIT STRING		OPTIONAL,
			nonCriticalExtensions			SEQUENCE {} OPTIONAL
		}	OPTIONAL
}

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

RadioBearerReconfigurationFailure ::= SEQUENCE {
	-- User equipment IEs
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
		failureCause					FailureCauseWithProtErr,
	-- Radio bearer IEs
		potentiallySuccesfulBearerList	RB-IdentityList						OPTIONAL,
		laterNonCriticalExtensions		SEQUENCE {
			-- Container for additional R99 extensions
			radioBearerReconfigurationFailure-r3-add-ext		BIT STRING		OPTIONAL,
			nonCriticalExtensions			SEQUENCE {} OPTIONAL
		}	OPTIONAL
}

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

RadioBearerRelease ::= CHOICE {
	r3								SEQUENCE {
		radioBearerRelease-r3			RadioBearerRelease-r3-IEs,
		v3a0NonCriticalExtensions		SEQUENCE {
			radioBearerRelease-v3a0ext		RadioBearerRelease-v3a0ext,
		laterNonCriticalExtensions		SEQUENCE {
			-- Container for additional R99 extensions
			radioBearerRelease-r3-add-ext		BIT STRING		OPTIONAL,
				v4b0NonCriticalExtensions		SEQUENCE {
					radioBearerRelease-v4b0ext		RadioBearerRelease-v4b0ext-IEs,
					v590NonCriticalExtensions		SEQUENCE {
						radioBearerRelease-v590ext		RadioBearerRelease-v590ext-IEs,
						v6xyNonCriticalExtensions		SEQUENCE {
							radioBearerRelease-v6xyext		RadioBearerRelease-v6xyext-IEs,
							nonCriticalExtensions			SEQUENCE {} OPTIONAL
						}		OPTIONAL
					}	OPTIONAL
				}	OPTIONAL
			}	OPTIONAL
		}	OPTIONAL
	},
```

```
	later-than-r3					SEQUENCE {
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
		criticalExtensions				CHOICE {
			r4								SEQUENCE {
				radioBearerRelease-r4			RadioBearerRelease-r4-IEs,
				v4d0NonCriticalExtensions			SEQUENCE {
					-- Container for adding non critical extensions after freezing REL-5
					radioBearerRelease-r4-add-ext		BIT STRING		OPTIONAL,
					v590NonCriticalExtensions		SEQUENCE {
						radioBearerRelease-v590ext		RadioBearerRelease-v590ext-IEs,
						v6xyNonCriticalExtensions		SEQUENCE {
							radioBearerRelease-v6xyext		RadioBearerRelease-v6xyext-IEs,
							nonCriticalExtensions			SEQUENCE {}		OPTIONAL
						}	OPTIONAL
					}	OPTIONAL
				}	OPTIONAL
			},
			criticalExtensions				CHOICE {
				r5								SEQUENCE {
					radioBearerRelease-r5			RadioBearerRelease-r5-IEs,
					-- Container for adding non critical extensions after freezing REL-6
					radioBearerRelease-r5-add-ext	BIT STRING		OPTIONAL,
					v6xyNonCriticalExtensions		SEQUENCE {
						radioBearerRelease-v6xyext		RadioBearerRelease-v6xyext-IEs,
						nonCriticalExtensions			SEQUENCE {}		OPTIONAL
					}	OPTIONAL
				},
				criticalExtensions				CHOICE {
					r6								SEQUENCE {
						radioBearerRelease-r6			RadioBearerRelease-r6-IEs,
						-- Container for adding non critical extensions after freezing REL-7
						radioBearerRelease-r6-add-ext	BIT STRING		OPTIONAL,
						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,
		dl-CounterSynchronisationInfo	DL-CounterSynchronisationInfo		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 {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dummydl-PDSCH-Information           DL-PDSCH-Information        OPTIONAL
            },
            tdd                         NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

RadioBearerRelease-v3a0ext ::= SEQUENCE {
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
    new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL
}

RadioBearerRelease-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- IE ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                          SSDT-UL                         OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        --  in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List         OPTIONAL
}

RadioBearerRelease-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

RadioBearerRelease-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        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,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
```

```
				~~dl-PDSCH-Information~~dummy			DL-PDSCH-Information		OPTIONAL
			},
			tdd								NULL
		},
		dl-CommonInformation				DL-CommonInformation-r4			OPTIONAL,
		dl-InformationPerRL-List			DL-InformationPerRL-List-r4		OPTIONAL
}

RadioBearerRelease-r5-IEs ::= SEQUENCE {
	-- User equipment IEs
		integrityProtectionModeInfo		IntegrityProtectionModeInfo		OPTIONAL,
		cipheringModeInfo					CipheringModeInfo				OPTIONAL,
		activationTime						ActivationTime					OPTIONAL,
		new-U-RNTI							U-RNTI							OPTIONAL,
		new-C-RNTI							C-RNTI							OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
		new-DSCH-RNTI						DSCH-RNTI						OPTIONAL,
		new-H-RNTI							H-RNTI							OPTIONAL,
		rrc-StateIndicator					RRC-StateIndicator,
		utran-DRX-CycleLengthCoeff			UTRAN-DRX-CycleLengthCoefficient	OPTIONAL,
	-- Core network IEs
		cn-InformationInfo					CN-InformationInfo				OPTIONAL,
		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-r5	OPTIONAL,
		dl-CounterSynchronisationInfo		DL-CounterSynchronisationInfo-r5	OPTIONAL,
	-- Transport channel IEs
		ul-CommonTransChInfo				UL-CommonTransChInfo-r4			OPTIONAL,
		ul-deletedTransChInfoList			UL-DeletedTransChInfoList		OPTIONAL,
		ul-AddReconfTransChInfoList		UL-AddReconfTransChInfoList		OPTIONAL,
		modeSpecificTransChInfo			CHOICE {
			fdd								SEQUENCE {
				cpch-SetID						CPCH-SetID					OPTIONAL,
				addReconfTransChDRAC-Info		DRAC-StaticInformationList	OPTIONAL
			},
			tdd								NULL
		}																	OPTIONAL,
		dl-CommonTransChInfo				DL-CommonTransChInfo-r4			OPTIONAL,
		dl-DeletedTransChInfoList			DL-DeletedTransChInfoList-r5	OPTIONAL,
		dl-AddReconfTransChInfoList		DL-AddReconfTransChInfoList-r5	OPTIONAL,
	-- Physical channel IEs
		frequencyInfo						FrequencyInfo					OPTIONAL,
		maxAllowedUL-TX-Power				MaxAllowedUL-TX-Power			OPTIONAL,
		ul-ChannelRequirement				UL-ChannelRequirement-r5		OPTIONAL,
		modeSpecificPhysChInfo				CHOICE {
			fdd								SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
				~~dl-PDSCH-Information~~dummy			DL-PDSCH-Information		OPTIONAL
			},
			tdd								NULL
		},
		dl-HSPDSCH-Information				DL-HSPDSCH-Information			OPTIONAL,
		dl-CommonInformation				DL-CommonInformation-r5			OPTIONAL,
		dl-InformationPerRL-List			DL-InformationPerRL-List-r5		OPTIONAL
}

RadioBearerRelease-v6xyext-IEs ::= SEQUENCE {
	-- Core network IEs
		primary-plmn-Identity				PLMN-Identity					OPTIONAL,
	-- Physical channel IEs
		harq-Preamble-Mode					HARQ-Preamble-Mode				OPTIONAL,
		beaconPLEst						BEACON-PL-Est					OPTIONAL,
	-- MBMS IEs
		mbms-PL-ServiceRestrictInfo		MBMS-PL-ServiceRestrictInfo-r6	OPTIONAL,
		mbms-RB-ListReleasedToChangeTransferMode
											RB-InformationReleaseList		OPTIONAL
}

RadioBearerRelease-r6-IEs ::= SEQUENCE {
	-- User equipment IEs
		integrityProtectionModeInfo		IntegrityProtectionModeInfo		OPTIONAL,
		cipheringModeInfo					CipheringModeInfo				OPTIONAL,
```

```
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        new-E-RNTI                      E-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        plmn-Identity                   PLMN-Identity                       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-r6       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList-r6        OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList-r6      OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r6            OPTIONAL,
        ul-EDCH-Information             UL-EDCH-Information-r6              OPTIONAL,
~~      modeSpecificPhysChInfo          CHOICE {~~
~~          fdd                             SEQUENCE {~~
~~              dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL~~
~~          },~~
~~          tdd                         NULL~~
~~      },~~
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6,
        mbms-RB-ListReleasedToChangeTransferMode
                                        RB-InformationReleaseList           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
        count-C-ActivationTime          ActivationTime                      OPTIONAL,
        -- dummy is not used in this version of the specification and
        -- it should be ignored by the receiver.
        dummy                           RB-ActivationTimeInfoList           OPTIONAL,
        ul-CounterSynchronisationInfo   UL-CounterSynchronisationInfo       OPTIONAL,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            radioBearerReleaseComplete-r3-add-ext       BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
```

```
}

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

RadioBearerReleaseFailure ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        failureCause                    FailureCauseWithProtErr,
    -- Radio bearer IEs
        potentiallySuccesfulBearerList  RB-IdentityList                     OPTIONAL,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            radioBearerReleaseFailure-r3-add-ext        BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

RadioBearerSetup ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerSetup-r3             RadioBearerSetup-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            radioBearerSetup-v3a0ext        RadioBearerSetup-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                radioBearerSetup-r3-add-ext     BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    radioBearerSetup-v4b0ext        RadioBearerSetup-v4b0ext-IEs,
                    v590NonCriticalExtensions       SEQUENCE {
                        radioBearerSetup-v590ext        RadioBearerSetup-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerSetup-v6xyext        RadioBearerSetup-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {} OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                radioBearerSetup-r4             RadioBearerSetup-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    radioBearerSetup-r4-add-ext     BIT STRING      OPTIONAL,
                    v590NonCriticalExtensions       SEQUENCE {
                        radioBearerSetup-v590ext        RadioBearerSetup-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerSetup-v6xyext        RadioBearerSetup-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    radioBearerSetup-r5             RadioBearerSetup-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    radioBearerSetup-r5-add-ext     BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        radioBearerSetup-v6xyext        RadioBearerSetup-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                },
                criticalExtensions              CHOICE {
                    r6                              SEQUENCE {
                        radioBearerSetup-r6             RadioBearerSetup-r6-IEs,
```

```
                    -- Container for adding non critical extensions after freezing REL-7
                    radioBearerSetup-r6-add-ext     BIT STRING      OPTIONAL,
                    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,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       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 {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                ~~dl-PDSCH-Information~~dummy           DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

RadioBearerSetup-v3a0ext ::= SEQUENCE {
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
    new-DSCH-RNTI                   DSCH-RNTI                               OPTIONAL
}

RadioBearerSetup-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                          SSDT-UL                         OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List         OPTIONAL
}

RadioBearerSetup-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
```

```
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

RadioBearerSetup-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-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-r4         OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                ~~dl-PDSCH-Information~~dummy              DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

RadioBearerSetup-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-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-r5         OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList-r5         OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList-r5       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
```

```
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}

RadioBearerSetup-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity           PLMN-Identity                       OPTIONAL,
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode                  OPTIONAL,
        beaconPLEst                     BEACON-PL-Est                       OPTIONAL,
    -- Radio bearer IEs
        rab-InformationSetupList        RAB-InformationSetupList-r6-ext     OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6      OPTIONAL
}

RadioBearerSetup-r6-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        new-E-RNTI                      E-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,
        plmn-Identity                   PLMN-Identity                       OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList-r6         OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList-r6         OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList-r6       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList-r6        OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList-r6      OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
```

```
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r6            OPTIONAL,
        ul-EDCH-Information             UL-EDCH-Information-r6              OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r6             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6
}

-- ***************************************************
--
-- 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,
        -- dummy is not used in this version of the specification and
        -- it should be ignored by the receiver.
        dummy                           RB-ActivationTimeInfoList           OPTIONAL,
        ul-CounterSynchronisationInfo   UL-CounterSynchronisationInfo       OPTIONAL,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            radioBearerSetupComplete-r3-add-ext     BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

RadioBearerSetupFailure ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        failureCause                    FailureCauseWithProtErr,
    -- Radio bearer IEs
        potentiallySuccesfulBearerList  RB-IdentityList                     OPTIONAL,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            radioBearerSetupFailure-r3-add-ext      BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

RRCConnectionReject ::= CHOICE {
    r3                              SEQUENCE {
        rrcConnectionReject-r3          RRCConnectionReject-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            rrcConnectionReject-r3-add-ext      BIT STRING      OPTIONAL,
            v6xyNonCriticalExtensions           SEQUENCE {
                rrcConnectionReject-v6xyext     RRCConnectionReject-v6xyext-IEs,
```

```
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        initialUE-Identity              InitialUE-Identity,
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        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
}

RRCConnectionReject-v6xyext-IEs ::= SEQUENCE {
    redirectionInfo-v6xyext             GSM-TargetCellInfoList          OPTIONAL
}

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

RRCConnectionRelease ::= CHOICE {
    r3                              SEQUENCE {
        rrcConnectionRelease-r3         RRCConnectionRelease-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            rrcConnectionRelease-r3-add-ext     BIT STRING      OPTIONAL,
            v6xyNonCriticalExtensions           SEQUENCE {
                rrcConnectionRelease-v6xyext    RRCConnectionRelease-v6xyext-IEs,
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                rrcConnectionRelease-r4         RRCConnectionRelease-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-6
                    rrcConnectionRelease-r4-add-ext     BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions           SEQUENCE {
                        rrcConnectionRelease-v6xyext
                                        RRCConnectionRelease-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              SEQUENCE {}
        }
    }
}

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

RRCConnectionRelease-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        -- n-308 is conditional on the UE state.
        n-308                           N-308                               OPTIONAL,
        releaseCause                    ReleaseCause,
        rplmn-information               Rplmn-Information-r4                OPTIONAL
```

```
}

RRCConnectionRelease-v6xyext-IEs ::= SEQUENCE {
    redirectionInfo-v6xyext             RedirectionInfo-r6  OPTIONAL
}

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

RRCConnectionRelease-CCCH ::= CHOICE {
    r3                                  SEQUENCE {
        rrcConnectionRelease-CCCH-r3    RRCConnectionRelease-CCCH-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            rrcConnectionRelease-CCCH-r3-add-ext        BIT STRING      OPTIONAL,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                       SEQUENCE {
        u-RNTI                          U-RNTI,
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                rrcConnectionRelease-CCCH-r4    RRCConnectionRelease-CCCH-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    rrcConnectionRelease-CCCH-r4-add-ext        BIT STRING      OPTIONAL,
                    nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                }       OPTIONAL
            },
            criticalExtensions              SEQUENCE {
                -- TABULAR: CHOICE IdentityType (U-RNTI, GroupIdentity) is replaced with the
                -- optional element groupIdentity, since the U-RNTI is mandatory in ASN.1.
                -- In case CHOICE IdentityType is equal to GroupIdentity the value of the U-RNTI
                -- shall be ignored by a UE complying with this version of the message.
                groupIdentity       SEQUENCE ( SIZE (1 .. maxURNTI-Group) ) OF
                                            GroupReleaseInformation     OPTIONAL,
                criticalExtensions              CHOICE {
                    r5                              SEQUENCE {
                        rrcConnectionRelease-CCCH-r5    RRCConnectionRelease-CCCH-r5-IEs,
                        -- Container for adding non critical extensions after freezing REL-6
                        rrcConnectionRelease-CCCH-r5-add-ext        BIT STRING      OPTIONAL,
                        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
}

RRCConnectionRelease-CCCH-r4-IEs ::= SEQUENCE {
    -- The rest of the message is identical to the one sent on DCCH.
        rrcConnectionRelease            RRCConnectionRelease-r4-IEs
}

-- The R5 and R4 sequence of IEs are identical in this message
RRCConnectionRelease-CCCH-r5-IEs ::= RRCConnectionRelease-CCCH-r4-IEs

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

RRCConnectionReleaseComplete ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
```

```
		errorIndication					FailureCauseWithProtErr			OPTIONAL,
		laterNonCriticalExtensions		SEQUENCE {
			-- Container for additional R99 extensions
			rrcConnectionReleaseComplete-r3-add-ext		BIT STRING		OPTIONAL,
			nonCriticalExtensions			SEQUENCE {}		OPTIONAL
		}	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 is MD, but for compactness reasons no default value
		-- has been assigned to it.
		protocolErrorIndicator			ProtocolErrorIndicator,
	-- Measurement IEs
		measuredResultsOnRACH			MeasuredResultsOnRACH			OPTIONAL,
	--  Non critical Extensions
		v3d0NonCriticalExtensions			SEQUENCE {
			rRCConnectionRequest-v3d0ext	RRCConnectionRequest-v3d0ext-IEs,
		-- Reserved for future non critical extension
			v4b0NonCriticalExtensions			SEQUENCE {
				rrcConnectionRequest-v4b0ext		RRCConnectionRequest-v4b0ext-IEs,
				v590NonCriticalExtensions			SEQUENCE {
					rrcConnectionRequest-v590ext		RRCConnectionRequest-v590ext-IEs,
					-- Reserved for future non critical extension
					nonCriticalExtensions			SEQUENCE {}		OPTIONAL
				}	OPTIONAL
			}	OPTIONAL
		}	OPTIONAL
}

RRCConnectionRequest-v3d0ext-IEs ::= SEQUENCE {
	-- User equipment IEs
		uESpecificBehaviourInformation1idle		UESpecificBehaviourInformation1idle		OPTIONAL
}

RRCConnectionRequest-v4b0ext-IEs ::=	SEQUENCE {
	-- User equipment IEs
		accessStratumReleaseIndicator			AccessStratumReleaseIndicator
}

RRCConnectionRequest-v590ext-IEs ::=	SEQUENCE {
	-- User equipment IEs
		predefinedConfigStatusInfo			BOOLEAN
}

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

RRCConnectionSetup ::= CHOICE {
	r3							SEQUENCE {
		rrcConnectionSetup-r3			RRCConnectionSetup-r3-IEs,
		laterNonCriticalExtensions		SEQUENCE {
			-- Container for additional R99 extensions
			rrcConnectionSetup-r3-add-ext	BIT STRING		OPTIONAL,
			v4b0NonCriticalExtensions		SEQUENCE {
				rrcConnectionSetup-v4b0ext		RRCConnectionSetup-v4b0ext-IEs,
				v590NonCriticalExtensions		SEQUENCE {
					rrcConnectionSetup-v590ext		RRCConnectionSetup-v590ext-IEs,
					nonCriticalExtensions			SEQUENCE {}		OPTIONAL
				}	OPTIONAL
			}	OPTIONAL
		}	OPTIONAL
	},
	later-than-r3					SEQUENCE {
		initialUE-Identity				InitialUE-Identity,
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
```

```
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                rrcConnectionSetup-r4           RRCConnectionSetup-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    rrcConnectionSetup-r4-add-ext   BIT STRING      OPTIONAL,
                    v590NonCriticalExtensions       SEQUENCE {
                        rrcConnectionSetup-v590ext      RRCConnectionSetup-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            rrcConnectionSetup-v6xyext      RRCConnectionSetup-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions                  CHOICE {
                r5                              SEQUENCE {
                    rrcConnectionSetup-r5           RRCConnectionSetup-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    rrcConnectionSetup-r5-add-ext   BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        rrcConnectionSetup-v6xyext      RRCConnectionSetup-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   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,
        -- TABULAR: If capabilityUpdateRequirement is not present, the default value
        -- defined in 10.3.3.2 shall be used.
        capabilityUpdateRequirement     CapabilityUpdateRequirement         OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList2,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        -- NOTE: ul-AddReconfTransChInfoList should be optional in later versions of
        -- this message
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        -- NOTE: dl-AddReconfTransChInfoList should be optional in later versions
        -- of this message
        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
}

RRCConnectionSetup-v4b0ext-IEs ::= SEQUENCE {
        capabilityUpdateRequirement-r4-ext  CapabilityUpdateRequirement-r4-ext  OPTIONAL,
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                          SSDT-UL                             OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List             OPTIONAL
}

RRCConnectionSetup-v590ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        systemSpecificCapUpdateReq      SystemSpecificCapUpdateReq-v590ext      OPTIONAL,
    -- Physical channel IEs
```

```
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

RRCConnectionSetup-r4-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI,
        new-c-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient,
        -- TABULAR: If capabilityUpdateRequirement is not present, the default value
        -- defined in 10.3.3.2 shall be used.
        capabilityUpdateRequirement     CapabilityUpdateRequirement-r4      OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList2,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

RRCConnectionSetup-r5-IEs ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI,
        new-c-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient,
        -- TABULAR: If capabilityUpdateRequirement is not present, the default value
        -- defined in 10.3.3.2 shall be used.
        capabilityUpdateRequirement     CapabilityUpdateRequirement-r5      OPTIONAL,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                -- Radio bearer IEs
                srb-InformationSetupList        SRB-InformationSetupList2,
                -- Transport channel IEs
                ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
                dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL
            },
            preconfiguration                SEQUENCE {
                -- All IEs that include an FDD/TDD choice are split in two IEs for this message,
                -- one for the FDD only elements and one for the TDD only elements, so that one
                -- FDD/TDD choice in this level is sufficient.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
                        defaultConfigIdentity           DefaultConfigIdentity-r5
                    }
                }
            }
        },
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5bis      OPTIONAL
}

RRCConnectionSetup-v6xyext-IEs ::= SEQUENCE {
    -- Physical Channel IEs
        beaconPLEst                     BEACON-PL-Est                       OPTIONAL
}

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

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

RRCConnectionSetupComplete ::= SEQUENCE {
    -- TABULAR: Integrity protection shall not be performed on this message.
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        startList                       STARTList,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    --  Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- Non critical extensions
        v370NonCriticalExtensions           SEQUENCE {
            rrcConnectionSetupComplete-v370ext  RRCConnectionSetupComplete-v370ext,
            v380NonCriticalExtensions           SEQUENCE {
                rrcConnectionSetupComplete-v380ext  RRCConnectionSetupComplete-v380ext-IEs,
                -- Reserved for future non critical extension
                v3a0NonCriticalExtensions           SEQUENCE {
                    rrcConnectionSetupComplete-v3a0ext  RRCConnectionSetupComplete-v3a0ext-IEs,
                    laterNonCriticalExtensions          SEQUENCE {
                        -- Container for additional R99 extensions
                        rrcConnectionSetupComplete-r3-add-ext       BIT STRING
                                (CONTAINING RRCConnectionSetupComplete-r3-add-ext-IEs)  OPTIONAL,
                        v3g0NonCriticalExtensions           SEQUENCE {
                            rrcConnectionSetupComplete-v3g0ext  RRCConnectionSetupComplete-v3g0ext-IEs,
                            v4b0NonCriticalExtensions           SEQUENCE {
                                rrcConnectionSetupComplete-v4b0ext
                                                                RRCConnectionSetupComplete-v4b0ext-IEs,
                                v590NonCriticalExtensions           SEQUENCE {
                                    rrcConnectionSetupComplete-v590ext
                                                                RRCConnectionSetupComplete-v590ext-IEs,
                                    v5c0NonCriticalExtensions           SEQUENCE {
                                        rrcConnectionSetupComplete-v5c0ext
                                                                RRCConnectionSetupComplete-v5c0ext-IEs,
                                        nonCriticalExtensions               SEQUENCE {}     OPTIONAL
                                    }       OPTIONAL
                                }       OPTIONAL
                            }       OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

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

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

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

RRCConnectionSetupComplete-v3g0ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v3g0ext    UE-RadioAccessCapability-v3g0ext    OPTIONAL
}

RRCConnectionSetupComplete-r3-add-ext-IEs ::= SEQUENCE {
        rrcConnectionSetupComplete-v650ext      RRCConnectionSetupComplete-v650ext-IEs  OPTIONAL,
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

RRCConnectionSetupComplete-v4b0ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v4b0ext        UE-RadioAccessCapability-v4b0ext        OPTIONAL
}

RRCConnectionSetupComplete-v590ext-IEs ::= SEQUENCE {
    -- User equipment IEs
```

```
        ue-RadioAccessCapability-v590ext        UE-RadioAccessCapability-v590ext        OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability-v590ext        InterRAT-UE-RadioAccessCapability-v590ext   OPTIONAL
}

RRCConnectionSetupComplete-v5c0ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v5c0ext        UE-RadioAccessCapability-v5c0ext        OPTIONAL
}

RRCConnectionSetupComplete-v650ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v650ext        UE-RadioAccessCapability-v650ext
}

-- ***************************************************
--
-- RRC FAILURE INFO
--
-- ***************************************************

RRC-FailureInfo ::= CHOICE {
    r3                                          SEQUENCE {
        rRC-FailureInfo-r3                          RRC-FailureInfo-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            rrc-FailureInfo-r3-add-ext      BIT STRING      OPTIONAL,
            nonCriticalExtensions                       SEQUENCE {} OPTIONAL
        }   OPTIONAL
    },
    criticalExtensions                          SEQUENCE {}
}

RRC-FailureInfo-r3-IEs ::=      SEQUENCE {
    -- Non-RRC IEs
        failureCauseWithProtErr                         FailureCauseWithProtErr
}

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

RRCStatus ::= SEQUENCE {
    -- Other IEs
        -- TABULAR: Identification of received message is nested in
        -- ProtocolErrorMoreInformation
        protocolErrorInformation        ProtocolErrorMoreInformation,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            rrcStatus-r3-add-ext        BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

SecurityModeCommand ::= CHOICE {
    r3                              SEQUENCE {
        securityModeCommand-r3          SecurityModeCommand-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            securityModeCommand-r3-add-ext      BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

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,
    -- Other IEs
        ue-SystemSpecificSecurityCap    InterRAT-UE-SecurityCapList        OPTIONAL
}

-- ***************************************************
--
-- 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,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            securityModeComplete-r3-add-ext     BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

SecurityModeFailure ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        failureCause                    FailureCauseWithProtErr,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            securityModeFailure-r3-add-ext      BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

SignallingConnectionRelease ::= CHOICE {
    r3                              SEQUENCE {
        signallingConnectionRelease-r3  SignallingConnectionRelease-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            signallingConnectionRelease-r3-add-ext      BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

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

```
-- ***************************************************
--
-- SIGNALLING CONNECTION RELEASE INDICATION
--
-- ***************************************************

SignallingConnectionReleaseIndication ::= SEQUENCE {
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            signallingConnectionReleaseIndication-r3-add-ext        BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   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,
            spare5                          NULL,
            spare4                          NULL,
            spare3                          NULL,
            spare2                          NULL,
            spare1                          NULL
        }
}

-- ***************************************************
--
-- 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,
            spare5                          NULL,
            spare4                          NULL,
            spare3                          NULL,
            spare2                          NULL,
            spare1                          NULL
        }
}

-- ***************************************************
--
-- 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,
        -- For 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
        sib-Data-fixed                  SIB-Data-fixed
}

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,
        -- For sib-Data-fixed, 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
        sib-Data-fixed                  BIT STRING (SIZE (226))
}

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,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            systemInformationChangeIndication-r3-add-ext        BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

TransportChannelReconfiguration ::= CHOICE {
    r3                              SEQUENCE {
        transportChannelReconfiguration-r3
                                        TransportChannelReconfiguration-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            transportChannelReconfiguration-v3a0ext
                                            TransportChannelReconfiguration-v3a0ext,
            laterNonCriticalExtensions          SEQUENCE {
                -- Container for additional R99 extensions
                transportChannelReconfiguration-r3-add-ext      BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    transportChannelReconfiguration-v4b0ext
                                                    TransportChannelReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtensions       SEQUENCE {
                        transportChannelReconfiguration-v590ext
                                                        TransportChannelReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            transportChannelReconfiguration-v6xyext
                                                        TransportChannelReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
```

```
        r4                              SEQUENCE {
            transportChannelReconfiguration-r4
                                            TransportChannelReconfiguration-r4-IEs,
            v4d0NonCriticalExtensions           SEQUENCE {
                -- Container for adding non critical extensions after freezing REL-5
                transportChannelReconfiguration-r4-add-ext      BIT STRING      OPTIONAL,
                v590NonCriticalExtensions       SEQUENCE {
                    transportChannelReconfiguration-v590ext
                                                TransportChannelReconfiguration-v590ext-IEs,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        transportChannelReconfiguration-v6xyext
                                                    TransportChannelReconfiguration-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        },
        criticalExtensions              CHOICE {
            r5                              SEQUENCE {
                transportChannelReconfiguration-r5
                                                TransportChannelReconfiguration-r5-IEs,
                -- Container for adding non critical extensions after freezing REL-6
                transportChannelReconfiguration-r5-add-ext      BIT STRING      OPTIONAL,
                v6xyNonCriticalExtensions       SEQUENCE {
                    transportChannelReconfiguration-v6xyext
                                                    TransportChannelReconfiguration-v6xyext-IEs,
                    nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r6                              SEQUENCE {
                    transportChannelReconfiguration-r6
                                                    TransportChannelReconfiguration-r6-IEs,
                    -- Container for adding non critical extensions after freezing REL-7
                    transportChannelReconfiguration-r6-add-ext      BIT STRING      OPTIONAL,
                    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
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       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 {
```

```
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dummy                       DL-PDSCH-Information        OPTIONAL
            },
            tdd                         NULL
        },
        dl-CommonInformation            DL-CommonInformation            OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List        OPTIONAL
}

TransportChannelReconfiguration-v3a0ext ::= SEQUENCE {
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
    new-DSCH-RNTI                   DSCH-RNTI                       OPTIONAL
}

TransportChannelReconfiguration-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                          SSDT-UL                         OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List         OPTIONAL
}

TransportChannelReconfiguration-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

TransportChannelReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dummy                       DL-PDSCH-Information        OPTIONAL
            },
            tdd                         NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

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

```
	-- User equipment IEs
		integrityProtectionModeInfo		IntegrityProtectionModeInfo		OPTIONAL,
		cipheringModeInfo				CipheringModeInfo				OPTIONAL,
		activationTime					ActivationTime					OPTIONAL,
		new-U-RNTI						U-RNTI							OPTIONAL,
		new-C-RNTI						C-RNTI							OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
		new-DSCH-RNTI					DSCH-RNTI						OPTIONAL,
		new-H-RNTI						H-RNTI							OPTIONAL,
		rrc-StateIndicator				RRC-StateIndicator,
		utran-DRX-CycleLengthCoeff		UTRAN-DRX-CycleLengthCoefficient	OPTIONAL,
	-- Core network IEs
		cn-InformationInfo				CN-InformationInfo				OPTIONAL,
	-- UTRAN mobility IEs
		ura-Identity					URA-Identity					OPTIONAL,
	-- Radio bearer IEs
		dl-CounterSynchronisationInfo	DL-CounterSynchronisationInfo-r5	OPTIONAL,
	-- Transport channel IEs
		ul-CommonTransChInfo			UL-CommonTransChInfo-r4			OPTIONAL,
		ul-AddReconfTransChInfoList		UL-AddReconfTransChInfoList		OPTIONAL,
		modeSpecificTransChInfo			CHOICE {
			fdd								SEQUENCE {
				cpch-SetID						CPCH-SetID					OPTIONAL,
				addReconfTransChDRAC-Info		DRAC-StaticInformationList	OPTIONAL
			},
			tdd								NULL
		}																OPTIONAL,
		dl-CommonTransChInfo			DL-CommonTransChInfo-r4			OPTIONAL,
		dl-AddReconfTransChInfoList		DL-AddReconfTransChInfoList-r5	OPTIONAL,
	-- Physical channel IEs
		frequencyInfo					FrequencyInfo					OPTIONAL,
		maxAllowedUL-TX-Power			MaxAllowedUL-TX-Power			OPTIONAL,
		ul-ChannelRequirement			UL-ChannelRequirement-r5		OPTIONAL,
		modeSpecificPhysChInfo			CHOICE {
			fdd								SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
				~~dl-PDSCH-Information~~dummy		DL-PDSCH-Information		OPTIONAL
			},
			tdd							NULL
		},
		dl-HSPDSCH-Information			DL-HSPDSCH-Information			OPTIONAL,
		dl-CommonInformation			DL-CommonInformation-r5			OPTIONAL,
		dl-InformationPerRL-List		DL-InformationPerRL-List-r5		OPTIONAL
}

TransportChannelReconfiguration-v6xyext-IEs ::= SEQUENCE {
	-- Core network IEs
		primary-plmn-Identity			PLMN-Identity					OPTIONAL,
	-- Physical channel IEs
		harq-Preamble-Mode				HARQ-Preamble-Mode				OPTIONAL,
		beaconPLEst						BEACON-PL-Est					OPTIONAL,
	-- MBMS IEs
		mbms-PL-ServiceRestrictInfo		MBMS-PL-ServiceRestrictInfo-r6	OPTIONAL
}

TransportChannelReconfiguration-r6-IEs ::= SEQUENCE {
	-- User equipment IEs
		integrityProtectionModeInfo		IntegrityProtectionModeInfo		OPTIONAL,
		cipheringModeInfo				CipheringModeInfo				OPTIONAL,
		activationTime					ActivationTime					OPTIONAL,
		new-U-RNTI						U-RNTI							OPTIONAL,
		new-C-RNTI						C-RNTI							OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
		new-DSCH-RNTI					DSCH-RNTI						OPTIONAL,
		new-H-RNTI						H-RNTI							OPTIONAL,
		new-E-RNTI						E-RNTI							OPTIONAL,
		rrc-StateIndicator				RRC-StateIndicator,
		utran-DRX-CycleLengthCoeff		UTRAN-DRX-CycleLengthCoefficient	OPTIONAL,
	-- Core network IEs
		cn-InformationInfo				CN-InformationInfo				OPTIONAL,
		plmn-Identity					PLMN-Identity					OPTIONAL,
	-- UTRAN mobility IEs
		ura-Identity					URA-Identity					OPTIONAL,
	-- Radio bearer IEs
		dl-CounterSynchronisationInfo	DL-CounterSynchronisationInfo-r5	OPTIONAL,
```

```
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList-r6      OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r6            OPTIONAL,
        ul-EDCH-Information             UL-EDCH-Information-r6              OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL
            },
            tdd                         NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r6             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r6         OPTIONAL,
    -- MBMS IEs
        mbms-PL-ServiceRestrictInfo     MBMS-PL-ServiceRestrictInfo-r6
}

-- ***************************************************
--
-- 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,
        -- dummy is not used in this version of the specification and
        -- it should be ignored by the receiver.
        dummy                           RB-ActivationTimeInfoList           OPTIONAL,
        ul-CounterSynchronisationInfo   UL-CounterSynchronisationInfo       OPTIONAL,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            transportChannelReconfigurationComplete-r3-add-ext      BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

TransportChannelReconfigurationFailure ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        failureCause                    FailureCauseWithProtErr,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            transportChannelReconfigurationFailure-r3-add-ext       BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

-- *********************************************************
--
-- TRANSPORT FORMAT COMBINATION CONTROL in AM or UM RLC mode
--
-- *********************************************************
```

```
TransportFormatCombinationControl ::= SEQUENCE {
        -- rrc-TransactionIdentifier is always included in this version of the specification
        rrc-TransactionIdentifier       RRC-TransactionIdentifier           OPTIONAL,
        modeSpecificInfo                    CHOICE {
            fdd                                 NULL,
            tdd                                 SEQUENCE {
                tfcs-ID                             TFCS-Identity   OPTIONAL
            }
        },
        dpch-TFCS-InUplink                  TFC-Subset,
        activationTimeForTFCSubset          ActivationTime                      OPTIONAL,
        tfc-ControlDuration                 TFC-ControlDuration                 OPTIONAL,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            transportFormatCombinationControl-r3-add-ext        BIT STRING      OPTIONAL,
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

TransportFormatCombinationControlFailure ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        failureCause                    FailureCauseWithProtErr,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            transportFormatCombinationControlFailure-r3-add-ext     BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

UECapabilityEnquiry ::= CHOICE {
    r3                              SEQUENCE {
        ueCapabilityEnquiry-r3          UECapabilityEnquiry-r3-IEs,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            ueCapabilityEnquiry-r3-add-ext      BIT STRING      OPTIONAL,
            v4b0NonCriticalExtensions       SEQUENCE {
                ueCapabilityEnquiry-v4b0ext     UECapabilityEnquiry-v4b0ext-IEs,
                v590NonCriticalExtensions           SEQUENCE {
                    ueCapabilityEnquiry-v590ext     UECapabilityEnquiry-v590ext-IEs,
                    nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                }                           OPTIONAL
            }       OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

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

UECapabilityEnquiry-v4b0ext-IEs ::= SEQUENCE {
        capabilityUpdateRequirement-r4-ext  CapabilityUpdateRequirement-r4-ext
}

UECapabilityEnquiry-v590ext-IEs ::= SEQUENCE {
        systemSpecificCapUpdateReq      SystemSpecificCapUpdateReq-v590ext
}

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

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

UECapabilityInformation ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier           OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability            OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList
    OPTIONAL,
        v370NonCriticalExtensions           SEQUENCE {
            ueCapabilityInformation-v370ext UECapabilityInformation-v370ext,
            v380NonCriticalExtensions           SEQUENCE {
                ueCapabilityInformation-v380ext     UECapabilityInformation-v380ext-IEs,
                v3a0NonCriticalExtensions           SEQUENCE {
                    ueCapabilityInformation-v3a0ext     UECapabilityInformation-v3a0ext-IEs,
                    laterNonCriticalExtensions          SEQUENCE {
                        -- Container for additional R99 extensions
                        ueCapabilityInformation-r3-add-ext      BIT STRING
                                    (CONTAINING UECapabilityInformation-r3-add-ext-IEs) OPTIONAL,
                        -- Reserved for future non critical extension
                        v4b0NonCriticalExtensions           SEQUENCE {
                            ueCapabilityInformation-v4b0ext     UECapabilityInformation-v4b0ext,
                            v590NonCriticalExtensions           SEQUENCE {
                                ueCapabilityInformation-v590ext     UECapabilityInformation-v590ext,
                                v5c0NonCriticalExtensions           SEQUENCE {
                                    ueCapabilityInformation-v5c0ext
                                                                UECapabilityInformation-v5c0ext,
                                    nonCriticalExtensions               SEQUENCE {}     OPTIONAL
                                }       OPTIONAL
                            }       OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

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

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

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

UECapabilityInformation-r3-add-ext-IEs ::= SEQUENCE {
        ueCapabilityInformation-v650ext     UECapabilityInformation-v650ext-IEs     OPTIONAL,
        nonCriticalExtensions               SEQUENCE {}     OPTIONAL
}

UECapabilityInformation-v4b0ext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v4b0ext        UE-RadioAccessCapability-v4b0ext        OPTIONAL
}

UECapabilityInformation-v590ext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v3g0ext        UE-RadioAccessCapability-v3g0ext        OPTIONAL,
        ue-RadioAccessCapability-v590ext        UE-RadioAccessCapability-v590ext        OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability-v590ext    InterRAT-UE-RadioAccessCapability-v590ext   OPTIONAL
}

UECapabilityInformation-v5c0ext ::= SEQUENCE {
    -- User equipment IEs
        ue-RadioAccessCapability-v5c0ext        UE-RadioAccessCapability-v5c0ext        OPTIONAL
}
```

```
UECapabilityInformation-v650ext-IEs ::= SEQUENCE {
        ue-RadioAccessCapability-v650ext        UE-RadioAccessCapability-v650ext
}

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

UECapabilityInformationConfirm ::= CHOICE {
    r3                              SEQUENCE {
        ueCapabilityInformationConfirm-r3
                                        UECapabilityInformationConfirm-r3-IEs,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            ueCapabilityInformationConfirm-r3-add-ext       BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        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,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            uplinkDirectTransfer-r3-add-ext     BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

UplinkPhysicalChannelControl ::= CHOICE {
    r3                              SEQUENCE {
        uplinkPhysicalChannelControl-r3 UplinkPhysicalChannelControl-r3-IEs,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            uplinkPhysicalChannelControl-r3-add-ext     BIT STRING      OPTIONAL,
            v4b0NonCriticalExtensions       SEQUENCE {
                uplinkPysicalChannelControl-v4b0ext     UplinkPhysicalChannelControl-v4b0ext-IEs,
                -- Extension mechanism for non-release 4 information
                noncriticalExtensions           SEQUENCE {}                     OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                uplinkPhysicalChannelControl-r4 UplinkPhysicalChannelControl-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    uplinkPhysicalChannelControl-r4-add-ext     BIT STRING      OPTIONAL,
```

```
                    v6xyNonCriticalExtensions       SEQUENCE {
                        uplinkPhysicalChannelControl-v6xyext    UplinkPhysicalChannelControl-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {} OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions          CHOICE {
                r5                              SEQUENCE {
                    uplinkPhysicalChannelControl-r5 UplinkPhysicalChannelControl-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    uplinkPhysicalChannelControl-r5-add-ext     BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        uplinkPhysicalChannelControl-v6xyext    UplinkPhysicalChannelControl-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {} OPTIONAL
                    }   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,
        specialBurstScheduling          SpecialBurstScheduling              OPTIONAL,
        prach-ConstantValue             ConstantValueTdd                    OPTIONAL,
        pusch-ConstantValue             ConstantValueTdd                    OPTIONAL
}

UplinkPhysicalChannelControl-v4b0ext-IEs ::= SEQUENCE {
    -- In case of TDD, openLoopPowerControl-IPDL-TDD is included instead of IE
    -- up-IPDL-Parameters in up-OTDOA-AssistanceData
    openLoopPowerControl-IPDL-TDD   OpenLoopPowerControl-IPDL-TDD-r4    OPTIONAL
}

UplinkPhysicalChannelControl-r4-IEs ::= SEQUENCE {
    -- Physical channel IEs
        ccTrCH-PowerControlInfo         CCTrCH-PowerControlInfo-r4          OPTIONAL,
        specialBurstScheduling          SpecialBurstScheduling              OPTIONAL,
        tddOption                       CHOICE {
            tdd384                          SEQUENCE {
                timingAdvance                   UL-TimingAdvanceControl-r4  OPTIONAL,
                alpha                           Alpha                       OPTIONAL,
                prach-ConstantValue             ConstantValueTdd            OPTIONAL,
                pusch-ConstantValue             ConstantValueTdd            OPTIONAL,
                openLoopPowerControl-IPDL-TDD   OpenLoopPowerControl-IPDL-TDD-r4    OPTIONAL
            },
            tdd128                          SEQUENCE {
                ul-SynchronisationParameters    UL-SynchronisationParameters-r4 OPTIONAL
            }
        }
}

UplinkPhysicalChannelControl-r5-IEs ::= SEQUENCE {
    -- Physical channel IEs
        ccTrCH-PowerControlInfo         CCTrCH-PowerControlInfo-r5          OPTIONAL,
        specialBurstScheduling          SpecialBurstScheduling              OPTIONAL,
        tddOption                       CHOICE {
            tdd384                          SEQUENCE {
                timingAdvance                   UL-TimingAdvanceControl-r4  OPTIONAL,
                alpha                           Alpha                       OPTIONAL,
                prach-ConstantValue             ConstantValueTdd            OPTIONAL,
                pusch-ConstantValue             ConstantValueTdd            OPTIONAL,
                openLoopPowerControl-IPDL-TDD   OpenLoopPowerControl-IPDL-TDD-r4    OPTIONAL,
                hs-SICH-PowerControl            HS-SICH-Power-Control-Info-TDD384   OPTIONAL
            },
            tdd128                          SEQUENCE {
                ul-SynchronisationParameters    UL-SynchronisationParameters-r4 OPTIONAL
            }
        }
}

UplinkPhysicalChannelControl-v6xyext-IEs ::= SEQUENCE {
```

```
	-- Physical Channel IEs
		beaconPLEst						BEACON-PL-Est							OPTIONAL
}

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

URAUpdate ::= SEQUENCE {
	-- User equipment IEs
		u-RNTI							U-RNTI,
		ura-UpdateCause					URA-UpdateCause,
		protocolErrorIndicator			ProtocolErrorIndicatorWithMoreInfo,
		laterNonCriticalExtensions			SEQUENCE {
			-- Container for additional R99 extensions
			uraUpdate-r3-add-ext		BIT STRING		OPTIONAL,
			nonCriticalExtensions			SEQUENCE {}		OPTIONAL
		}	OPTIONAL
}

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

URAUpdateConfirm ::= CHOICE {
	r3								SEQUENCE {
		uraUpdateConfirm-r3				URAUpdateConfirm-r3-IEs,
		laterNonCriticalExtensions			SEQUENCE {
			-- Container for additional R99 extensions
			uraUpdateConfirm-r3-add-ext		BIT STRING		OPTIONAL,
			v6xyNonCriticalExtensions		SEQUENCE {
				uraUpdateConfirm-v6xyext			URAUpdateConfirm-v6xyext-IEs,
				nonCriticalExtensions			SEQUENCE {}		OPTIONAL
			}	OPTIONAL
		}	OPTIONAL
	},
	later-than-r3					SEQUENCE {
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
		criticalExtensions				CHOICE {
			r5							SEQUENCE {
				uraUpdateConfirm-r5				URAUpdateConfirm-r5-IEs,
				v6xyNonCriticalExtensions		SEQUENCE {
					uraUpdateConfirm-v6xyext			URAUpdateConfirm-v6xyext-IEs,
					nonCriticalExtensions			SEQUENCE {}		OPTIONAL
				}	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
		dl-CounterSynchronisationInfo	DL-CounterSynchronisationInfo		OPTIONAL
}

URAUpdateConfirm-r5-IEs ::= SEQUENCE {
	-- User equipment IEs
		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
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL
}

URAUpdateConfirm-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity               PLMN-Identity                   OPTIONAL
}

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

URAUpdateConfirm-CCCH ::= CHOICE {
    r3                              SEQUENCE {
        uraUpdateConfirm-CCCH-r3        URAUpdateConfirm-CCCH-r3-IEs,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            uraUpdateConfirm-CCCH-r3-add-ext        BIT STRING      OPTIONAL,
            v6xyNonCriticalExtensions       SEQUENCE {
                uraUpdateConfirm-v6xyext            URAUpdateConfirm-v6xyext-IEs,
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        u-RNTI                          U-RNTI,
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        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 ::= CHOICE {
    r3                              SEQUENCE {
        utranMobilityInformation-r3     UTRANMobilityInformation-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            utranMobilityInformation-v3a0ext    UTRANMobilityInformation-v3a0ext-IEs,
            laterNonCriticalExtensions          SEQUENCE {
                -- Container for additional R99 extensions
                utranMobilityInformation-r3-add-ext     BIT STRING      OPTIONAL,
                v6xyNonCriticalExtensions           SEQUENCE {
                    utranMobilityInformation-v6xyext    UtranMobilityInformation-v6xyext-IEs,
                    nonCriticalExtensions               SEQUENCE {}     OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r5                              SEQUENCE {
                utranMobilityInformation-r5     UTRANMobilityInformation-r5-IEs,
                v6xyNonCriticalExtensions       SEQUENCE {
                    utranMobilityInformation-v6xyext    UtranMobilityInformation-v6xyext-IEs,
                    nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                }   OPTIONAL
            },
```

```
            criticalExtensions              SEQUENCE {}
        }
    }
}

UTRANMobilityInformation-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,
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants           OPTIONAL,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfoFull              OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

UTRANMobilityInformation-v3a0ext-IEs ::= SEQUENCE {
    ue-ConnTimersAndConstants-v3a0ext       UE-ConnTimersAndConstants-v3a0ext
}

UTRANMobilityInformation-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants-r5        OPTIONAL,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfoFull              OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL
}

UtranMobilityInformation-v6xyext-IEs ::= SEQUENCE {
    -- Core network IEs
        primary-plmn-Identity               PLMN-Identity                       OPTIONAL
}

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

UTRANMobilityInformationConfirm ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        count-C-ActivationTime          ActivationTime                      OPTIONAL,
        -- dummy is not used in this version of the specification and
        -- it should be ignored by the receiver.
        dummy                           RB-ActivationTimeInfoList           OPTIONAL,
        ul-CounterSynchronisationInfo   UL-CounterSynchronisationInfo       OPTIONAL,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            utranMobilityInformationConfirm-r3-add-ext      BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

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

UTRANMobilityInformationFailure ::= SEQUENCE {
    -- UE information elements
```

```
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        failureCause                    FailureCauseWithProtErr,
        laterNonCriticalExtensions          SEQUENCE {
            -- Container for additional R99 extensions
            utranMobilityInformationFailure-r3-add-ext      BIT STRING      OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

-- ***************************************************
--
-- MBMS ACCESS INFORMATION
--
-- ***************************************************

MBMSAccessInformation ::= SEQUENCE {
    -- Access Information IEs
        mbms-ServiceAccessInfoList      MBMS-ServiceAccessInfoList-r6,
    -- Non critical extensions
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

-- ***************************************************
--
-- MBMS COMMON PTM RB INFORMATION
--
-- ***************************************************

MBMSCommonPTMRBInformation ::= SEQUENCE {
    -- Common PTM RB Information IEs
        mbms-CommonRBInformationList    MBMS-CommonRBInformationList-r6,
        mbms-TranspChInfoForEachTrCh    MBMS-TranspChInfoForEachTrCh-r6,
        mbms-TranspChInfoForEachCCTrCh  MBMS-TranspChInfoForEachCCTrCh-r6,
        mbms-PhyChInformationList       MBMS-PhyChInformationList-r6,
    -- Non critical extensions
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

-- ***************************************************
--
-- MBMS CURRENT CELL PTM RB INFORMATION
--
-- ***************************************************

MBMSCurrentCellPTMRBInformation ::= SEQUENCE {
    -- Current Cell PTM RB Information IEs
        mbms-CurrentCell-SCCPCHList     MBMS-CurrentCell-SCCPCHList-r6      OPTIONAL,
        mbms-SIBType5-SCCPCHList        MBMS-SIBType5-SCCPCHList-r6         OPTIONAL,
    -- Non critical extensions
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

-- ***************************************************
--
-- MBMS GENERAL INFORMATION
--
-- ***************************************************

MBMSGeneralInformation ::= SEQUENCE {
    -- MBMS General Information IEs
        mbms-PreferredFrequencyInfo     MBMS-PreferredFrequencyList-r6      OPTIONAL,
        mbms-TimersAndCouneters         MBMS-TimersAndCouneters-r6,
        michConfigurationInfo           MBMS-MICHConfigurationInfo-r6,
        cellGroupIdentity               MBMS-CellGroupIdentity-r6,
        mschDefaultConfigurationInfo    MBMS-MSCHConfigurationInfo-r6       OPTIONAL,
    -- Non critical extensions
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

-- ***************************************************
--
-- MBMS MODIFICATION REQUEST
--
-- ***************************************************

MBMSModificationRequest ::= SEQUENCE {
    -- MBMS Modification Request IEs
        mbms-PreferredFreqRequest       MBMS-PreferredFreqRequest-r6        OPTIONAL,
```

```
		rb-InformationReleaseList		RB-InformationReleaseList			OPTIONAL,
	-- Non critical extensions
		nonCriticalExtensions			SEQUENCE {}		OPTIONAL
}

-- ***************************************************
--
-- MBMS MODIFIED SERVICES INFORMATION
--
-- ***************************************************

MBMSModifiedServicesInformation ::= SEQUENCE {
	-- MBMS Modified Services Information IEs
		modifedServiceList				MBMS-ModifedServiceList-r6			OPTIONAL,
		mbms-ReacquireMCCH				BOOLEAN,
		endOfModifiedMCCHInformation	INTEGER (1..15)						OPTIONAL,
	-- Non critical extensions
		nonCriticalExtensions			SEQUENCE {}		OPTIONAL
}

-- ***************************************************
--
-- MBMS NEIGHBOURING CELL PTM RB INFORMATION
--
-- ***************************************************

MBMSNeighbouringCellPTMRBInformation ::= SEQUENCE {
	-- MBMS Neighbouring Cell PTM RB Information IEs
		neighbouringCellIdentity		INTEGER (1),	-- FFS
		neighbouringCellSCCPCHList		MBMS-NeighbouringCellSCCPCHList-r6,
	-- Non critical extensions
		nonCriticalExtensions			SEQUENCE {}		OPTIONAL
}

-- ***************************************************
--
-- MBMS SCHEDULING INFORMATION
--
-- ***************************************************

MBMSSchedulingInformation ::= SEQUENCE {
	-- MBMS Scheduling Information IEs
		serviceSchedulingInfoList		MBMS-ServiceSchedulingInfoList-r6,
	-- Non critical extensions
		nonCriticalExtensions			SEQUENCE {}		OPTIONAL
}

-- ***************************************************
--
-- MBMS UNMODIFIED SERVICES INFORMATION
--
-- ***************************************************

MBMSUnmodifiedServicesInformation ::= SEQUENCE {
	-- IEs
		unmodifiedServiceList			MBMS-UnmodifiedServiceList-r6		OPTIONAL,
	-- Non critical extensions
		nonCriticalExtensions			SEQUENCE {}		OPTIONAL
}

END
```

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,
maxDPDCH-UL,
maxDRACclasses,
maxE-DCHMACdFlow,
maxE-DCHMACdFlow-1,
maxFACHPCH,
maxFreq,
maxFreqBandsFDD,
maxFreqBandsTDD,
maxFreqBandsGSM,
maxGERAN-SI,
maxHarqRTT,
maxHProcesses,
maxHSDSCHTBIndex,
maxHSDSCHTBIndex-tdd384,
maxHSSCCHs,
maxInterSysMessages,
maxLoCHperRLC,
maxMAC-d-PDUsizes,
maxMBMS-CommonCCTrCh,
maxMBMS-CommonPhyCh,
maxMBMS-CommonRB,
maxMBMS-CommonTrCh,
maxMBMS-Freq,
maxMBMS-L1CP,
maxMBMSservCount,
maxMBMSservDedic,
maxMBMSservModif,
maxMBMSservSched,
maxMBMSservUnmodif,
maxMBMSTransmis,
maxMeasEvent,
maxMeasIntervals,
maxMeasParEvent,
maxNumCDMA2000Freqs,
maxNumFDDFreqs,
maxNumGSMFreqRanges,
maxGSMTargetCells,
maxNumTDDFreqs,
maxOtherRAT,
maxOtherRAT-16,
maxPage1,
maxPCPCH-APsig,
maxPCPCH-APsubCh,
maxPCPCH-CDsig,
maxPCPCH-CDsubCh,
maxPCPCH-SF,
maxPCPCHs,
maxPDCPAlgoType,
maxPDSCH,
maxPDSCH-TFCIgroups,
maxPRACH,
maxPRACH-FPACH,
maxPredefConfig,
maxPUSCH,
maxQueueIDs,
maxRABsetup,
maxRAT,
maxRB,
maxRBallRABs,
maxRBperTrCh,
maxRBMuxOptions,
maxRBperRAB,
maxReportedGSMCells,
maxRLCPDUsizePerLogChan,
maxSRBsetup,
maxRL,
```

```
    maxRL-1,
    maxROHC-PacketSizes-r4,
    maxROHC-Profile-r4,
    maxSCCPCH,
    maxSat,
    maxSIB,
    maxSIB-FACH,
    maxSystemCapability,
    maxTF,
    maxTF-CPCH,
    maxTFC,
    maxTFCsub,
    maxTFCI-2-Combs,
    maxTGPS,
    maxTrCH,
    maxTrChperSCCPCH,
    maxTrCHpreconf,
    maxTS,
    maxTS-1,
    maxTS-2,
    maxTS-LCR,
    maxTS-LCR-1,
    maxURA,
    maxURNTI-Group
FROM Constant-definitions;

Ansi-41-IDNNS ::=                           BIT STRING (SIZE (14))

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

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

CN-DomainInformationFull ::=        SEQUENCE {
    cn-DomainIdentity                   CN-DomainIdentity,
    cn-DomainSpecificNAS-Info           NAS-SystemInformationGSM-MAP,
    cn-DRX-CycleLengthCoeff             CN-DRX-CycleLengthCoefficient
}

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

CN-DomainInformationListFull ::=    SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        CN-DomainInformationFull

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
}

CN-InformationInfoFull ::=          SEQUENCE {
    plmn-Identity                       PLMN-Identity                       OPTIONAL,
    cn-CommonGSM-MAP-NAS-SysInfo        NAS-SystemInformationGSM-MAP        OPTIONAL,
    cn-DomainInformationListFull        CN-DomainInformationListFull        OPTIONAL
}

Digit ::=                           INTEGER (0..9)

Gsm-map-IDNNS ::=                           SEQUENCE {
    routingbasis                                    CHOICE {
        localPTMSI                                      SEQUENCE {
            routingparameter                                RoutingParameter
```

```
        },
        tMSIofsamePLMN                                  SEQUENCE {
            routingparameter                                RoutingParameter
        },
        tMSIofdifferentPLMN                             SEQUENCE {
            routingparameter                                RoutingParameter
        },
        iMSIresponsetopaging                            SEQUENCE {
            routingparameter                                RoutingParameter
        },
        iMSIcauseUEinitiatedEvent                       SEQUENCE {
            routingparameter                                RoutingParameter
        },
        iMEI                                            SEQUENCE {
            routingparameter                                RoutingParameter
        },
        spare2                                          SEQUENCE {
            routingparameter                                RoutingParameter
        },
        spare1                                          SEQUENCE {
            routingparameter                                RoutingParameter
        }
    },
    -- dummy is not used in this version of the specification and
    -- it should be ignored by the receiver.
    dummy                                       BOOLEAN
}

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

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

IMSI-GSM-MAP ::=                    SEQUENCE (SIZE (6..21)) OF
                                        Digit

IntraDomainNasNodeSelector ::=                  SEQUENCE {
    version                                         CHOICE {
        release99                                       SEQUENCE {
            cn-Type                                         CHOICE {
                gsm-Map-IDNNS                                   Gsm-map-IDNNS,
                ansi-41-IDNNS                                   Ansi-41-IDNNS
            }
        },
        later                                           SEQUENCE {
            futurecoding                                    BIT STRING (SIZE (15))
        }
    }
}

LAI ::=                             SEQUENCE {
    plmn-Identity                       PLMN-Identity,
    lac                                 BIT STRING (SIZE (16))
}

MCC ::=                             SEQUENCE (SIZE (3)) OF
                                        Digit

MNC ::=                             SEQUENCE (SIZE (2..3)) OF
                                        Digit

MultiplePLMN-List-r6 ::=            SEQUENCE {
    mibPLMN-Identity                    BOOLEAN,
    multiplePLMNs                       SEQUENCE (SIZE (1..5)) OF
                                            PLMN-IdentityWithOptionalMCC-r6
}

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-IdentityWithOptionalMCC-r6 ::= SEQUENCE {
    mcc                                 MCC                     OPTIONAL,
    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
    },
    spare                           NULL
}

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))

RoutingParameter ::=                            BIT STRING (SIZE (10))

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,
    cellReservationExtension            ReservedIndicator,
    -- NOTE: IE accessClassBarredList should not be included if the IE CellAccessRestriction
    -- is included in the IE SysInfoType4
    accessClassBarredList               AccessClassBarredList               OPTIONAL
}

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

```
    notBarred                          NULL
}

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

CellIdentity-PerRL-List ::=         SEQUENCE (SIZE (1..maxRL)) OF CellIdentity

CellSelectReselectInfoSIB-3-4 ::=   SEQUENCE {
    mappingInfo                        MappingInfo                        OPTIONAL,
    cellSelectQualityMeasure           CHOICE {
        cpich-Ec-N0                        SEQUENCE {
            -- Default value for q-HYST-2-S is q-HYST-1-S
            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
}

DomainSpecificAccessRestrictionForSharedNetwork-v6xyext ::= CHOICE {
        domainSpecificAccessRestictionList                DomainSpecificAccessRestrictionList-v6xyext,
        domainSpecificAccessRestictionParametersForAll      DomainSpecificAccessRestrictionParam-v6xyext
}

DomainSpecificAccessRestrictionList-v6xyext ::= SEQUENCE {
        domainSpecificAccessRestrictionParametersForOperator1
                                    DomainSpecificAccessRestrictionParam-v6xyext    OPTIONAL,
        domainSpecificAccessRestrictionParametersForOperator2
                                    DomainSpecificAccessRestrictionParam-v6xyext    OPTIONAL,
        domainSpecificAccessRestrictionParametersForOperator3
                                    DomainSpecificAccessRestrictionParam-v6xyext    OPTIONAL,
        domainSpecificAccessRestrictionParametersForOperator4
                                    DomainSpecificAccessRestrictionParam-v6xyext    OPTIONAL,
        domainSpecificAccessRestrictionParametersForOperator5
                                    DomainSpecificAccessRestrictionParam-v6xyext    OPTIONAL
}

DomainSpecificAccessRestrictionParam-v6xyext ::= SEQUENCE {
        cSDomainSpecificAccessRestriction       DomainSpecificAccessRestriction-v6xyext,
        pSDomainSpecificAccessRestriction       DomainSpecificAccessRestriction-v6xyext
}

DomainSpecificAccessRestriction-v6xyext ::= CHOICE {
        noRestriction       NULL,
        restriction         SEQUENCE {
            domainSpecficAccessClassBarredList      AccessClassBarredList   OPTIONAL
        }
}

MapParameter ::=                    INTEGER (0..99)

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

Mapping-LCR-r4 ::=                  SEQUENCE {
```

```
    mappingFunctionParameterList        MappingFunctionParameterList
}

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

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

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

-- In MappingInfo list, mapping for FDD and 3.84Mcps TDD is defined.
-- For 1.28Mcps TDD, Mapping-LCR-r4 is used instead.
MappingInfo ::=                     SEQUENCE (SIZE (1..maxRAT)) OF
                                        Mapping

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

Q-Hyst-S-Fine ::= INTEGER (0..40)

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

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

-- Actual value ScalingFactor = IE value * 0.1
SpeedDependentScalingFactor ::=     INTEGER (0..10)

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

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

```
-- Actual value T-Reselection-S-Fine = IE value * 0.2
T-Reselection-S-Fine ::=            INTEGER (0..31)

-- Actual value ScalingFactor = IE value * 0.25
TreselectionScalingFactor ::=       INTEGER (4..19)

-- For UpperLimit, 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)
--
-- ***************************************************

AccessStratumReleaseIndicator ::=   ENUMERATED {
                                        rel-4, rel-5, rel-6, spare13,
                                        spare12, spare11, spare10, spare9, spare8,
                                        spare7, spare6, spare5, spare4, spare3,
                                        spare2, spare1 }

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

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

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

CapabilityUpdateRequirement ::=     SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement  BOOLEAN,
    -- ue-RadioCapabilityTDDUpdateRequirement is for 3.84Mcps TDD update requirement
    ue-RadioCapabilityTDDUpdateRequirement  BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList      OPTIONAL
}

CapabilityUpdateRequirement-r4-ext ::= SEQUENCE {
    ue-RadioCapabilityUpdateRequirement-TDD128  BOOLEAN
}

CapabilityUpdateRequirement-r4 ::=  SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement-FDD  BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD384   BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD128   BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList      OPTIONAL
}

-- If the IE CellUpdateCause has the value 'cellUpdateCause-ext', the actual value is
-- defined in the IE CellUpdateCause-ext.
CellUpdateCause ::=                 ENUMERATED {
                                        cellReselection,
                                        periodicalCellUpdate,
                                        uplinkDataTransmission,
                                        utran-pagingResponse,
                                        re-enteredServiceArea,
                                        radiolinkFailure,
                                        rlc-unrecoverableError,
                                        cellUpdateCause-ext }

-- The IE CellUpdateCause-ext shall be present, if the IE CellUpdateCause has the
-- value 'cellUpdateCause-ext'.
CellUpdateCause-ext ::=             ENUMERATED {
                                        mbms-Reception,
                                        spare3, spare2, spare1 }
```

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

CipheringAlgorithm ::=              ENUMERATED {
                                        uea0, uea1 }

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

CipheringModeInfo ::=               SEQUENCE {
    -- TABULAR: The ciphering algorithm is included in the CipheringModeCommand.
    cipheringModeCommand                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,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

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

CompressedModeMeasCapability-LCR-r4 ::= SEQUENCE {
    tdd128-Measurements                     BOOLEAN                         OPTIONAL
}

CompressedModeMeasCapabFDDList ::=  SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                        CompressedModeMeasCapabFDD

CompressedModeMeasCapabFDDList2 ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                        CompressedModeMeasCapabFDD2

CompressedModeMeasCapabFDDList-ext ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                        CompressedModeMeasCapabFDD-ext

CompressedModeMeasCapabFDD ::=      SEQUENCE {
    radioFrequencyBandFDD               RadioFrequencyBandFDD   OPTIONAL,
    dl-MeasurementsFDD                  BOOLEAN,
    ul-MeasurementsFDD                  BOOLEAN
}

CompressedModeMeasCapabFDD2 ::=     SEQUENCE {
    -- UE may omit both IEs if this IE indicates the compressed mode capability within the same
    -- frequency band. Otherwise, the UE shall include either one of the following OPTIONAL IEs.
    radioFrequencyBandFDD               RadioFrequencyBandFDD   OPTIONAL,
    radioFrequencyBandFDD2              RadioFrequencyBandFDD2  OPTIONAL,
    dl-MeasurementsFDD                  BOOLEAN,
    ul-MeasurementsFDD                  BOOLEAN
}

CompressedModeMeasCapabFDD-ext ::=      SEQUENCE {
    radioFrequencyBandFDD2              RadioFrequencyBandFDD2,
    dl-MeasurementsFDD                  BOOLEAN,
    ul-MeasurementsFDD                  BOOLEAN
}

CompressedModeMeasCapabTDDList ::=  SEQUENCE (SIZE (1..maxFreqBandsTDD)) OF
                                        CompressedModeMeasCapabTDD
```

```
CompressedModeMeasCapabTDD ::=      SEQUENCE {
    radioFrequencyBandTDD               RadioFrequencyBandTDD,
    dl-MeasurementsTDD                  BOOLEAN,
    ul-MeasurementsTDD                  BOOLEAN
}

CompressedModeMeasCapabGSMList ::=  SEQUENCE (SIZE (1..maxFreqBandsGSM)) OF
                                        CompressedModeMeasCapabGSM

CompressedModeMeasCapabGSM ::=      SEQUENCE {
    radioFrequencyBandGSM               RadioFrequencyBandGSM,
    dl-MeasurementsGSM                  BOOLEAN,
    ul-MeasurementsGSM                  BOOLEAN
}

CompressedModeMeasCapabMC ::=       SEQUENCE {
    dl-MeasurementsMC                   BOOLEAN,
    ul-MeasurementsMC                   BOOLEAN
}

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

DL-CapabilityWithSimultaneousHS-DSCHConfig ::=  ENUMERATED{kbps32, kbps64, kbps128, kbps384}

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

DL-PhysChCapabilityFDD ::=          SEQUENCE {
-- The IE “maxNoDPCH-PDSCH-Codes” only gives information on the maximum number of DPCH Codes.
    maxNoDPCH-PDSCH-Codes               INTEGER (1..8),
    maxNoPhysChBitsReceived             MaxNoPhysChBitsReceived,
    supportForSF-512                    BOOLEAN,
-- The RNC should ignore this IE on reception.
    supportOfPDSCHdummy                         BOOLEAN,
    simultaneousSCCPCH-DPCH-Reception   SimultaneousSCCPCH-DPCH-Reception
}

DL-PhysChCapabilityFDD-v380ext ::=          SEQUENCE {
    supportOfDedicatedPilotsForChEstimation     SupportOfDedicatedPilotsForChEstimation     OPTIONAL
}

SupportOfDedicatedPilotsForChEstimation ::=         ENUMERATED { true }

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

DL-PhysChCapabilityTDD-LCR-r4 ::=   SEQUENCE {
    maxTS-PerSubFrame                   MaxTS-PerSubFrame-r4,
    maxPhysChPerFrame                   MaxPhysChPerSubFrame-r4,
    minimumSF                           MinimumSF-DL,
    supportOfPDSCH                      BOOLEAN,
    maxPhysChPerTS                      MaxPhysChPerTS,
    supportOf8PSK                       BOOLEAN
}

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

DRAC-SysInfo ::=                    SEQUENCE {
    transmissionProbability             TransmissionProbability,
```

```
    maximumBitRate                      MaximumBitRate
}

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

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

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

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,
                                        originatingHighPrioritySignalling,
                                        originatingLowPrioritySignalling,
                                        callRe-establishment,
                                        terminatingHighPrioritySignalling,
                                        terminatingLowPrioritySignalling,
                                        terminatingCauseUnknown,
                                        mbms-Reception,
                                        spare11,
                                        spare10,
                                        spare9,
                                        spare8,
                                        spare7,
                                        spare6,
                                        spare5,
                                        spare4,
                                        spare3,
                                        spare2,
                                        spare1 }

FailureCauseWithProtErr ::=         CHOICE {
    configurationUnsupported            NULL,
    physicalChannelFailure              NULL,
    incompatibleSimultaneousReconfiguration
                                        NULL,
    compressedModeRuntimeError          TGPSI,
    protocolError                       ProtocolErrorInformation,
    cellUpdateOccurred                  NULL,
    invalidConfiguration                NULL,
    configurationIncomplete             NULL,
    unsupportedMeasurement              NULL,
    mbmsSessionAlreadyReceivedCorrectly NULL,
    lowerPriorityMBMSService            NULL,
    spare5                              NULL,
    spare4                              NULL,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

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

GroupIdentityWithReleaseInformation ::=     SEQUENCE {
        rrc-ConnectionReleaseInformation        RRC-ConnectionReleaseInformation,
        groupReleaseInformation                 GroupReleaseInformation
    }

GroupReleaseInformation ::=         SEQUENCE {
    uRNTI-Group                         U-RNTI-Group
```

```
}

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

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

HSDSCH-physical-layer-category ::=      INTEGER (1..64)

UESpecificBehaviourInformation1idle ::= BIT STRING (SIZE (4))

UESpecificBehaviourInformation1interRAT ::= BIT STRING (SIZE (8))


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 (1..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 {
    -- TABULAR: DL integrity protection activation info and Integrity
    -- protection intialisation number have been nested inside
    -- IntegrityProtectionModeCommand.
    integrityProtectionModeCommand      IntegrityProtectionModeCommand,
    integrityProtectionAlgorithm        IntegrityProtectionAlgorithm        OPTIONAL
}

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

-- dummy is not used in this version of the specification, it should
-- not be sent and if received it should be ignored.
MaxHcContextSpace ::=                   ENUMERATED  {
                                            dummy, by1024, by2048, by4096,
                                            by8192 }

MaxHcContextSpace-r5-ext ::=            ENUMERATED  {
                                            by16384, by32768, by65536, by131072 }
```

```
MaxROHC-ContextSessions-r4 ::=      ENUMERATED  {
                                            s2, s4, s8, s12, s16, s24, s32, s48,
                                            s64, s128, s256, s512, s1024, s16384 }

MaximumAM-EntityNumberRLC-Cap ::=   ENUMERATED {
                                        dummy, am4, am5, am6,
                                        am8, am16, am30 }

-- Actual value MaximumBitRate = 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 {
                                        dummy, 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-DL ::=               ENUMERATED {
                                        tfc16, tfc32, tfc48, tfc64, tfc96,
                                        tfc128, tfc256, tfc512, tfc1024 }

MaxNumberOfTFC-UL ::=               ENUMERATED {
                                        dummy1, dummy2, tfc16, tfc32, tfc48, tfc64,
                                        tfc96, tfc128, tfc256, tfc512, tfc1024 }

-- the values 1 …4 for MaxPhysChPerFrame are not used in this version of the protocol
MaxPhysChPerFrame ::=               INTEGER (1..224)

MaxPhysChPerSubFrame-r4 ::=         INTEGER (1..96)

MaxPhysChPerTimeslot ::=            ENUMERATED {
                                        ts1, ts2 }

-- the values 1 …4 for MaxPhysChPerTS are not used in this version of the protocol
MaxPhysChPerTS ::=                  INTEGER (1..16)

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

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

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

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

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

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

MaxTS-PerSubFrame-r4 ::=            INTEGER (1..6)

-- TABULAR: MeasurementCapability contains dependencies to UE-MultiModeRAT-Capability,
```

```
-- the conditional fields have been left mandatory for now.
MeasurementCapability ::=           SEQUENCE {
    downlinkCompressedMode              CompressedModeMeasCapability,
    uplinkCompressedMode                CompressedModeMeasCapability
}

MeasurementCapabilityExt ::=        SEQUENCE{
    compressedModeMeasCapabFDDList      CompressedModeMeasCapabFDDList,
    compressedModeMeasCapabTDDList      CompressedModeMeasCapabTDDList  OPTIONAL,
    compressedModeMeasCapabGSMList      CompressedModeMeasCapabGSMList  OPTIONAL,
    compressedModeMeasCapabMC           CompressedModeMeasCapabMC       OPTIONAL
}

MeasurementCapabilityExt2 ::=       SEQUENCE{
    compressedModeMeasCapabFDDList      CompressedModeMeasCapabFDDList2,
    compressedModeMeasCapabTDDList      CompressedModeMeasCapabTDDList  OPTIONAL,
    compressedModeMeasCapabGSMList      CompressedModeMeasCapabGSMList  OPTIONAL,
    compressedModeMeasCapabMC           CompressedModeMeasCapabMC       OPTIONAL
}


MeasurementCapability-r4-ext ::=    SEQUENCE {
    downlinkCompressedMode-LCR          CompressedModeMeasCapability-LCR-r4,
    uplinkCompressedMode-LCR            CompressedModeMeasCapability-LCR-r4
}

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

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

MinimumSF-UL ::=                    ENUMERATED {
                                        sf1, sf2, sf4, sf8, dummy }

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

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

MultiModeRAT-Capability-v590ext ::= SEQUENCE {
    supportOfUTRAN-ToGERAN-NACC         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-312ext ::=                        ENUMERATED {
                                        s2, s4, s10, s20 }

N-312-r5 ::=                            ENUMERATED {
                                        s1, s2, s4, s10, s20,
                                        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-315ext ::=                        ENUMERATED {
                                        s2, s4, s10, s20 }

N-315-r5 ::=                            ENUMERATED {
                                        s1, s2, s4, s10, s20,
                                        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,
                                        terminatingHighPrioritySignalling,
                                        terminatingLowPrioritySignalling,
                                        terminatingCauseUnknown,
                                        spare
 }

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
    }
}

PagingRecord2-r5 ::=                CHOICE {
    utran-SingleUE-Identity             SEQUENCE {
        u-RNTI                              U-RNTI,
        cn-OriginatedPage-connectedMode-UE  SEQUENCE {
            pagingCause                         PagingCause,
            cn-DomainIdentity                   CN-DomainIdentity,
            pagingRecordTypeID                  PagingRecordTypeID
        }                                                                   OPTIONAL,
        rrc-ConnectionReleaseInformation        RRC-ConnectionReleaseInformation
    },
    utran-GroupIdentity                     SEQUENCE ( SIZE (1 .. maxURNTI-Group) ) OF
                                                GroupIdentityWithReleaseInformation
}

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

```
PagingRecord2List-r5 ::=            SEQUENCE (SIZE (1..maxPage1)) OF
                                        PagingRecord2-r5

PDCP-Capability ::=                 SEQUENCE {
    losslessSRNS-RelocationSupport      BOOLEAN,
    -- If present, the "maxHcContextSpace" in the IE "PDCP-Capability-r5-ext" overrides the
    -- "supported" value in this IE. The value in this IE may be used by a pre-REL-5 UTRAN.
    supportForRfc2507                   CHOICE {
        notSupported                        NULL,
        supported                           MaxHcContextSpace
    }
}

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

PDCP-Capability-r5-ext ::=          SEQUENCE {
    supportForRfc3095ContextRelocation      BOOLEAN,
    maxHcContextSpace                       MaxHcContextSpace-r5-ext    OPTIONAL
}

PDCP-Capability-r5-ext2 ::=         SEQUENCE {
    losslessDLRLC-PDUSizeChange         ENUMERATED { true }                 OPTIONAL
}

PhysicalChannelCapability ::=       SEQUENCE {
        fddPhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityFDD,
            uplinkPhysChCapability              UL-PhysChCapabilityFDD
        }                                           OPTIONAL,
        -- tddPhysChCapability describes the 3.84Mcps TDD physical channel capability
        tddPhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD
        }                                           OPTIONAL
}

-- PhysicalChannelCapability-LCR-r4 describes the 1.28Mcps TDD physical channel capability
PhysicalChannelCapability-LCR-r4 ::=        SEQUENCE {
        tdd128-PhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD-LCR-r4,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD-LCR-r4
        }                                           OPTIONAL
}

-- PhysicalChannelCapability-hspdsch-r5 describes the HS-PDSCH physical channel capability
PhysicalChannelCapability-hspdsch-r5 ::=        SEQUENCE {
    fdd-hspdsch                                     CHOICE {
        supported                                       SEQUENCE {
            hsdsch-physical-layer-category                  HSDSCH-physical-layer-category,
            supportOfDedicatedPilotsForChannelEstimationOfHSDSCH    BOOLEAN,
            -- simultaneousSCCPCH-DPCH-HSDSCH-Reception shall be true only if the
            -- IE SimultaneousSCCPCH-DPCH-Reception indicates support of simultaneous
            -- reception of S-CCPCH and DPCH
            simultaneousSCCPCH-DPCH-HSDSCH-Reception        BOOLEAN
        },
        unsupported                                     NULL
    },
    tdd384-hspdsch                                  CHOICE {
        supported                                       HSDSCH-physical-layer-category,
        unsupported                                     NULL
    },
    tdd128-hspdsch                                  CHOICE {
        supported                                       HSDSCH-physical-layer-category,
        unsupported                                     NULL
    }
}

PNBSCH-Allocation-r4 ::=                SEQUENCE {
        numberOfRepetitionsPerSFNPeriod ENUMERATED {
                                            c2, c3, c4, c5, c6, c7, c8, c9, c10,
```

```
                                            c12, c14, c16, c18, c20, c24, c28, c32,
                                            c36, c40, c48, c56, c64, c72, c80  }
}

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

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
                                                IdentificationOfReceivedMessage,
            ie-ValueNotComprehended             IdentificationOfReceivedMessage,
            conditionalInformationElementError  IdentificationOfReceivedMessage,
            messageExtensionNotComprehended     IdentificationOfReceivedMessage,
            spare1                              NULL,
            spare2                              NULL
        },
        spare                               NULL
    }
}

RadioFrequencyBandFDD ::=           ENUMERATED {
    -- fdd2100, fdd1900, fdd1800 correspond to Band I, Band II and Band III respectively
                                        fdd2100,
                                        fdd1900,
                                        fdd1800,
                                        bandVI,
                                        bandIV,
                                        bandV,
                                        bandVII,
                                        extension-indicator }

RadioFrequencyBandFDD2 ::=          ENUMERATED {
                                        bandVIII,
                                        bandIX,
                                        bandX,
                                        bandXI,
                                        bandXII,
                                        bandXIII,
                                        bandXIV,
                                        bandXV,
                                        bandXVI,
                                        bandXVII,
                                        bandXVIII,
                                        bandXIX,
                                        bandXX,
                                        bandXXI,
                                        bandXXII,
                                        extension-indicator }

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

RadioFrequencyBandTDD ::=           ENUMERATED {a, b, c, spare}

RadioFrequencyBandGSM ::=           ENUMERATED {
                                        gsm450,
```

```
                                        gsm480,
                                        gsm850,
                                        gsm900P,
                                        gsm900E,
                                        gsm1800,
                                        gsm1900,
                                        spare9, spare8, spare7, spare6, spare5,
                                        spare4, spare3, spare2, spare1}

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

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

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

RedirectionInfo-r6 ::=              CHOICE {
    frequencyInfo                       FrequencyInfo,
    interRATInfo                        InterRATInfo-r6
}

RejectionCause ::=                  ENUMERATED {
                                        congestion,
                                        unspecified }

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

RF-Capability ::=                   SEQUENCE {
        fddRF-Capability                SEQUENCE {
            ue-PowerClass                   UE-PowerClass,
            txRxFrequencySeparation         TxRxFrequencySeparation
        }                                   OPTIONAL,
        tddRF-Capability                            SEQUENCE {
            ue-PowerClass               UE-PowerClass,
            radioFrequencyTDDBandList   RadioFrequencyBandTDDList,
            chipRateCapability          ChipRateCapability
        }                                   OPTIONAL
}

RF-Capability-r4-ext ::=                SEQUENCE {
        tddRF-Capability                            SEQUENCE {
            ue-PowerClass               UE-PowerClass,
            radioFrequencyBandTDDList   RadioFrequencyBandTDDList,
            chipRateCapability          ChipRateCapability
        }                                   OPTIONAL
}

RLC-Capability ::=                  SEQUENCE {
    -- If present, the "totalRLC-AM-BufferSize" in the IE "RLC-Capability-r5-ext" overrides the
    -- corresponding value in this IE. The value in this IE may be used by a pre-REL-5 UTRAN.
    totalRLC-AM-BufferSize              TotalRLC-AM-BufferSize,
    maximumRLC-WindowSize               MaximumRLC-WindowSize,
    maximumAM-EntityNumber              MaximumAM-EntityNumberRLC-Cap
}

RLC-Capability-r5-ext ::=                   SEQUENCE {
    totalRLC-AM-BufferSize              TotalRLC-AM-BufferSize-r5-ext       OPTIONAL
}

RRC-ConnectionReleaseInformation ::=    CHOICE {
    noRelease                               NULL,
    release                                 SEQUENCE {
        releaseCause                            ReleaseCause
    }
```

```
}

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 {
                                        -- For each bit value “0” means false/ not supported
                                            spare15(0),
                                            spare14(1),
                                            spare13(2),
                                            spare12(3),
                                            spare11(4),
                                            spare10(5),
                                            spare9(6),
                                            spare8(7),
                                            spare7(8),
                                            spare6(9),
                                            spare5(10),
                                            spare4(11),
                                            spare3(12),
                                            spare2(13),
                                            uea1(14),
                                            uea0(15)
                                            }   (SIZE (16)),
    integrityProtectionAlgorithmCap     BIT STRING {
                                        -- For each bit value “0” means false/ not supported
                                            spare15(0),
                                            spare14(1),
                                            spare13(2),
                                            spare12(3),
                                            spare11(4),
                                            spare10(5),
                                            spare9(6),
                                            spare8(7),
                                            spare7(8),
                                            spare6(9),
                                            spare5(10),
                                            spare4(11),
                                            spare3(12),
                                            spare2(13),
                                            uia1(14),
                                            spare0(15)
                                            }    (SIZE (16))
}

SimultaneousSCCPCH-DPCH-Reception ::= CHOICE {
    notSupported                        NULL,
    supported                           SEQUENCE {
        maxNoSCCPCH-RL                      MaxNoSCCPCH-RL,
        -- simultaneousSCCPCH-DPCH-DPDCH-Reception is applicable only if
        -- the IE Support of PDSCH = TRUE
        -- Note: the reference to DPDCH in the element name below is incorrect (see tabular). The
        -- name is not changed, to keep it aligned with R99.
        simultaneousSCCPCH-DPCH-DPDCH-Reception     BOOLEAN
    }
}

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
}

CapabilityUpdateRequirement-r5 ::=  SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement-FDD  BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD384   BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD128   BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList-r5       OPTIONAL
}

SystemSpecificCapUpdateReq ::=      ENUMERATED {
                                        gsm }

SystemSpecificCapUpdateReq-v590ext ::=      ENUMERATED {
                                        geranIu }

SystemSpecificCapUpdateReq-r5 ::=       ENUMERATED {
                                        gsm, geranIu }

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

SystemSpecificCapUpdateReqList-r5 ::= SEQUENCE (SIZE (1..maxSystemCapability)) OF
                                        SystemSpecificCapUpdateReq-r5

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, spare }

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

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

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

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

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 }

-- The value 0 for T-312 is not used in this version of the specification
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, spare }

-- All the values are changed to "infinity" in Rel-5
T-317 ::=                           ENUMERATED {
                                        infinity0,  infinity1,  infinity2, infinity3, infinity4,
                                        infinity5, infinity6, infinity7}

T-318 ::=                           ENUMERATED {
                                        ms250, ms500, ms750, ms1000, ms1250, ms1500,
                                        ms1750, ms2000, ms3000, ms4000, ms6000, ms8000,
                                        ms10000, ms12000, ms16000 }

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

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

TMSI-DS-41 ::=                      OCTET STRING (SIZE (2..17))

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

TotalRLC-AM-BufferSize-r5-ext ::=   ENUMERATED {
                                        kb200, kb300, kb400, kb750 }

-- Actual value TransmissionProbability = 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-Group ::=                    CHOICE {
-- TABULAR: not following the tabular strictly, but this will most likely save bits
    all                                 NULL,
    u-RNTI-BitMaskIndex-b1              BIT STRING (SIZE (31)),
    u-RNTI-BitMaskIndex-b2              BIT STRING (SIZE (30)),
    u-RNTI-BitMaskIndex-b3              BIT STRING (SIZE (29)),
    u-RNTI-BitMaskIndex-b4              BIT STRING (SIZE (28)),
    u-RNTI-BitMaskIndex-b5              BIT STRING (SIZE (27)),
    u-RNTI-BitMaskIndex-b6              BIT STRING (SIZE (26)),
    u-RNTI-BitMaskIndex-b7              BIT STRING (SIZE (25)),
    u-RNTI-BitMaskIndex-b8              BIT STRING (SIZE (24)),
    u-RNTI-BitMaskIndex-b9              BIT STRING (SIZE (23)),
    u-RNTI-BitMaskIndex-b10             BIT STRING (SIZE (22)),
    u-RNTI-BitMaskIndex-b11             BIT STRING (SIZE (21)),
    u-RNTI-BitMaskIndex-b12             BIT STRING (SIZE (20)),
    u-RNTI-BitMaskIndex-b13             BIT STRING (SIZE (19)),
    u-RNTI-BitMaskIndex-b14             BIT STRING (SIZE (18)),
    u-RNTI-BitMaskIndex-b15             BIT STRING (SIZE (17)),
    u-RNTI-BitMaskIndex-b16             BIT STRING (SIZE (16)),
    u-RNTI-BitMaskIndex-b17             BIT STRING (SIZE (15)),
```

```
    u-RNTI-BitMaskIndex-b18             BIT STRING (SIZE (14)),
    u-RNTI-BitMaskIndex-b19             BIT STRING (SIZE (13)),
    u-RNTI-BitMaskIndex-b20             BIT STRING (SIZE (12)),
    u-RNTI-BitMaskIndex-b21             BIT STRING (SIZE (11)),
    u-RNTI-BitMaskIndex-b22             BIT STRING (SIZE (10)),
    u-RNTI-BitMaskIndex-b23             BIT STRING (SIZE (9)),
    u-RNTI-BitMaskIndex-b24             BIT STRING (SIZE (8)),
    u-RNTI-BitMaskIndex-b25             BIT STRING (SIZE (7)),
    u-RNTI-BitMaskIndex-b26             BIT STRING (SIZE (6)),
    u-RNTI-BitMaskIndex-b27             BIT STRING (SIZE (5)),
    u-RNTI-BitMaskIndex-b28             BIT STRING (SIZE (4)),
    u-RNTI-BitMaskIndex-b29             BIT STRING (SIZE (3)),
    u-RNTI-BitMaskIndex-b30             BIT STRING (SIZE (2)),
    u-RNTI-BitMaskIndex-b31             BIT STRING (SIZE (1))
}

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 and n-301 should not be used by the UE in this version of the specification
    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                               DEFAULT ms2000,
    n-304                               N-304                               DEFAULT 2,
    t-305                               T-305                               DEFAULT m30,
    t-307                               T-307                               DEFAULT s30,
    t-308                               T-308                               DEFAULT ms160,
    t-309                               T-309                               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 shall be ignored if n-312 in UE-ConnTimersAndConstants-v3a0ext is present, and the
    -- value of that element shall be used instead.
    n-312                               N-312                               DEFAULT s1,
    t-313                               T-313                               DEFAULT 3,
    n-313                               N-313                               DEFAULT s20,
    t-314                               T-314                               DEFAULT s12,
    t-315                               T-315                               DEFAULT s180,
    -- n-315 shall be ignored if n-315 in UE-ConnTimersAndConstants-v3a0ext is present, and the
    -- value of that element shall be used instead.
    n-315                               N-315                               DEFAULT s1,
    t-316                               T-316                               DEFAULT s30,
    t-317                               T-317                               DEFAULT infinity4
}

UE-ConnTimersAndConstants-v3a0ext ::=       SEQUENCE {
    n-312                               N-312ext                                OPTIONAL,
    n-315                               N-315ext                                OPTIONAL
}

UE-ConnTimersAndConstants-r5 ::=        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 version of the specification
    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                               DEFAULT ms2000,
    n-304                               N-304                               DEFAULT 2,
    t-305                               T-305                               DEFAULT m30,
    t-307                               T-307                               DEFAULT s30,
    t-308                               T-308                               DEFAULT ms160,
    t-309                               T-309                               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-r5                            DEFAULT s1,
    t-313                               T-313                               DEFAULT 3,
    n-313                               N-313                               DEFAULT s20,
    t-314                               T-314                               DEFAULT s12,
```

```
	t-315							T-315								DEFAULT s180,
	n-315							N-315-r5							DEFAULT s1,
	t-316							T-316								DEFAULT s30,
	t-317							T-317								DEFAULT infinity4
}

UE-IdleTimersAndConstants ::=		SEQUENCE {
	t-300							T-300,
	n-300							N-300,
	t-312							T-312,
	-- n-312 shall be ignored if n-312 in UE-IdleTimersAndConstants-v3a0ext is present, and the
	-- value of that element shall be used instead.
	n-312							N-312
}

UE-IdleTimersAndConstants-v3a0ext ::=		SEQUENCE {
	n-312							N-312ext								OPTIONAL
}

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

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

UE-PowerClassExt ::=				ENUMERATED {class1, class2, class3, class4,
										 spare4, spare3, spare2, spare1 }

UE-RadioAccessCapability ::=		SEQUENCE {
	-- UE-RadioAccessCapability is compatible with R99, although accessStratumReleaseIndicator
	-- is removed from this IE, since its encoding did not does in bits. The
	-- accessStratumReleaseIndicator is provided in the relevant REL-4 extension IEs.
	pdcp-Capability					PDCP-Capability,
	rlc-Capability					RLC-Capability,
	transportChannelCapability		TransportChannelCapability,
	rf-Capability					RF-Capability,
	physicalChannelCapability		PhysicalChannelCapability,
	ue-MultiModeRAT-Capability		UE-MultiModeRAT-Capability,
	securityCapability				SecurityCapability,
	ue-positioning-Capability		UE-Positioning-Capability,
	measurementCapability			MeasurementCapability		OPTIONAL
}

UE-RadioAccessCapabilityInfo ::=		SEQUENCE {
	ue-RadioAccessCapability			UE-RadioAccessCapability,
	ue-RadioAccessCapability-v370ext	UE-RadioAccessCapability-v370ext
}

UE-RadioAccessCapability-v370ext ::=	SEQUENCE {
	ue-RadioAccessCapabBandFDDList		UE-RadioAccessCapabBandFDDList
}

UE-RadioAccessCapability-v380ext ::=	SEQUENCE {
	ue-PositioningCapabilityExt-v380		UE-PositioningCapabilityExt-v380
}

UE-RadioAccessCapability-v3a0ext ::=	SEQUENCE {
	ue-PositioningCapabilityExt-v3a0		UE-PositioningCapabilityExt-v3a0
}

UE-RadioAccessCapability-v3g0ext ::=	SEQUENCE {
	ue-PositioningCapabilityExt-v3g0		UE-PositioningCapabilityExt-v3g0
}

UE-RadioAccessCapability-v650ext ::=	SEQUENCE {
	ue-RadioAccessCapabBandFDDList2		UE-RadioAccessCapabBandFDDList2,
	-- This IE shall be included if the UE also supports Band I-VII
	ue-RadioAccessCapabBandFDDList-ext	UE-RadioAccessCapabBandFDDList-ext	OPTIONAL
}

UE-RadioAccessCapabBandFDDList2 ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
										UE-RadioAccessCapabBandFDD2

UE-RadioAccessCapabBandFDD2 ::= SEQUENCE {
	radioFrequencyBandFDD2			RadioFrequencyBandFDD2,
	fddRF-Capability				SEQUENCE {
		ue-PowerClass					UE-PowerClassExt,
```

```
        txRxFrequencySeparation             TxRxFrequencySeparation
    }       OPTIONAL,
    measurementCapability2              MeasurementCapabilityExt2
}


UE-PositioningCapabilityExt-v380 ::=    SEQUENCE {
    rx-tx-TimeDifferenceType2Capable        BOOLEAN
}

UE-PositioningCapabilityExt-v3a0 ::=    SEQUENCE {
    validity-CellPCH-UraPCH                 ENUMERATED { true }
}

UE-PositioningCapabilityExt-v3g0 ::=    SEQUENCE {
    sfn-sfnType2Capability              ENUMERATED { true }
}

UE-RadioAccessCapabBandFDDList ::=  SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                            UE-RadioAccessCapabBandFDD

UE-RadioAccessCapabBandFDDList-ext ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                        UE-RadioAccessCapabBandFDD-ext

UE-RadioAccessCapabBandFDD ::=  SEQUENCE{
    radioFrequencyBandFDD               RadioFrequencyBandFDD,
    fddRF-Capability                    SEQUENCE {
        ue-PowerClass                       UE-PowerClassExt,
        txRxFrequencySeparation             TxRxFrequencySeparation
    }                                                               OPTIONAL,
    measurementCapability               MeasurementCapabilityExt
}

UE-RadioAccessCapabBandFDD-ext ::= SEQUENCE {
    radioFrequencyBandFDD               RadioFrequencyBandFDD,
    compressedModeMeasCapabFDDList-ext  CompressedModeMeasCapabFDDList-ext
}

UE-RadioAccessCapability-v4b0ext ::=    SEQUENCE {
    pdcp-Capability-r4-ext              PDCP-Capability-r4-ext,
    tdd-CapabilityExt                   SEQUENCE {
        rf-Capability                       RF-Capability-r4-ext,
        physicalChannelCapability-LCR       PhysicalChannelCapability-LCR-r4,
        measurementCapability-r4-ext        MeasurementCapability-r4-ext
    }                                           OPTIONAL,
    -- IE " AccessStratumReleaseIndicator" is not needed in RRC CONNECTION SETUP COMPLETE
    accessStratumReleaseIndicator               AccessStratumReleaseIndicator   OPTIONAL
}

UE-RadioAccessCapabilityComp ::= SEQUENCE {
    totalAM-RLCMemoryExceeds10kB            BOOLEAN,
    rf-CapabilityComp                       RF-CapabilityComp
}

RF-CapabilityComp ::= SEQUENCE {
    fdd                     CHOICE {
        notSupported                    NULL,
        supported                       RF-CapabBandListFDDComp
    },
    tdd384-RF-Capability    CHOICE {
        notSupported                    NULL,
        supported                       RadioFrequencyBandTDDList
    },
    tdd128-RF-Capability    CHOICE {
        notSupported                    NULL,
        supported                       RadioFrequencyBandTDDList
    }
}

-- NOTE: This IE is the frequency separation in MHz
RF-CapabBandFDDComp ::= ENUMERATED { notSupported, mhz190,
                                        mhz174-8-205-2, mhz134-8-245-2 }

RF-CapabBandListFDDComp ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
    -- the first entry corresponds with the first value of IE RadioFrequencyBandFDD,
    -- fdd2100, and so on
    RF-CapabBandFDDComp
```

```
UE-RadioAccessCapability-v590ext ::=    SEQUENCE {
    dl-CapabilityWithSimultaneousHS-DSCHConfig  DL-CapabilityWithSimultaneousHS-DSCHConfig
    OPTIONAL,
    pdcp-Capability-r5-ext              PDCP-Capability-r5-ext,
    rlc-Capability-r5-ext               RLC-Capability-r5-ext,
    physicalChannelCapability           PhysicalChannelCapability-hspdsch-r5,
    multiModeRAT-Capability-v590ext     MultiModeRAT-Capability-v590ext
}

UE-RadioAccessCapability-v5c0ext ::= SEQUENCE {
    pdcp-Capability-r5-ext2             PDCP-Capability-r5-ext2
}

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

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

UL-PhysChCapabilityTDD-LCR-r4 ::=   SEQUENCE {
    maxTS-PerSubFrame                   MaxTS-PerSubFrame-r4,
    maxPhysChPerTimeslot                MaxPhysChPerTimeslot,
    minimumSF                           MinimumSF-UL,
    supportOfPUSCH                      BOOLEAN,
    supportOf8PSK                       BOOLEAN
}

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

UE-Positioning-Capability ::=       SEQUENCE {
    standaloneLocMethodsSupported           BOOLEAN,
    ue-BasedOTDOA-Supported                 BOOLEAN,
    networkAssistedGPS-Supported            NetworkAssistedGPS-Supported,
    supportForUE-GPS-TimingOfCellFrames     BOOLEAN,
    supportForIPDL                          BOOLEAN
}

UE-SecurityInformation ::=          SEQUENCE {
    start-CS                            START-Value
}

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

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

WaitTime ::=                        INTEGER (0..15)

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

AlgorithmSpecificInfo ::=           CHOICE {
```

```
    rfc2507-Info                        RFC2507-Info
}

AlgorithmSpecificInfo-r4 ::=        CHOICE {
    rfc2507-Info                        RFC2507-Info,
    rfc3095-Info                        RFC3095-Info-r4
}

CID-InclusionInfo-r4 ::=            ENUMERATED {
                                        pdcp-Header,
                                        rfc3095-PacketFormat }

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

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

DefaultConfigIdentity ::=           INTEGER (0..10)

DefaultConfigIdentity-r4 ::=        INTEGER (0..12)

DefaultConfigIdentity-r5 ::=        INTEGER (0..13)

DefaultConfigMode ::=               ENUMERATED {
                                        fdd,
                                        tdd }

DDI ::=                             INTEGER (0..62)

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

DL-AM-RLC-Mode-r5 ::=                   SEQUENCE {
    dl-RLC-PDU-size                     OctetModeRLC-SizeInfoType1,
    inSequenceDelivery                  BOOLEAN,
    receivingWindowSize                 ReceivingWindowSize,
    dl-RLC-StatusInfo                   DL-RLC-StatusInfo
}

DL-CounterSynchronisationInfo ::=       SEQUENCE {
    rB-WithPDCP-InfoList                    RB-WithPDCP-InfoList    OPTIONAL
}

DL-CounterSynchronisationInfo-r5 ::=    SEQUENCE {
    rb-WithPDCP-InfoList                    RB-WithPDCP-InfoList            OPTIONAL,
    rb-PDCPContextRelocationList            RB-PDCPContextRelocationList    OPTIONAL
}

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

DL-LogicalChannelMapping-r5 ::=     SEQUENCE {
    -- TABULAR: DL-TransportChannelType contains TransportChannelIdentity as well.
    dl-TransportChannelType             DL-TransportChannelType-r5,
    logicalChannelIdentity              LogicalChannelIdentity              OPTIONAL
}

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

DL-LogicalChannelMappingList-r5 ::= SEQUENCE (SIZE (1..maxLoCHperRLC)) OF
                                        DL-LogicalChannelMapping-r5

DL-RFC3095-r4 ::=                   SEQUENCE {
    cid-InclusionInfo                   CID-InclusionInfo-r4,
    max-CID                             INTEGER (1..16383)                  DEFAULT 15,
    reverseDecompressionDepth           INTEGER (0..65535)                  DEFAULT 0
}

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-Mode-r5 ::=                      CHOICE {
    dl-AM-RLC-Mode-r5                   DL-AM-RLC-Mode-r5,
    dl-UM-RLC-Mode-r5                   DL-UM-RLC-Mode-r5,
    dl-TM-RLC-Mode                      DL-TM-RLC-Mode
}

DL-RLC-Mode-r6 ::=                      CHOICE {
    dl-AM-RLC-Mode-r5                   DL-AM-RLC-Mode-r5,
    dl-UM-RLC-Mode-r5                   DL-UM-RLC-Mode-r6,
    dl-TM-RLC-Mode                      DL-TM-RLC-Mode
}

DL-RLC-StatusInfo ::=                   SEQUENCE {
    timerStatusProhibit                     TimerStatusProhibit             OPTIONAL,
    -- dummy is not used in this version of the specification, it should not be sent
    -- and if received they should be ignored.
    dummy                               TimerEPC                        OPTIONAL,
    missingPDU-Indicator                    BOOLEAN,
    timerStatusPeriodic                     TimerStatusPeriodic             OPTIONAL
}

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

DL-TransportChannelType ::=             CHOICE {
    dch                                     TransportChannelIdentity,
    fach                                    NULL,
    dsch                                    TransportChannelIdentity,
-- The choice "dsch" should not be used in FDD mode, and if received the UE behaviour is unspecified
    dch-and-dsch                            TransportChannelIdentityDCHandDSCH
-- The choice "dch-and-dsch" should not be used in FDD mode, and if received the UE
-- behaviour is unspecified
}

DL-TransportChannelType-r5 ::=              CHOICE {
    dch                                     TransportChannelIdentity,
    fach                                    NULL,
-- The choice "dsch" should not be used in FDD mode, and if received the UE behaviour is unspecified
    dsch                                    TransportChannelIdentity,
-- The choice "dch-and-dsch" should not be used in FDD mode, and if received the UE
-- behaviour is unspecified
    dch-and-dsch                            TransportChannelIdentityDCHandDSCH,
    hsdsch                                  MAC-d-FlowIdentity,
    dch-and-hsdsch                          MAC-d-FlowIdentityDCHandHSDSCH
}

DL-UM-RLC-LI-size ::=                       ENUMERATED {
                                            size7, size15 }

DL-UM-RLC-Mode-r5 ::=                       SEQUENCE {
    dl-UM-RLC-LI-size                       DL-UM-RLC-LI-size
}

DL-UM-RLC-Mode-r6 ::=                   SEQUENCE {
    dl-UM-RLC-LI-size                       DL-UM-RLC-LI-size,
    dl-UM-RLC-DuplAvoid-Reord-Info          UM-RLC-DuplAvoid-Reord-Info-r6      OPTIONAL,
    dl-UM-RLC-OutOSeqDelivery-Info          UM-RLC-OutOSeqDelivery-Info-r6      OPTIONAL
}

ExpectReordering ::=                    ENUMERATED {
                                            reorderingNotExpected,
                                            reorderingExpected }

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

HeaderCompressionInfo ::=               SEQUENCE {
    algorithmSpecificInfo                   AlgorithmSpecificInfo
}
```

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

HeaderCompressionInfo-r4 ::=        SEQUENCE {
    algorithmSpecificInfo               AlgorithmSpecificInfo-r4
}

HeaderCompressionInfoList-r4 ::=    SEQUENCE (SIZE (1..maxPDCPAlgoType)) OF
                                        HeaderCompressionInfo-r4

LogicalChannelIdentity ::=          INTEGER (1..15)

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

MAC-d-HFN-initial-value ::=         BIT STRING (SIZE (24))

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,
    -- TABULAR: pdcp-PDU-Header is MD in the tabular format and it can be encoded
    -- in one bit, so the OPTIONAL is removed for compactness.
    pdcp-PDU-Header                     PDCP-PDU-Header,
    headerCompressionInfoList           HeaderCompressionInfoList           OPTIONAL
}

PDCP-Info-r4 ::=                    SEQUENCE {
    losslessSRNS-RelocSupport           LosslessSRNS-RelocSupport           OPTIONAL,
    -- TABULAR: pdcp-PDU-Header is MD in the tabular format and it can be encoded
    -- in one bit, so the OPTIONAL is removed for compactness.
    pdcp-PDU-Header                     PDCP-PDU-Header,
    headerCompressionInfoList           HeaderCompressionInfoList-r4        OPTIONAL
}

PDCP-InfoReconfig ::=               SEQUENCE {
    pdcp-Info                           PDCP-Info,
    -- dummy is not used in this version of the specification and
    -- it should be ignored.
    dummy                               INTEGER (0..65535)
}

PDCP-InfoReconfig-r4 ::=            SEQUENCE {
    pdcp-Info                           PDCP-Info-r4
}

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

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

```
Poll-PDU ::=                        ENUMERATED {
                                        pdu1, pdu2, pdu4, pdu8, pdu16,
                                        pdu32, pdu64, pdu128 }

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

PollingInfo ::=                     SEQUENCE {
    timerPollProhibit                   TimerPollProhibit                   OPTIONAL,
    timerPoll                           TimerPoll                           OPTIONAL,
    poll-PDU                            Poll-PDU                            OPTIONAL,
    poll-SDU                            Poll-SDU                            OPTIONAL,
    lastTransmissionPDU-Poll            BOOLEAN,
    lastRetransmissionPDU-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 {
    re-EstablishmentTimer               Re-EstablishmentTimer,
    srb-InformationList                 SRB-InformationSetupList,
    rb-InformationList                  RB-InformationSetupList
}

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

PredefinedConfigStatusList ::=              SEQUENCE (SIZE (maxPredefConfig)) OF
                                            PredefinedConfigStatusInfo

PredefinedConfigStatusInfo ::=      CHOICE {
    storedWithValueTagSameAsPrevius     NULL,
    other                               CHOICE {
        notStored                           NULL,
        storedWithDifferentValueTag         PredefinedConfigValueTag
    }
}

PredefinedConfigStatusListComp ::= SEQUENCE {
    setsWithDifferentValueTag           PredefinedConfigSetsWithDifferentValueTag,
    otherEntries                        PredefinedConfigStatusListVarSz             OPTIONAL
}

PredefinedConfigSetsWithDifferentValueTag ::= SEQUENCE (SIZE (1..2)) OF
                                                PredefinedConfigSetWithDifferentValueTag

PredefinedConfigSetWithDifferentValueTag ::= SEQUENCE {
    startPosition                               INTEGER (0..10)     DEFAULT 0,
    -- numberOfEntries                          INTEGER (6..16),
    -- numberOfEntries is covered by the size of the list in IE PredefinedConfigValueTagList
    valueTagList                                PredefinedConfigValueTagList
}


PredefinedConfigValueTagList ::=        SEQUENCE (SIZE (1..maxPredefConfig)) OF
                                            PredefinedConfigValueTag

PredefinedConfigStatusListVarSz ::=     SEQUENCE (SIZE (1..maxPredefConfig)) OF
                                            PredefinedConfigStatusInfo

RAB-Info ::=                        SEQUENCE {
    rab-Identity                        RAB-Identity,
    cn-DomainIdentity                   CN-DomainIdentity,
```

```
    nas-Synchronisation-Indicator       NAS-Synchronisation-Indicator   OPTIONAL,
    re-EstablishmentTimer               Re-EstablishmentTimer
}

RAB-Info-r6-ext ::=                 SEQUENCE {
    mbms-SessionIdentity                MBMS-SessionIdentity                OPTIONAL
}

RAB-Info-r6 ::=                     SEQUENCE {
    rab-Identity                        RAB-Identity,
    mbms-SessionIdentity                MBMS-SessionIdentity                OPTIONAL,
    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-InformationSetup-r4 ::=         SEQUENCE {
    rab-Info                            RAB-Info,
    rb-InformationSetupList             RB-InformationSetupList-r4
}

RAB-InformationSetup-r5 ::=         SEQUENCE {
    rab-Info                            RAB-Info,
    rb-InformationSetupList             RB-InformationSetupList-r5
}

RAB-InformationSetup-r6-ext ::=     SEQUENCE {
    rab-Info-r6-ext                     RAB-Info-r6-ext
}

RAB-InformationSetup-r6 ::=         SEQUENCE {
    rab-Info                            RAB-Info-r6,
    rb-InformationSetupList             RB-InformationSetupList-r6
}

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

RAB-InformationSetupList-r4 ::=     SEQUENCE (SIZE (1..maxRABsetup)) OF
                                        RAB-InformationSetup-r4

RAB-InformationSetupList-r5 ::=     SEQUENCE (SIZE (1..maxRABsetup)) OF
                                        RAB-InformationSetup-r5

RAB-InformationSetupList-r6 ::=     SEQUENCE (SIZE (1..maxRABsetup)) OF
                                        RAB-InformationSetup-r6

-- The IE 'RAB-InformationSetupList-r6-ext' provides elements of extension information, which
-- are added to the corresponding elements of the IE 'RAB-InformationSetupList/-r4/-r5'.
RAB-InformationSetupList-r6-ext ::= SEQUENCE (SIZE (1..maxRABsetup)) OF
                                        RAB-InformationSetup-r6-ext

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-InformationAffected-r5 ::=       SEQUENCE {
    rb-Identity                         RB-Identity,
    rb-MappingInfo                      RB-MappingInfo-r5
}

RB-InformationAffected-r6 ::=       SEQUENCE {
    rb-Identity                         RB-Identity,
    rb-MappingInfo                      RB-MappingInfo-r6
}

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

RB-InformationAffectedList-r5 ::=   SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationAffected-r5

RB-InformationAffectedList-r6 ::=   SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationAffected-r6

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

RB-InformationReconfig-r4 ::=       SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-InfoReconfig-r4                OPTIONAL,
    pdcp-SN-Info                        PDCP-SN-Info                        OPTIONAL,
    rlc-Info                            RLC-Info                            OPTIONAL,
    rb-MappingInfo                      RB-MappingInfo                      OPTIONAL,
    rb-StopContinue                     RB-StopContinue                     OPTIONAL
}

RB-InformationReconfig-r5 ::=       SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-InfoReconfig-r4                OPTIONAL,
    pdcp-SN-Info                        PDCP-SN-Info                        OPTIONAL,
    rlc-Info                            RLC-Info-r5                         OPTIONAL,
    rb-MappingInfo                      RB-MappingInfo-r5                   OPTIONAL,
    rb-StopContinue                     RB-StopContinue                     OPTIONAL
}
```

```
RB-InformationReconfig-r6 ::=       SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-InfoReconfig-r4                OPTIONAL,
    pdcp-SN-Info                        PDCP-SN-Info                        OPTIONAL,
    rlc-Info                            RLC-Info-r5                         OPTIONAL,
    rb-MappingInfo                      RB-MappingInfo-r6                   OPTIONAL,
    rb-StopContinue                     RB-StopContinue                     OPTIONAL
}

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

RB-InformationReconfigList-r4 ::=   SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationReconfig-r4

RB-InformationReconfigList-r5 ::=   SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationReconfig-r5

RB-InformationReconfigList-r6 ::=   SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationReconfig-r6

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

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

RB-InformationSetup-r4 ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-Info-r4                        OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice,
    rb-MappingInfo                      RB-MappingInfo
}

RB-InformationSetup-r5 ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-Info-r4                        OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice-r5,
    rb-MappingInfo                      RB-MappingInfo-r5
}

RB-InformationSetup-r6 ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-Info-r4                        OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice-r5,
    rb-MappingInfo                      RB-MappingInfo-r6
}

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

RB-InformationSetupList-r4 ::=      SEQUENCE (SIZE (1..maxRBperRAB)) OF
                                        RB-InformationSetup-r4

RB-InformationSetupList-r5 ::=      SEQUENCE (SIZE (1..maxRBperRAB)) OF
                                        RB-InformationSetup-r5

RB-InformationSetupList-r6 ::=      SEQUENCE (SIZE (1..maxRBperRAB)) OF
                                        RB-InformationSetup-r6

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

RB-MappingInfo-r5 ::=                   SEQUENCE (SIZE (1..maxRBMuxOptions)) OF
                                        RB-MappingOption-r5

RB-MappingInfo-r6 ::=                   SEQUENCE (SIZE (1..maxRBMuxOptions)) OF
                                        RB-MappingOption-r6

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

```
RB-MappingOption-r5 ::=                SEQUENCE {
    ul-LogicalChannelMappings          UL-LogicalChannelMappings           OPTIONAL,
    dl-LogicalChannelMappingList       DL-LogicalChannelMappingList-r5     OPTIONAL
}

RB-MappingOption-r6 ::=                SEQUENCE {
    ul-LogicalChannelMappings          UL-LogicalChannelMappings           OPTIONAL,
    dl-LogicalChannelMappingList       DL-LogicalChannelMappingList-r5     OPTIONAL
}

RB-PDCPContextRelocation ::=           SEQUENCE {
    rb-Identity                            RB-Identity,
    dl-RFC3095-Context-Relocation          BOOLEAN,
    ul-RFC3095-Context-Relocation          BOOLEAN
}

RB-PDCPContextRelocationList ::=           SEQUENCE (SIZE (1..maxRBallRABs)) OF
                                           RB-PDCPContextRelocation

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,
    -- TABULAR: expectReordering has only two possible values, so using Optional or Default
    -- would be wasteful
    expectReordering                   ExpectReordering
}

RFC3095-Info-r4 ::=            SEQUENCE {
    rohcProfileList                    ROHC-ProfileList-r4,
    ul-RFC3095                         UL-RFC3095-r4                       OPTIONAL,
    dl-RFC3095                         DL-RFC3095-r4                       OPTIONAL
}

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

RLC-Info-r5 ::=                    SEQUENCE {
    ul-RLC-Mode                        UL-RLC-Mode                         OPTIONAL,
    dl-RLC-Mode-r5                     DL-RLC-Mode-r5                      OPTIONAL,
    rlc-OneSidedReEst                  BOOLEAN
}

RLC-Info-r6 ::=                    SEQUENCE {
    ul-RLC-Mode                        UL-RLC-Mode                         OPTIONAL,
    dl-RLC-Mode-r5                     DL-RLC-Mode-r6                      OPTIONAL,
    rlc-OneSidedReEst                  BOOLEAN
}

RLC-InfoChoice ::=                 CHOICE {
    rlc-Info                           RLC-Info,
    same-as-RB                         RB-Identity
}

RLC-InfoChoice-r5 ::=                  CHOICE {
    rlc-Info-r5                        RLC-Info-r5,
    same-as-RB                         RB-Identity
```

```
}

RLC-PDU-Size ::=                    OctetModeRLC-SizeInfoType1

RLC-PDU-SizeList ::=                SEQUENCE (SIZE (1..maxRLCPDUsizePerLogChan)) OF
                                        RLC-PDU-Size

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

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

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

ROHC-Profile-r4 ::=                 INTEGER (1..3)

ROHC-ProfileList-r4 ::=             SEQUENCE (SIZE  (1..maxROHC-Profile-r4))    OF
                                        ROHC-Profile-r4

ROHC-PacketSize-r4 ::=              INTEGER (2..1500)

ROHC-PacketSizeList-r4 ::=          SEQUENCE (SIZE  (1..maxROHC-PacketSizes-r4))    OF
                                        ROHC-PacketSize-r4

SRB-InformationSetup ::=            SEQUENCE {
    -- The default value for rb-Identity is the smallest value not used yet.
    rb-Identity                         RB-Identity                         OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice,
    rb-MappingInfo                      RB-MappingInfo
}

SRB-InformationSetup-r5 ::=         SEQUENCE {
    -- The default value for rb-Identity is the smallest value not used yet.
    rb-Identity                         RB-Identity                         OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice-r5,
    rb-MappingInfo                      RB-MappingInfo-r5
}

SRB-InformationSetup-r6 ::=         SEQUENCE {
    -- The default value for rb-Identity is the smallest value not used yet.
    rb-Identity                         RB-Identity                         OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice-r5,
    rb-MappingInfo                      RB-MappingInfo-r6
}

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

SRB-InformationSetupList-r5 ::=     SEQUENCE (SIZE (1..maxSRBsetup)) OF
                                        SRB-InformationSetup-r5

SRB-InformationSetupList-r6 ::=     SEQUENCE (SIZE (1..maxSRBsetup)) OF
                                        SRB-InformationSetup-r6

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

TimerDAR-r6 ::=                     ENUMERATED {
                                        ms40, ms80, ms120, ms160, ms240, ms320, ms480, ms640,
                                        ms960, ms1280, ms1920, ms2560, ms3840, ms5120 }

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 }

TimerOSD-r6 ::=                     ENUMERATED {
                                        ms40, ms80, ms120, ms160, ms240, ms320, ms480, ms640,
                                        ms960, ms1280, ms1920, ms2560, ms3840, ms5120 }

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                         OPTIONAL
}

UL-CounterSynchronisationInfo ::=       SEQUENCE {
    rB-WithPDCP-InfoList                    RB-WithPDCP-InfoList    OPTIONAL,
    startList                               STARTList
}

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-LogicalChannelMapping-r6 ::=     SEQUENCE {
    ul-TrCH-Type                        CHOICE {
        dch-rach-cpch-usch                  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
            }
        },
        e-dch                               SEQUENCE {
            e-DCH-MAC-d-FlowIdentity            E-DCH-MAC-d-FlowIdentity,
            ddi                                 DDI,
            rlc-PDU-SizeList                    RLC-PDU-SizeList
        }
    },
    mac-LogicalChannelPriority          MAC-LogicalChannelPriority
}

UL-LogicalChannelMappingList ::=    SEQUENCE {
    -- rlc-LogicalChannelMappingIndicator shall be set to TRUE in this version
    -- of the specification
    rlc-LogicalChannelMappingIndicator  BOOLEAN,
    ul-LogicalChannelMapping            SEQUENCE (SIZE (maxLoCHperRLC)) OF
                                        UL-LogicalChannelMapping
}

UL-LogicalChannelMappingList-r6 ::= SEQUENCE {
    -- rlc-LogicalChannelMappingIndicator shall be set to TRUE in this version
    -- of the specification
    rlc-LogicalChannelMappingIndicator  BOOLEAN,
    ul-LogicalChannelMapping            SEQUENCE (SIZE (maxLoCHperRLC)) OF
                                            UL-LogicalChannelMapping-r6
}

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

UL-LogicalChannelMappings-r6 ::=    CHOICE {
    oneLogicalChannel                   UL-LogicalChannelMapping-r6,
    twoLogicalChannels                  UL-LogicalChannelMappingList-r6
}

UL-RFC3095-r4 ::=                   SEQUENCE {
    cid-InclusionInfo                   CID-InclusionInfo-r4,
    max-CID                             INTEGER (1..16383)                  DEFAULT 15,
    rohcPacketSizeList                  ROHC-PacketSizeList-r4
}

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                                TransportChannelIdentity
}

UM-RLC-DuplAvoid-Reord-Info-r6 ::=  SEQUENCE {
    timer-DAR                           TimerDAR-r6,
    widowSize-DAR                       WindowSizeDAR-r6
}

UM-RLC-OutOSeqDelivery-Info-r6 ::=  SEQUENCE {
    timer-OSD                           TimerOSD-r6                         OPTIONAL,
    windowSize-OSD                      WindowSizeOSD-r6
}

WindowSizeDAR-r6 ::=                ENUMERATED {
                                        ws4, ws8, ws16, ws32, ws40, ws48,
                                        ws56, ws64, spare1 }

WindowSizeOSD-r6 ::=                ENUMERATED {
                                        ws8, ws16, ws32, ws40, ws48,
                                        ws56, ws64, spare1 }

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

AddOrReconfMAC-dFlow ::=            SEQUENCE {
    mac-hs-AddReconfQueue-List              MAC-hs-AddReconfQueue-List  OPTIONAL,
    mac-hs-DelQueue-List                    MAC-hs-DelQueue-List    OPTIONAL
}

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

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

BitModeRLC-SizeInfo ::=             CHOICE {
    sizeType1                           INTEGER (0..127),
    -- Actual value sizeType2 = (part1 * 8) + 128 + part2
    sizeType2                           SEQUENCE {
        part1                               INTEGER (0..15),
        part2                               INTEGER (1..7)                  OPTIONAL
    },
    -- Actual value sizeType3 = (part1 * 16) + 256 + part2
    sizeType3                           SEQUENCE {
        part1                               INTEGER (0..47),
        part2                               INTEGER (1..15)                 OPTIONAL
    },
    -- Actual value sizeType4 = (part1 * 64) + 1024 + part2
    sizeType4                           SEQUENCE {
        part1                               INTEGER (0..62),
        part2                               INTEGER (1..63)                 OPTIONAL
    }
}

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

```
ChannelCodingType ::=               CHOICE {
    -- noCoding is only used for TDD in this version of the specification,
    -- otherwise it should be ignored
    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
}

CommonTransChTFS-LCR ::=                SEQUENCE {
    tti                                 CHOICE {
        tti5                                CommonDynamicTF-InfoList,
        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
}

-- The maximum allowed size of DL-AddReconfTransChInfo2List sequence is 16
DL-AddReconfTransChInfo2List ::=    SEQUENCE (SIZE (1..maxTrCHpreconf)) OF
                                        DL-AddReconfTransChInformation2

-- The maximum allowed size of DL-AddReconfTransChInfoList sequence is 16
DL-AddReconfTransChInfoList ::=     SEQUENCE (SIZE (1..maxTrCHpreconf)) OF
                                        DL-AddReconfTransChInformation

-- The maximum allowed size of DL-AddReconfTransChInfoList-r4 sequence is 16
DL-AddReconfTransChInfoList-r4 ::=  SEQUENCE (SIZE (1..maxTrCHpreconf)) OF
                                        DL-AddReconfTransChInformation-r4

-- The maximum allowed size of DL-AddReconfTransChInfoList-r5 sequence is 16
DL-AddReconfTransChInfoList-r5 ::=  SEQUENCE (SIZE (1..maxTrCHpreconf)) OF
                                        DL-AddReconfTransChInformation-r5

-- 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-TransportChannelType             DL-TrCH-Type,
    dl-transportChannelIdentity         TransportChannelIdentity,
    tfs-SignallingMode                  CHOICE {
        explicit-config                     TransportFormatSet,
        sameAsULTrCH                        UL-TransportChannelIdentity
    },
    dch-QualityTarget                   QualityTarget                       OPTIONAL,
    -- dummy is not used in this version of the specification, it should
    -- not be sent and if received it should be ignored.
    dummy                               TM-SignallingInfo                   OPTIONAL
}

DL-AddReconfTransChInformation-r4 ::=   SEQUENCE {
    dl-TransportChannelType             DL-TrCH-Type,
    dl-transportChannelIdentity         TransportChannelIdentity,
    tfs-SignallingMode                  CHOICE {
        explicit-config                     TransportFormatSet,
        sameAsULTrCH                        UL-TransportChannelIdentity
    },
    dch-QualityTarget                   QualityTarget                       OPTIONAL
}

DL-AddReconfTransChInformation-r5 ::=   SEQUENCE {
    dl-TransportChannelType             DL-TrCH-TypeId1-r5,
    tfs-SignallingMode                  CHOICE {
        explicit-config                     TransportFormatSet,
        sameAsULTrCH                        UL-TransportChannelIdentity,
```

```
        hsdsch                              HSDSCH-Info
    },
    dch-QualityTarget                   QualityTarget                       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 {
    dl-TransportChannelType             DL-TrCH-Type,
    transportChannelIdentity            TransportChannelIdentity,
    tfs-SignallingMode                  CHOICE {
        explicit-config                     TransportFormatSet,
        sameAsULTrCH                        UL-TransportChannelIdentity
    },
    qualityTarget                       QualityTarget                       OPTIONAL
}

DL-CommonTransChInfo ::=            SEQUENCE {
    sccpch-TFCS                         TFCS                                OPTIONAL,
    -- modeSpecificInfo should be optional. A new version of this IE should be defined
    -- to be used in later versions of messages using this IE
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dl-Parameters                       CHOICE {
                dl-DCH-TFCS                         TFCS,
                sameAsUL                            NULL
            }                                                               OPTIONAL
        },
        tdd                                 SEQUENCE {
            individualDL-CCTrCH-InfoList        IndividualDL-CCTrCH-InfoList
                                                                            OPTIONAL
        }
    }
}

DL-CommonTransChInfo-r4 ::=         SEQUENCE {
    sccpch-TFCS                         TFCS                                OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dl-Parameters                       CHOICE {
                dl-DCH-TFCS                         SEQUENCE {
                    tfcs                                TFCS                OPTIONAL
                },
                sameAsUL                            NULL
            }                                                               OPTIONAL
        },
        tdd                                 SEQUENCE {
            individualDL-CCTrCH-InfoList        IndividualDL-CCTrCH-InfoList
                                                                            OPTIONAL
        }
    }   OPTIONAL
}

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

DL-DeletedTransChInfoList-r5 ::=    SEQUENCE (SIZE (1..maxTrCH)) OF
                                        DL-TransportChannelIdentity-r5

DL-TransportChannelIdentity ::=         SEQUENCE {
    dl-TransportChannelType             DL-TrCH-Type,
    dl-TransportChannelIdentity         TransportChannelIdentity
}

DL-TransportChannelIdentity-r5 ::=      SEQUENCE {
    dl-TransportChannelType             DL-TrCH-TypeId2-r5
}

DL-TrCH-Type ::=                    ENUMERATED {dch, dsch}
-- The choice "dsch" should not be used in FDD mode, and if received the UE behaviour is unspecified

DL-TrCH-TypeId1-r5 ::=              CHOICE {
    dch                                 TransportChannelIdentity,
    dsch                                TransportChannelIdentity,
-- The choice "dsch" should not be used in FDD mode, and if received the UE behaviour is unspecified
    hsdsch                              NULL
}
```

```
DL-TrCH-TypeId2-r5 ::=              CHOICE {
    dch                                 TransportChannelIdentity,
    dsch                                TransportChannelIdentity,
-- The choice "dsch" should not be used in FDD mode, and if received the UE behaviour is unspecified
    hsdsch                              MAC-d-FlowIdentity
}

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

E-DCH-AddReconf-MAC-d-Flow ::=      SEQUENCE {
    mac-d-FlowIdentity                  E-DCH-MAC-d-FlowIdentity,
    mac-d-FlowPowerOffset               E-DCH-MAC-d-FlowPowerOffset         OPTIONAL,
    mac-d-FlowMaxRetrans                E-DCH-MAC-d-FlowMaxRetrans          OPTIONAL,
    mac-d-FlowMultiplexingList          E-DCH-MAC-d-FlowMultiplexingList    OPTIONAL
}

E-DCH-Harq-Info ::=                 INTEGER (1..maxHarqRTT)

E-DCH-MAC-d-FlowIdentity ::=        INTEGER (0..maxE-DCHMACdFlow)

E-DCH-MAC-d-FlowMaxRetrans ::=      INTEGER (0)                             -- FFS

E-DCH-MAC-d-FlowMultiplexingList ::= BIT STRING (SIZE (maxE-DCHMACdFlow-1))

E-DCH-MAC-d-FlowPowerOffset ::=     INTEGER (0)                             -- FFS

E-DCH-TTI ::=                       ENUMERATED { tti2, tti10 }

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
}

HSDSCH-Info ::=                     SEQUENCE {
    harqInfo                            HARQ-Info               OPTIONAL,
    addOrReconfMAC-dFlow                AddOrReconfMAC-dFlow    OPTIONAL
}

HARQ-Info ::=                       SEQUENCE {
    numberOfProcesses                   INTEGER (1..8),
    memoryPartitioning                  CHOICE {
        implicit                            NULL,
        explicit                            SEQUENCE (SIZE (1..maxHProcesses)) OF
                                                HARQMemorySize
    }
}

HARQMemorySize ::=                  ENUMERATED {
                                        hms800, hms1600, hms2400, hms3200, hms4000,
                                        hms4800, hms5600, hms6400, hms7200, hms8000,
                                        hms8800, hms9600, hms10400, hms11200, hms12000,
                                        hms12800, hms13600, hms14400, hms15200, hms16000,
                                        hms17600, hms19200, hms20800, hms22400, hms24000,
                                        hms25600, hms27200, hms28800, hms30400, hms32000,
                                        hms36000, hms40000, hms44000, hms48000, hms52000,
                                        hms56000, hms60000, hms64000, hms68000, hms72000,
```

```
                                        hms76000, hms80000, hms88000, hms96000, hms104000,
                                        hms112000, hms120000, hms128000, hms136000, hms144000,
                                        hms152000, hms160000, hms176000, hms192000, hms208000,
                                        hms224000, hms240000, hms256000, hms272000, hms288000,
                                        hms304000 }

IndividualDL-CCTrCH-Info ::=        SEQUENCE {
    dl-TFCS-Identity                    TFCS-Identity,
    tfcs-SignallingMode                 CHOICE {
        explicit-config                     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 ,
    tfc-Subset                          TFC-Subset
}

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
}

MAC-d-FlowIdentityDCHandHSDSCH ::=  SEQUENCE {
    dch-transport-ch-id                 TransportChannelIdentity,
    hsdsch-mac-d-flow-id                MAC-d-FlowIdentity
}

MAC-d-FlowIdentity ::=              INTEGER (0..7)

MAC-d-PDU-SizeInfo-List ::=         SEQUENCE (SIZE(1.. maxMAC-d-PDUsizes)) OF
                                        MAC-d-PDUsizeInfo

--MAC-d-Pdu sizes need to be defined
MAC-d-PDUsizeInfo ::=               SEQUENCE{
    mac-d-PDU-Size                      INTEGER (1..5000),
    mac-d-PDU-Index                     INTEGER(0..7)
}

MAC-hs-AddReconfQueue-List ::=              SEQUENCE (SIZE(1..maxQueueIDs)) OF
                                        MAC-hs-AddReconfQueue

MAC-hs-AddReconfQueue ::=           SEQUENCE {
    mac-hsQueueId                       INTEGER(0..7),
    mac-dFlowId                         MAC-d-FlowIdentity,
    reorderingReleaseTimer              T1-ReleaseTimer,
    mac-hsWindowSize                    MAC-hs-WindowSize,
    mac-d-PDU-SizeInfo-List             MAC-d-PDU-SizeInfo-List             OPTIONAL
}

MAC-hs-DelQueue-List ::=                SEQUENCE (SIZE(1..maxQueueIDs)) OF
                                        MAC-hs-DelQueue

MAC-hs-DelQueue ::=                 SEQUENCE {
    mac-hsQueueId                       INTEGER(0..7)
}

MAC-hs-WindowSize ::=               ENUMERATED {
                                        mws4, mws6, mws8, mws12, mws16, mws24, mws32 }

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

OctetModeRLC-SizeInfoType2 ::=      CHOICE {
    -- Actual size = (sizeType1 * 8) + 48
    sizeType1                           INTEGER (0..31),
    -- Actual size = (sizeType2 * 16) + 312
    sizeType2                           INTEGER (0..63),
    -- Actual size = (sizeType3 *64) + 1384
    sizeType3                           INTEGER (0..56)
}

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 {
    ul-TransportChannelType             UL-TrCH-Type,
    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 }

T1-ReleaseTimer ::=                 ENUMERATED {
                                        rt10, rt20, rt30, rt40, rt50,
                                        rt60, rt70, rt80, rt90, rt100,
                                        rt120, rt140, rt160, rt200, rt300,
                                        rt400 }

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

TFC-Subset-ID-With3b ::=            INTEGER (0..7)

TFC-Subset-ID-With5b ::=            INTEGER (0..31)

TFC-Subset-ID-With10b ::=           INTEGER (0..1023)

TFC-SubsetList ::=                  SEQUENCE (SIZE (1.. maxTFCsub)) OF SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            tfcs-ID                             TFCS-Identity               OPTIONAL
        }
    },
    tfc-Subset                          TFC-Subset
}

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

TFCI-Field2-Information ::=         CHOICE {
    tfci-Range                          TFCI-RangeList,
    explicit-config                     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,
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
    splitTFCI-Signallingdummy               SplitTFCI-Signalling
}

TFCS-Identity ::=                   SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  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),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc4Bit                            SEQUENCE (SIZE (1..maxTFC)) OF SEQUENCE {
            ctfc4                               INTEGER (0..15),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc6Bit                            SEQUENCE (SIZE (1..maxTFC)) OF SEQUENCE {
            ctfc6                               INTEGER (0..63),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc8Bit                            SEQUENCE (SIZE (1..maxTFC)) OF SEQUENCE {
            ctfc8                               INTEGER (0..255),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc12Bit                           SEQUENCE (SIZE(1..maxTFC)) OF SEQUENCE {
            ctfc12                              INTEGER (0..4095),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc16Bit                           SEQUENCE (SIZE (1..maxTFC)) OF SEQUENCE {
            ctfc16                              INTEGER(0..65535),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc24Bit                           SEQUENCE (SIZE (1..maxTFC)) OF SEQUENCE {
            ctfc24                              INTEGER(0..16777215),
            powerOffsetInformation              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 {
            -- in ul-controlledTrChList, TrCH-Type is always DCH
            ul-controlledTrChList               UL-ControlledTrChList
        }
    }
}

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

TransmissionTimeValidity ::=        INTEGER (1..256)

TransportChannelIdentity ::=        INTEGER (1..32)

TransportChannelIdentityDCHandDSCH ::=  SEQUENCE {
    dch-transport-ch-id             TransportChannelIdentity,
    dsch-transport-ch-id            TransportChannelIdentity
}
```

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

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

-- The maximum allowed size of UL-AddReconfTransChInfoList sequence is 16
UL-AddReconfTransChInfoList ::=     SEQUENCE (SIZE (1..maxTrCHpreconf)) OF
                                        UL-AddReconfTransChInformation

-- The maximum allowed size of UL-AddReconfTransChInfoList-r6 sequence is 32
UL-AddReconfTransChInfoList-r6 ::=  SEQUENCE (SIZE (1..maxTrCH)) OF
                                        UL-AddReconfTransChInformation-r6

UL-AddReconfTransChInformation ::= SEQUENCE {
    ul-TransportChannelType             UL-TrCH-Type,
    transportChannelIdentity            TransportChannelIdentity,
    transportFormatSet                  TransportFormatSet
}

UL-AddReconfTransChInformation-r6 ::= CHOICE {
    dch-usch                            SEQUENCE {
        ul-TransportChannelType             UL-TrCH-Type,
        transportChannelIdentity            TransportChannelIdentity,
        transportFormatSet                  TransportFormatSet
    },
    e-dch                               SEQUENCE {
        tti                                 E-DCH-TTI,
        harq-Info                           E-DCH-Harq-Info,
        addReconf-MAC-d-Flow                E-DCH-AddReconf-MAC-d-Flow
    }
}

UL-CommonTransChInfo ::=            SEQUENCE {
    -- TABULAR: tfc-subset is applicable to FDD only, TDD specifies tfc-subset in individual
    -- CCTrCH Info.
    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
        }
    }                                                                       OPTIONAL
}

UL-CommonTransChInfo-r4 ::=         SEQUENCE {
    -- TABULAR: tfc-subset is applicable to FDD only, TDD specifies tfc-subset in individual
    -- CCTrCH Info.
    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
        }
    }                                                                       OPTIONAL,
    tfc-SubsetList                      TFC-SubsetList                      OPTIONAL
}

-- In UL-ControlledTrChList, TrCH-Type is always DCH
UL-ControlledTrChList ::=           SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransportChannelIdentity

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

```
UL-DeletedTransChInfoList-r6 ::=    SEQUENCE (SIZE (1..maxTrCH)) OF
                                        UL-TransportChannelIdentity-r6

UL-TransportChannelIdentity ::=     SEQUENCE {
    ul-TransportChannelType             UL-TrCH-Type,
    ul-TransportChannelIdentity         TransportChannelIdentity
}

UL-TransportChannelIdentity-r6 ::=  CHOICE {
    dch-usch                            SEQUENCE {
        ul-TransportChannelType             UL-TrCH-Type,
        ul-TransportChannelIdentity         TransportChannelIdentity
    },
    e-dch                               E-DCH-MAC-d-FlowIdentity
}

UL-TrCH-Type ::=                    ENUMERATED {dch, usch}

USCH-TransportChannelsInfo ::=      SEQUENCE (SIZE (1..maxTrCH)) OF
                                        SEQUENCE {
    usch-TransportChannelIdentity           TransportChannelIdentity,
    usch-TFS                                TransportFormatSet
}
-- ***************************************************
--
--      PHYSICAL CHANNEL INFORMATION ELEMENTS (10.3.6)
--
-- ***************************************************

ACK-NACK-repetitionFactor ::=       INTEGER(1..4)

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

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

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

    assignedSubChannelNumber            BIT STRING {
                                            b3(0),
                                            b2(1),
                                            b1(2),
                                            b0(3)
                                            }    (SIZE(4))
}

AccessServiceClass-TDD ::=          SEQUENCE {
    channelisationCodeIndices           BIT STRING  {
                                            chCodeIndex7(0),
                                            chCodeIndex6(1),
                                            chCodeIndex5(2),
                                            chCodeIndex4(3),
                                            chCodeIndex3(4),
                                            chCodeIndex2(5),
                                            chCodeIndex1(6),
                                            chCodeIndex0(7)
                                            } (SIZE(8))             OPTIONAL,
    subchannelSize                      CHOICE {
        size1                               NULL,
        size2                               SEQUENCE {
            -- subch0 means bitstring '01' in the tabular, subch1 means bitsring '10'
            subchannels                         ENUMERATED  { subch0, subch1 }  OPTIONAL
        },
        size4                               SEQUENCE {
            subchannels                         BIT STRING  {
                                                    subCh3(0),
                                                    subCh2(1),
                                                    subCh1(2),
                                                    subCh0(3)
                                                    } (SIZE(4))     OPTIONAL
        },
        size8                               SEQUENCE {
            subchannels                         BIT STRING  {
                                                    subCh7(0),
                                                    subCh6(1),
                                                    subCh5(2),
```

```
                                                    subCh4(3),
                                                    subCh3(4),
                                                    subCh2(5),
                                                    subCh1(6),
                                                    subCh0(7)
                                                    } (SIZE(8))     OPTIONAL
        }
    }
}

AccessServiceClass-TDD-LCR-r4 ::=   SEQUENCE {
    availableSYNC-UlCodesIndics         BIT STRING {
                                            sulCodeIndex7(0),
                                            sulCodeIndex6(1),
                                            sulCodeIndex5(2),
                                            sulCodeIndex4(3),
                                            sulCodeIndex3(4),
                                            sulCodeIndex2(5),
                                            sulCodeIndex1(6),
                                            sulCodeIndex0(7)
                                            } (SIZE(8))               OPTIONAL,
    subchannelSize                      CHOICE {
        size1                               NULL,
        size2                               SEQUENCE {
            -- subch0 means bitstring '01' in the tabular, subch1 means bitsring '10'.
            subchannels                         ENUMERATED  { subch0, subch1 }  OPTIONAL
        },
        size4                               SEQUENCE {
            subchannels                         BIT STRING  {
                                                    subCh3(0),
                                                    subCh2(1),
                                                    subCh1(2),
                                                    subCh0(3)
                                                    } (SIZE(4))         OPTIONAL
        },
        size8                               SEQUENCE {
            subchannels                         BIT STRING  {
                                                    subCh7(0),
                                                    subCh6(1),
                                                    subCh5(2),
                                                    subCh4(3),
                                                    subCh3(4),
                                                    subCh2(5),
                                                    subCh1(6),
                                                    subCh0(7)
                                                    } (SIZE(8))         OPTIONAL
        }
    }

}

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 (0..255),
    allocationDuration                  INTEGER (1..256)
}

-- Actual value Alpha = IE value * 0.125
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)

ASCSetting-FDD ::=                      SEQUENCE {
    -- TABULAR: accessServiceClass-FDD 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-FDD                  AccessServiceClass-FDD  OPTIONAL
}

ASCSetting-TDD ::=                      SEQUENCE {
    -- TABULAR: accessServiceClass-TDD is MD in tabular description
    -- Default value is previous ASC
    -- If this is the first ASC, the default value is all available channelisation codes and
    -- all available sub-channels with subchannelSize=size1.
    accessServiceClass-TDD                  AccessServiceClass-TDD  OPTIONAL
}

ASCSetting-TDD-LCR-r4 ::=                       SEQUENCE {
    -- TABULAR: accessServiceClass-TDD-LCR is MD in tabular description
    -- Default value is previous ASC
    -- If this is the first ASC, the default value is all available SYNC_UL codes and
    -- all available sub-channels with subchannelSize=size1.
    accessServiceClass-TDD-LCR                  AccessServiceClass-TDD-LCR-r4   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 {
                                    signature15(0),
                                    signature14(1),
                                    signature13(2),
                                    signature12(3),
                                    signature11(4),
                                    signature10(5),
                                    signature9(6),
                                    signature8(7),
                                    signature7(8),
                                    signature6(9),
                                    signature5(10),
                                    signature4(11),
                                    signature3(12),
                                    signature2(13),
                                    signature1(14),
                                    signature0(15)
                                    }    (SIZE(16))

AvailableSubChannelNumbers ::=      BIT STRING {
                                        subCh11(0),
                                        subCh10(1),
                                        subCh9(2),
                                        subCh8(3),
                                        subCh7(4),
                                        subCh6(5),
                                        subCh5(6),
                                        subCh4(7),
                                        subCh3(8),
                                        subCh2(9),
                                        subCh1(10),
```

```
                                        subCh0(11)
                                        }    (SIZE(12))

BEACON-PL-Est ::=                   ENUMERATED { true }

BurstType ::=                       ENUMERATED {
                                        type1, type2 }

-- Actual value Bler-Target = IE value * 0.05
Bler-Target ::=                     INTEGER (-63..0)

CCTrCH-PowerControlInfo ::=         SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo
}

CCTrCH-PowerControlInfo-r4 ::=      SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo-r4
}

CCTrCH-PowerControlInfo-r5 ::=      SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo-r5
}

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

CellAndChannelIdentity ::=          SEQUENCE {
    -- burstType may be set to either value and should be ignored by the receiver for 1.28 Mcps TDD.
    burstType                           BurstType,
    midambleShift                       MidambleShiftLong,
    timeslot                            TimeslotNumber,
    cellParametersID                    CellParametersID
    }

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
}

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

```
CommonTimeslotInfo ::=              SEQUENCE {
    -- TABULAR: secondInterleavingMode 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: secondInterleavingMode 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)

ConstantValueTdd ::=                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,
    -- TABULAR: VCAM info has been nested inside ChannelAssignmentActive,
    -- which in turn is mandatory since it's only a binary choice.
    channelAssignmentActive             ChannelAssignmentActive,
    cpch-StatusIndicationMode           CPCH-StatusIndicationMode,
    pcpch-ChannelInfoList               PCPCH-ChannelInfoList
}

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

CPCH-StatusIndicationMode ::=       ENUMERATED {
                                        pa-mode,
                                        pamsf-mode }

CQI-RepetitionFactor ::=            INTEGER(1..4)

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

-- DefaultDPCH-OffsetValueFDD and DefaultDPCH-OffsetValueTDD corresponds to
-- IE "Default DPCH Offset Value" depending on the mode.
-- Actual value DefaultDPCH-OffsetValueFDD = IE value * 512
DefaultDPCH-OffsetValueFDD ::=      INTEGER (0..599)

DefaultDPCH-OffsetValueTDD ::=      INTEGER (0..7)

DeltaPp-m ::=                       INTEGER (-10..10)

DeltaCQI ::=                        INTEGER (0..8)

DeltaNACK ::=                       INTEGER (0..8)

DeltaACK ::=                        INTEGER (0..8)
```

```
-- Actual value DeltaSIR = IE value * 0.1
DeltaSIR ::=                        INTEGER (0..30)

DL-CCTrCh ::=                       SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    dl-CCTrCH-TimeslotsCodes            DownlinkTimeslotsCodes              OPTIONAL,
    ul-CCTrChTPCList                    UL-CCTrChTPCList                    OPTIONAL
}

DL-CCTrCh-r4 ::=                    SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    tddOption                           CHOICE {
        tdd384                              SEQUENCE {
            dl-CCTrCH-TimeslotsCodes            DownlinkTimeslotsCodes  OPTIONAL
        },
        tdd128                              SEQUENCE {
            dl-CCTrCH-TimeslotsCodes            DownlinkTimeslotsCodes-LCR-r4   OPTIONAL
        }
    },
    ul-CCTrChTPCList                    UL-CCTrChTPCList        OPTIONAL
}

DL-CCTrChList ::=                   SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        DL-CCTrCh

DL-CCTrChList-r4 ::=                SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        DL-CCTrCh-r4

DL-CCTrChListToRemove ::=           SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        TFCS-IdentityPlain

DL-CCTrChTPCList ::=                SEQUENCE (SIZE (0..maxCCTrCH)) OF
                                            TFCS-Identity

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-CommonInformation-r4 ::=         SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommon-r4       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueFDD  OPTIONAL,
            dpch-CompressedModeInfo             DPCH-CompressedModeInfo     OPTIONAL,
            tx-DiversityMode                    TX-DiversityMode            OPTIONAL,
            ssdt-Information                    SSDT-Information-r4         OPTIONAL
        },
        tdd                                 SEQUENCE {
            tddOption                           CHOICE {
                tdd384                              NULL,
                tdd128                              SEQUENCE {
                    tstd-Indicator                      BOOLEAN
                }
            },
```

```
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueTDD  OPTIONAL
        }
    }
}


DL-CommonInformation-r5 ::=         SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommon-r4           OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueFDD  OPTIONAL,
            dpch-CompressedModeInfo             DPCH-CompressedModeInfo     OPTIONAL,
            tx-DiversityMode                    TX-DiversityMode            OPTIONAL,
            ssdt-Information                    SSDT-Information-r4         OPTIONAL
        },
        tdd                                 SEQUENCE {
            tddOption                           CHOICE {
                tdd384                              NULL,
                tdd128                              SEQUENCE {
                    tstd-Indicator                      BOOLEAN
                }
            },
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueTDD  OPTIONAL
        }
    },
    mac-hsResetIndicator                ENUMERATED { true }         OPTIONAL
}

DL-CommonInformation-r6 ::=         SEQUENCE {
    dl-dpchInfoCommon                   CHOICE {
        dl-DPCH-InfoCommon                  DL-DPCH-InfoCommon-r4,
        dl-FDPCH-InfoCommon                 DL-FDPCH-InfoCommon-r6
    }                                                                   OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueFDD  OPTIONAL,
            dpch-CompressedModeInfo             DPCH-CompressedModeInfo     OPTIONAL,
            tx-DiversityMode                    TX-DiversityMode            OPTIONAL,
            ssdt-Information                    SSDT-Information-r4         OPTIONAL
        },
        tdd                                 SEQUENCE {
            tddOption                           CHOICE {
                tdd384                              NULL,
                tdd128                              SEQUENCE {
                    tstd-Indicator                      BOOLEAN
                }
            },
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueTDD  OPTIONAL
        }
    },
    mac-hsResetIndicator                ENUMERATED { true }         OPTIONAL
}

DL-CommonInformationPost ::=        SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommonPost
}

DL-CommonInformationPredef ::=      SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommonPredef    OPTIONAL
}

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,
            powerOffsetPilot-pdpdch             PowerOffsetPilot-pdpdch,
            dl-rate-matching-restriction        Dl-rate-matching-restriction        OPTIONAL,
            -- TABULAR: The number of pilot bits is nested inside the spreading factor.
```

```
            spreadingFactorAndPilot             SF512-AndPilot,
            positionFixedOrFlexible             PositionFixedOrFlexible,
            tfci-Existence                      BOOLEAN
        },
        tdd                                 SEQUENCE {
            dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo            OPTIONAL
        }
    }
}

DL-DPCH-InfoCommon-r4 ::=           SEQUENCE {
    cfnHandling                         CHOICE {
        maintain                            NULL,
        initialise                          SEQUENCE {
            cfntargetsfnframeoffset             Cfntargetsfnframeoffset             OPTIONAL
        }
    },
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo            OPTIONAL,
            powerOffsetPilot-pdpdch             PowerOffsetPilot-pdpdch,
            dl-rate-matching-restriction        Dl-rate-matching-restriction        OPTIONAL,
            -- TABULAR: The number of pilot bits is nested inside the spreading factor.
            spreadingFactorAndPilot             SF512-AndPilot,
            positionFixedOrFlexible             PositionFixedOrFlexible,
            tfci-Existence                      BOOLEAN
        },
        tdd                                 SEQUENCE {
            dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo            OPTIONAL
        }
    },
-- The IE mac-d-HFN-initial-value should be absent in the RRCConnectionSetup-r4-IEs or
-- RRCConnectionSetup-r5-IEs or HandoverToUTRANCommand-r4-IEs or HandoverToUTRANCommand-r5-IEs and
-- if the IE is included, the general error handling for conditional IEs applies.
    mac-d-HFN-initial-value             MAC-d-HFN-initial-value             OPTIONAL

}


DL-DPCH-InfoCommonPost ::=          SEQUENCE {
    dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo                OPTIONAL
}

DL-DPCH-InfoCommonPredef ::=        SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            -- TABULAR: The number of pilot bits is nested inside the spreading factor.
            spreadingFactorAndPilot             SF512-AndPilot,
            positionFixedOrFlexible             PositionFixedOrFlexible,
            tfci-Existence                      BOOLEAN
        },
        tdd                                 SEQUENCE {
            commonTimeslotInfo                  CommonTimeslotInfo
        }
    }
}

DL-DPCH-InfoPerRL ::=               CHOICE {
    fdd                                 SEQUENCE {
        pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst,
        dpch-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                                 SEQUENCE {
        dl-CCTrChListToEstablish            DL-CCTrChList                   OPTIONAL,
        dl-CCTrChListToRemove               DL-CCTrChListToRemove           OPTIONAL
    }
}

DL-DPCH-InfoPerRL-r4 ::=            CHOICE {
    fdd                                 SEQUENCE {
        pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst,
        dpch-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                                 SEQUENCE {
        dl-CCTrChListToEstablish            DL-CCTrChList-r4                OPTIONAL,
        dl-CCTrChListToRemove               DL-CCTrChListToRemove           OPTIONAL
    }
}

DL-DPCH-InfoPerRL-r5 ::=            CHOICE {
    fdd                                 SEQUENCE {
        pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst,
        dpch-FrameOffset                    DPCH-FrameOffset,
        secondaryCPICH-Info                 SecondaryCPICH-Info             OPTIONAL,
        dl-ChannelisationCodeList           DL-ChannelisationCodeList,
        tpc-CombinationIndex                TPC-CombinationIndex,
        powerOffsetTPC-pdpdch               PowerOffsetTPC-pdpdch           OPTIONAL,
        ssdt-CellIdentity                   SSDT-CellIdentity               OPTIONAL,
        closedLoopTimingAdjMode             ClosedLoopTimingAdjMode         OPTIONAL
    },
    tdd                                 SEQUENCE {
        dl-CCTrChListToEstablish            DL-CCTrChList-r4                OPTIONAL,
        dl-CCTrChListToRemove               DL-CCTrChListToRemove           OPTIONAL
    }
}

DL-FDPCH-InfoPerRL-r6 ::=           SEQUENCE {
    pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst,
    fdpch-FrameOffset                   DPCH-FrameOffset,
    secondaryCPICH-Info                 SecondaryCPICH-Info             OPTIONAL,
    secondaryScramblingCode             SecondaryScramblingCode         OPTIONAL,
    dl-ChannelisationCode               INTEGER (0..255),
    tpc-CombinationIndex                TPC-CombinationIndex
}

DL-DPCH-InfoPerRL-PostFDD ::=                           SEQUENCE {
        pCPICH-UsageForChannelEst               PCPICH-UsageForChannelEst,
        dl-ChannelisationCode                   DL-ChannelisationCode,
        tpc-CombinationIndex                    TPC-CombinationIndex
}

DL-DPCH-InfoPerRL-PostTDD ::=               SEQUENCE {
    dl-DPCH-TimeslotsCodes                      DownlinkTimeslotsCodes
}

DL-DPCH-InfoPerRL-PostTDD-LCR-r4 ::=        SEQUENCE {
    dl-CCTrCH-TimeslotsCodes                    DownlinkTimeslotsCodes-LCR-r4
}

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

DL-FDPCH-InfoCommon-r6 ::=          SEQUENCE {
    cfnHandling                         CHOICE {
        maintain                            NULL,
        initialise                          SEQUENCE {
            cfntargetsfnframeoffset             Cfntargetsfnframeoffset             OPTIONAL
        }
    },
    dl-FDPCH-PowerControlInfo           DL-DPCH-PowerControlInfo            OPTIONAL,
-- Actual value dl-FDPCH-TPCcommandErrorRate = IE value * 0.005
-- dl-FDPCH-TPCcommandErrorRate values 21..32 are spare and shall not be used in this version of
-- the protocol
    dl-FDPCH-TPCcommandErrorRate        INTEGER (1..32)     OPTIONAL
}

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

```
DL-HSPDSCH-Information ::=          SEQUENCE {
    hs-scch-Info                    HS-SCCH-Info    OPTIONAL,
    measurement-feedback-Info       Measurement-Feedback-Info   OPTIONAL,
    modeSpecificInfo                CHOICE {
    tdd                             CHOICE{
            tdd384                          SEQUENCE {
                dl-HSPDSCH-TS-Configuration DL-HSPDSCH-TS-Configuration     OPTIONAL
            },
            tdd128                          SEQUENCE {
                hs-PDSCH-Midamble-Configuration-TDD128
                        HS-PDSCH-Midamble-Configuration-TDD128              OPTIONAL
            }
        },
        fdd                         NULL
    }
}

-- The IE 'DL-HSPDSCH-TS-Configuration' applies to tdd-384 REL-5 onward
DL-HSPDSCH-TS-Configuration ::=     SEQUENCE (SIZE (1..maxTS-1)) OF
                                        SEQUENCE {
    timeslot                                TimeslotNumber,
    midambleShiftAndBurstType               MidambleShiftAndBurstType-DL
}

DL-InformationPerRL ::=             SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
        -- dummy1 and dummy 2 are not used in this version of specification, they should
        -- not be sent and if received they should be ignored.
            ~~pdsch-SHO-DCH-Info~~dummy1                    PDSCH-SHO-DCH-Info          OPTIONAL,
            ~~pdsch-CodeMapping~~dummy2                 PDSCH-CodeMapping           OPTIONAL
        },
        tdd                                 PrimaryCCPCH-Info
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL                   OPTIONAL,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH                  OPTIONAL
}

DL-InformationPerRL-r4 ::=          SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
        -- dummy1 and dummy 2 are not used in this version of specification, they should
        -- not be sent and if received they should be ignored.
            ~~pdsch-SHO-DCH-Info~~dummy1                    PDSCH-SHO-DCH-Info          OPTIONAL,
            ~~pdsch-CodeMapping~~dummy2                 PDSCH-CodeMapping           OPTIONAL
        },
        tdd                                 PrimaryCCPCH-Info-r4
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL-r4                OPTIONAL,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH-r4               OPTIONAL,
    cell-id                             CellIdentity                        OPTIONAL
}

DL-InformationPerRL-r5 ::=          SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
        -- dummy1 and dummy 2 are not used in this version of specification, they should
        -- not be sent and if received they should be ignored.
            ~~pdsch-SHO-DCH-Info~~dummy1                    PDSCH-SHO-DCH-Info          OPTIONAL,
            ~~pdsch-CodeMapping~~dummy2                 PDSCH-CodeMapping           OPTIONAL,
            servingHSDSCH-RL-indicator          BOOLEAN
        },
        tdd                                 PrimaryCCPCH-Info-r4
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL-r5                OPTIONAL,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH-r4               OPTIONAL,
    cell-id                             CellIdentity                        OPTIONAL
}

DL-InformationPerRL-r5bis ::=       SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
        -- dummy1 and dummy 2 are not used in this version of specification, they should
```

```
        -- not be sent and if received they should be ignored.
            pdsch-SHO-DCH-Infodummy1               PDSCH-SHO-DCH-Info         OPTIONAL,
            pdsch-CodeMappingdummy2                PDSCH-CodeMapping          OPTIONAL
        },
        tdd                                    PrimaryCCPCH-Info-r4
    },
    dl-DPCH-InfoPerRL                      DL-DPCH-InfoPerRL-r5                OPTIONAL,
    sccpch-InfoforFACH                     SCCPCH-InfoForFACH-r4               OPTIONAL,
    cell-id                                CellIdentity                        OPTIONAL
}

DL-InformationPerRL-r6 ::=             SEQUENCE {
    modeSpecificInfo                       CHOICE {
        fdd                                    SEQUENCE {
            primaryCPICH-Info                      PrimaryCPICH-Info,
            pdsch-SHO-DCH-Info                     PDSCH-SHO-DCH-Info          OPTIONAL,
            pdsch-CodeMapping                      PDSCH-CodeMapping           OPTIONAL,
            servingHSDSCH-RL-indicator             BOOLEAN,
            servingEDCH-RL-indicator               BOOLEAN
        },
        tdd                                    PrimaryCCPCH-Info-r4
    },
    dl-dpchInfo                            CHOICE {
        dl-DPCH-InfoPerRL                      DL-DPCH-InfoPerRL-r5,
        dl-FDPCH-InfoPerRL                     DL-FDPCH-InfoPerRL-r6
    }                                                                          OPTIONAL,
    sccpch-InfoforFACH                     SCCPCH-InfoForFACH-r4               OPTIONAL,
    e-AGCH-Information                     E-AGCH-Information                  OPTIONAL,
    e-HICH-Information                     E-HICH-Information                  OPTIONAL,
    e-RGCH-Information                     E-RGCH-Information                  OPTIONAL,
    cell-id                                CellIdentity                        OPTIONAL
}

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

DL-InformationPerRL-List-r4 ::=        SEQUENCE (SIZE (1..maxRL)) OF
                                           DL-InformationPerRL-r4

DL-InformationPerRL-List-r5 ::=        SEQUENCE (SIZE (1..maxRL)) OF
                                           DL-InformationPerRL-r5

DL-InformationPerRL-List-r6 ::=        SEQUENCE (SIZE (1..maxRL)) OF
                                           DL-InformationPerRL-r6

DL-InformationPerRL-List-r5bis ::=         SEQUENCE (SIZE (1..maxRL)) OF
                                               DL-InformationPerRL-r5bis

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-InformationPerRL-PostTDD-LCR-r4 ::=  SEQUENCE {
    primaryCCPCH-Info                      PrimaryCCPCH-InfoPostTDD-LCR-r4,
    dl-DPCH-InfoPerRL                      DL-DPCH-InfoPerRL-PostTDD-LCR-r4
}

DL-PDSCH-Information ::=               SEQUENCE {
-- dummy1 and dummy 2 are not used in this version of specification, it should
-- not be sent and if received it should be ignored.
    dummy1pdsch-SHO-DCH-Info                       PDSCH-SHO-DCH-Info              OPTIONAL,
    pdsch-CodeMappingdummy2                    PDSCH-CodeMapping               OPTIONAL
}

Dl-rate-matching-restriction ::=       SEQUENCE {
    restrictedTrCH-InfoList                RestrictedTrCH-InfoList             OPTIONAL
}

DL-TPC-PowerOffsetPerRL ::=        SEQUENCE {
```

```
        powerOffsetTPC-pdpdch               PowerOffsetTPC-pdpdch           OPTIONAL
}

-- NOTE: The radio links in the following list have a one-to-one mapping with the
-- radio links in the message.
DL-TPC-PowerOffsetPerRL-List ::=    SEQUENCE (SIZE (1..maxRL)) OF
                                        DL-TPC-PowerOffsetPerRL

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 {
                                                chCode16-SF16(0),
                                                chCode15-SF16(1),
                                                chCode14-SF16(2),
                                                chCode13-SF16(3),
                                                chCode12-SF16(4),
                                                chCode11-SF16(5),
                                                chCode10-SF16(6),
                                                chCode9-SF16(7),
                                                chCode8-SF16(8),
                                                chCode7-SF16(9),
                                                chCode6-SF16(10),
                                                chCode5-SF16(11),
                                                chCode4-SF16(12),
                                                chCode3-SF16(13),
                                                chCode2-SF16(14),
                                                chCode1-SF16(15)
                                                }   (SIZE (16))
    }
}

DownlinkAdditionalTimeslots ::=     SEQUENCE {
    parameters                          CHOICE {
        sameAsLast                          SEQUENCE {
            timeslotNumber                      TimeslotNumber
        },
        newParameters                       SEQUENCE {
            individualTimeslotInfo              IndividualTimeslotInfo,
            dl-TS-ChannelisationCodesShort      DL-TS-ChannelisationCodesShort
        }
    }
}

DownlinkAdditionalTimeslots-LCR-r4 ::=  SEQUENCE {
    parameters                          CHOICE {
        sameAsLast                          SEQUENCE {
            timeslotNumber                      TimeslotNumber-LCR-r4
        },
        newParameters                       SEQUENCE {
            individualTimeslotInfo              IndividualTimeslotInfo-LCR-r4,
            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
        }
    }
}
```

```
DownlinkTimeslotsCodes-LCR-r4 ::=   SEQUENCE {
    firstIndividualTimeslotInfo         IndividualTimeslotInfo-LCR-r4,
    dl-TS-ChannelisationCodesShort      DL-TS-ChannelisationCodesShort,
    moreTimeslots                       CHOICE {
        noMore                              NULL,
        additionalTimeslots                 CHOICE {
            consecutive                         INTEGER (1..maxTS-LCR-1),
            timeslotList                        SEQUENCE (SIZE (1..maxTS-LCR-1)) OF
                                                    DownlinkAdditionalTimeslots-LCR-r4
        }
    }
}

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

-- Actual value DPCCH-PowerOffset = IE value * 2
DPCCH-PowerOffset ::=               INTEGER (-82..-3)

-- Actual value DPCCH-PowerOffset2 = 2 + (IE value * 4)
DPCCH-PowerOffset2 ::=              INTEGER (-28..-13)

DPCH-CompressedModeInfo ::=         SEQUENCE {
    tgp-SequenceList                    TGP-SequenceList
}

DPCH-CompressedModeStatusInfo ::=   SEQUENCE {
    tgps-Reconfiguration-CFN            TGPS-Reconfiguration-CFN,
    tgp-SequenceShortList                   SEQUENCE (SIZE (1..maxTGPS)) OF
                                            TGP-SequenceShort
}

-- Actual value DPCH-FrameOffset = 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)

DSCH-TransportChannelsInfo ::=      SEQUENCE (SIZE (1..maxTrCH)) OF
                                        SEQUENCE {
    dsch-transport-channel-identity         TransportChannelIdentity,
    dsch-TFS                                TransportFormatSet
}
DurationTimeInfo ::=                INTEGER (1..4096)

DynamicPersistenceLevel ::=         INTEGER (1..8)

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

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

E-AGCH-ChannelisationCode ::=       INTEGER (0..255)

E-AGCH-Information ::=              SEQUENCE {
    dl-ScramblingCode                   SecondaryScramblingCode             OPTIONAL,
    e-AGCH-ChannelisationCode           E-AGCH-ChannelisationCode
}

E-DPCCH-Info ::=                    SEQUENCE {
    e-DPCCH-DPCCH-PowerOffset           E-DPCCH-DPCCH-PowerOffset
}

E-DPCCH-DPCCH-PowerOffset ::=       INTEGER (0)     -- FFS

E-DPDCH-Info ::=                    SEQUENCE {
    e-TFCI-ReferencePowerOffset         E-TFCI-ReferencePowerOffset,
```

```
    e-TFCI-TableIndex                   E-TFCI-TableIndex,
    e-DPDCH-MaxNChannelisationCodes     E-DPDCH-MaxNChannelisationCodes
}

E-DPDCH-MaxNChannelisationCodes ::= INTEGER (0)     -- FFS

E-HICH-ChannelisationCode ::=       INTEGER (0..127)

E-HICH-Information ::=              SEQUENCE {
    dl-ScramblingCode                   SecondaryScramblingCode             OPTIONAL,
    channelisationCode                  E-HICH-ChannelisationCode,
    signatureSequence                   E-HICH-RGCH-SignatureSequence,
    timingOffset                        E-HICH-RGCH-TimingOffset
}

E-HICH-RGCH-SignatureSequence ::=   INTEGER (0..39)

E-HICH-RGCH-TimingOffset ::=        INTEGER (0)     -- FFS

E-RGCH-CombinationIndex ::=         INTEGER (0..5)

E-RGCH-Information ::=              SEQUENCE {
    dl-ScramblingCode                   SecondaryScramblingCode             OPTIONAL,
    signatureSequence                   E-HICH-RGCH-SignatureSequence,
    timingOffset                        E-HICH-RGCH-TimingOffset,
    rg-CombinationIndex                 E-RGCH-CombinationIndex             OPTIONAL
}

E-TFCI-ReferencePowerOffset ::=     INTEGER (0)     -- FFS

E-TFCI-TableIndex ::=               ENUMERATED { ncc1, ncc2, ncc4 }

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

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

Feedback-cycle ::=                  ENUMERATED {
                                        fc0, fc2, fc4, fc8, fc10, fc20, fc40, fc80, fc160}

FPACH-Info-r4 ::=                       SEQUENCE {
    timeslot                            TimeslotNumber-LCR-r4,
    channelisationCode                  TDD-FPACH-CCode16-r4,
    midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
    wi                                  Wi-LCR
}

FrequencyInfo ::=                   SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 FrequencyInfoFDD,
        tdd                                 FrequencyInfoTDD    }
}

FrequencyInfoFDD ::=                SEQUENCE {
    uarfcn-UL                           UARFCN              OPTIONAL,
    uarfcn-DL                           UARFCN
}

FrequencyInfoTDD ::=                SEQUENCE {
    uarfcn-Nt                           UARFCN
}

HARQ-Preamble-Mode ::=              INTEGER (0..1)

HS-ChannelisationCode-LCR ::=       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 }

HS-PDSCH-Midamble-Configuration-TDD128 ::=  SEQUENCE {
    midambleAllocationMode              CHOICE{
        defaultMidamble                     NULL,
        commonMidamble                      NULL,
```

```
        ueSpecificMidamble                  INTEGER (0..15)
    },
    -- Actual value midambleConfiguration = IE value * 2
    midambleConfiguration               INTEGER (1..8)
}

HS-SCCH-Info ::=                    SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            hS-SCCHChannelisationCodeInfo       SEQUENCE (SIZE (1..maxHSSCCHs)) OF
                                                    HS-SCCH-Codes,
            dl-ScramblingCode                   SecondaryScramblingCode     OPTIONAL
        },
        tdd                                 CHOICE {
            tdd384                              SEQUENCE {
                nack-ack-power-offset              INTEGER (-7..8),
                hs-SICH-PowerControl-Info          HS-SICH-Power-Control-Info-TDD384,
                hS-SCCH-SetConfiguration           SEQUENCE (SIZE (1..maxHSSCCHs)) OF
                        HS-SCCH-TDD384
                },
            tdd128                              SEQUENCE (SIZE (1..maxHSSCCHs)) OF
                                                    HS-SCCH-TDD128
        }
    }
}

HS-SCCH-Codes ::=                   INTEGER (0..127)

HS-SCCH-TDD128 ::=              SEQUENCE {
    timeslotNumber                      TimeslotNumber-LCR-r4,
    firstChannelisationCode             HS-ChannelisationCode-LCR,
    secondChannelisationCode            HS-ChannelisationCode-LCR,
    midambleAllocationMode              CHOICE {
        defaultMidamble                     NULL,
        commonMidamble                      NULL,
        ueSpecificMidamble                  INTEGER(0..15)
    },
    -- Actual value midambleConfiguration = IE value * 2
    midambleConfiguration               INTEGER (1..8),
    bler-target                         Bler-Target,
    hs-sich-configuration               HS-SICH-Configuration-TDD128
}

HS-SICH-Configuration-TDD128 ::=    SEQUENCE {
    timeslotNumber                      TimeslotNumber-LCR-r4,
    channelisationCode                  HS-ChannelisationCode-LCR,
    midambleAllocationMode              CHOICE {
        defaultMidamble                     NULL,
        ueSpecificMidamble                  SEQUENCE {
            midambleShift                       MidambleShiftLong
        }
    },
    -- Actual value midambleConfiguration = IE value * 2
    midambleConfiguration               INTEGER (1..8),
    nack-ack-power-offset               INTEGER (-7..8),
    power-level-HSSICH                  INTEGER (-120..-58),
    tpc-step-size                       ENUMERATED { s1, s2, s3 , spare1}
}



HS-SCCH-TDD384 ::=              SEQUENCE {
    timeslotNumber                      TimeslotNumber,
    channelisationCode                  DL-TS-ChannelisationCode,
    midambleAllocationMode              CHOICE {
        defaultMidamble                     NULL,
        commonMidamble                      NULL,
        ueSpecificMidamble                  SEQUENCE {
            midambleShift                       MidambleShiftLong
        }
    },
    midambleconfiguration               MidambleConfigurationBurstType1and3,
    bler-target                         Bler-Target,
    hs-sich-configuration               HS-SICH-Configuration-TDD384
}

HS-SICH-Configuration-TDD384 ::=    SEQUENCE {
    timeslotNumber                      TimeslotNumber,
```

```
    channelisationCode                  DL-TS-ChannelisationCode,
    midambleAllocationMode              CHOICE {
        defaultMidamble                     NULL,
        ueSpecificMidamble                  SEQUENCE {
            midambleShift                       MidambleShiftLong
        }
    },
    midambleconfiguration               MidambleConfigurationBurstType1and3
}

HS-SICH-Power-Control-Info-TDD384 ::= SEQUENCE {
    -- Actual value ul-target-SIR = IE value * 0.5
    ul-target-SIR                       INTEGER (-22..40),
    hs-sich-ConstantValue               ConstantValue
}


IndividualTimeslotInfo ::=          SEQUENCE {
    timeslotNumber                      TimeslotNumber,
    tfci-Existence                      BOOLEAN,
    midambleShiftAndBurstType           MidambleShiftAndBurstType
}

IndividualTimeslotInfo-LCR-r4 ::=   SEQUENCE {
    timeslotNumber                      TimeslotNumber-LCR-r4,
    tfci-Existence                      BOOLEAN,
    midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
    modulation                          ENUMERATED { mod-QPSK, mod-8PSK },
    ss-TPC-Symbols                      ENUMERATED { zero, one, sixteenOverSF },
    additionalSS-TPC-Symbols            INTEGER(1..15)      OPTIONAL
}

IndividualTimeslotInfo-LCR-r4-ext ::=       SEQUENCE {
-- timeslotNumber and tfci-Existence is taken from IndividualTimeslotInfo.
-- midambleShiftAndBurstType in IndividualTimeslotInfo shall be ignored.
    midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
    modulation                          ENUMERATED { mod-QPSK, mod-8PSK },
    ss-TPC-Symbols                      ENUMERATED { zero, one, sixteenOverSF }
}

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

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

ITP ::=                             ENUMERATED {
                                        mode0, mode1 }

NidentifyAbort ::=  INTEGER (1..128)

MaxAllowedUL-TX-Power ::=           INTEGER (-50..33)

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

MaxPowerIncrease-r4 ::=             INTEGER (0..3)

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

Measurement-Feedback-Info ::=       SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            measurementPowerOffset          MeasurementPowerOffset,
            feedback-cycle                  Feedback-cycle,
            cqi-RepetitionFactor            CQI-RepetitionFactor,
            deltaCQI                        DeltaCQI
        },
        tdd                             NULL
    }
}


MidambleConfigurationBurstType1and3 ::= ENUMERATED {ms4, ms8, ms16}

MidambleConfigurationBurstType2 ::=     ENUMERATED {ms3, ms6}
```

```
MidambleShiftAndBurstType ::=       SEQUENCE {
    burstType                           CHOICE {
        type1                               SEQUENCE {
            midambleConfigurationBurstType1and3 MidambleConfigurationBurstType1and3,
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftLong
                }
            }
        },
        type2                               SEQUENCE {
            midambleConfigurationBurstType2     MidambleConfigurationBurstType2,
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftShort
                }
            }
        },
        type3                               SEQUENCE {
            midambleConfigurationBurstType1and3 MidambleConfigurationBurstType1and3,
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftLong
                }
            }
        }
    }
}

MidambleShiftAndBurstType-DL ::=        SEQUENCE {
    burstType                           CHOICE {
        type1                               SEQUENCE {
            midambleConfigurationBurstType1and3 MidambleConfigurationBurstType1and3,
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftLong
                }
            }
        },
        type2                               SEQUENCE {
            midambleConfigurationBurstType2     MidambleConfigurationBurstType2,
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftShort
                }
            }
        }
    }
}

MidambleShiftAndBurstType-LCR-r4 ::=    SEQUENCE {
    midambleAllocationMode              CHOICE {
        defaultMidamble                     NULL,
        commonMidamble                      NULL,
        ueSpecificMidamble                  SEQUENCE {
            midambleShift                       INTEGER (0..15)
        }
    },
    -- Actual value midambleConfiguration = IE value * 2
    midambleConfiguration               INTEGER (1..8)
}

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, prach-ConstantValue, dpch-ConstantValue and pusch-ConstantValue
    -- shall be ignored in 1.28Mcps TDD mode.
    alpha                               Alpha                       OPTIONAL,
    prach-ConstantValue                 ConstantValueTdd,
    dpch-ConstantValue                  ConstantValueTdd,
    pusch-ConstantValue                 ConstantValueTdd            OPTIONAL
}

OpenLoopPowerControl-IPDL-TDD-r4 ::=    SEQUENCE {
    ipdl-alpha                          Alpha,
    maxPowerIncrease                    MaxPowerIncrease-r4
}

PagingIndicatorLength ::=           ENUMERATED {
                                        pi4, pi8, pi16 }

PC-Preamble ::=                     INTEGER (0..7)

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 is conditional on new-configuration branch below, if this
    -- selected the IE is OPTIONAL otherwise it should not be sent
    pdsch-PowerControlInfo              PDSCH-PowerControlInfo              OPTIONAL,
    pdsch-AllocationPeriodInfo          AllocationPeriodInfo,
    configuration                       CHOICE {
        old-Configuration                   SEQUENCE {
            tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
            pdsch-Identity                      PDSCH-Identity
        },
        new-Configuration                   SEQUENCE {
            pdsch-Info                          PDSCH-Info,
            pdsch-Identity                      PDSCH-Identity              OPTIONAL
        }
    }
}

PDSCH-CapacityAllocationInfo-r4 ::= SEQUENCE {
```

```
    pdsch-AllocationPeriodInfo          AllocationPeriodInfo,
    configuration                       CHOICE {
        old-Configuration                   SEQUENCE {
            tfcs-ID                             TFCS-IdentityPlain                DEFAULT 1,
            pdsch-Identity                      PDSCH-Identity
        },
        new-Configuration                   SEQUENCE {
            pdsch-Info                          PDSCH-Info-r4,
            pdsch-Identity                      PDSCH-Identity              OPTIONAL,
            pdsch-PowerControlInfo              PDSCH-PowerControlInfo      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-config                     PDSCH-CodeInfoList,
        replace                             ReplacedPDSCH-CodeInfoList
    }
}

PDSCH-Identity ::=                  INTEGER (1..hiPDSCHidentities)


PDSCH-Info ::=                      SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    pdsch-TimeslotsCodes                DownlinkTimeslotsCodes              OPTIONAL
}

PDSCH-Info-r4 ::=                       SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    tddOption                           CHOICE {
        tdd384                              SEQUENCE {
            pdsch-TimeslotsCodes                DownlinkTimeslotsCodes      OPTIONAL
        },
        tdd128                              SEQUENCE {
            pdsch-TimeslotsCodes                DownlinkTimeslotsCodes-LCR-r4   OPTIONAL
        }
    }
}

PDSCH-Info-LCR-r4 ::=               SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    pdsch-TimeslotsCodes                DownlinkTimeslotsCodes-LCR-r4       OPTIONAL
}

PDSCH-PowerControlInfo ::=          SEQUENCE {
    tpc-StepSizeTDD                     TPC-StepSizeTDD                     OPTIONAL,
    ul-CCTrChTPCList                    UL-CCTrChTPCList                    OPTIONAL
}

PDSCH-SHO-DCH-Info ::=              SEQUENCE {
    dsch-RadioLinkIdentifier            DSCH-RadioLinkIdentifier,
```

```
    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-SysInfo-HCR-r5 ::=                SEQUENCE {
    pdsch-Identity                      PDSCH-Identity,
    pdsch-Info                          PDSCH-Info,
    dsch-TransportChannelsInfo          DSCH-TransportChannelsInfo          OPTIONAL,
    dsch-TFCS                           TFCS                                OPTIONAL
}

PDSCH-SysInfo-LCR-r4 ::=            SEQUENCE {
    pdsch-Identity                      PDSCH-Identity,
    pdsch-Info                          PDSCH-Info-LCR-r4,
    dsch-TFS                            TransportFormatSet                  OPTIONAL,
    dsch-TFCS                           TFCS                                OPTIONAL
}

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

PDSCH-SysInfoList-HCR-r5 ::=            SEQUENCE (SIZE (1..maxPDSCH)) OF PDSCH-SysInfo-HCR-r5

PDSCH-SysInfoList-LCR-r4 ::=        SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        PDSCH-SysInfo-LCR-r4

PDSCH-SysInfoList-SFN ::=           SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        SEQUENCE {
    pdsch-SysInfo                           PDSCH-SysInfo,
    sfn-TimeInfo                            SFN-TimeInfo                    OPTIONAL
}

PDSCH-SysInfoList-SFN-HCR-r5 ::=            SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        SEQUENCE {
    pdsch-SysInfo                           PDSCH-SysInfo-HCR-r5,
    sfn-TimeInfo                            SFN-TimeInfo                    OPTIONAL
}

PDSCH-SysInfoList-SFN-LCR-r4 ::=    SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        SEQUENCE {
    pdsch-SysInfo                           PDSCH-SysInfo-LCR-r4,
    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 }

PichChannelisationCodeList-LCR-r4 ::=   SEQUENCE (SIZE (1..2)) OF
                                            DL-TS-ChannelisationCode

PICH-Info ::=                       CHOICE {
    fdd                                 SEQUENCE {
        channelisationCode256               ChannelisationCode256,
        pi-CountPerFrame                    PI-CountPerFrame,
        sttd-Indicator                      BOOLEAN
    },
    tdd                                 SEQUENCE {
        channelisationCode                  TDD-PICH-CCode                  OPTIONAL,
        timeslot                            TimeslotNumber                  OPTIONAL,
        midambleShiftAndBurstType           MidambleShiftAndBurstType,
        repetitionPeriodLengthOffset        RepPerLengthOffset-PICH         OPTIONAL,
        pagingIndicatorLength               PagingIndicatorLength           DEFAULT pi4,
        n-GAP                               N-GAP                           DEFAULT f4,
        n-PCH                               N-PCH                           DEFAULT 2
    }
```

```
}

PICH-Info-LCR-r4 ::=                SEQUENCE {
    timeslot                            TimeslotNumber-LCR-r4               OPTIONAL,
    pichChannelisationCodeList-LCR-r4   PichChannelisationCodeList-LCR-r4,
    midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
    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 }

    -- Actual measurement power offset value = IE value * 0.5
MeasurementPowerOffset ::=          INTEGER (-12..26)

PositionFixedOrFlexible ::=         ENUMERATED {
                                        fixed,
                                        flexible }

PowerControlAlgorithm ::=           CHOICE {
    algorithm1                          TPC-StepSizeFDD,
    algorithm2                          NULL
}

PowerOffsetPilot-pdpdch ::=         INTEGER (0..24)

PowerOffsetTPC-pdpdch ::=           INTEGER (0..24)

PowerRampStep ::=                   INTEGER (1..8)

PRACH-ChanCodes-LCR-r4 ::=          SEQUENCE (SIZE (1..4)) OF
                                        TDD-PRACH-CCode-LCR-r4

PRACH-Definition-LCR-r4 ::=         SEQUENCE {
    timeslot                            TimeslotNumber-PRACH-LCR-r4,
    prach-ChanCodes-LCR                 PRACH-ChanCodes-LCR-r4,
    midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
    fpach-Info                          FPACH-Info-r4
}

PRACH-Midamble ::=                  ENUMERATED {
                                        direct,
                                        direct-Inverted }

PRACH-Partitioning ::=              CHOICE {
    fdd                                 SEQUENCE (SIZE (1..maxASC)) OF
    -- TABULAR: If only "NumASC+1" (with, NumASC+1 < maxASC) ASCSetting-FDD are listed,
    -- the remaining (NumASC+2 through maxASC) ASCs are unspecified.
                                            ASCSetting-FDD,
    tdd                                 SEQUENCE (SIZE (1..maxASC)) OF
    -- TABULAR: If only "NumASC+1" (with, NumASC+1 < maxASC) ASCSetting-TDD are listed,
    -- the remaining (NumASC+2 through maxASC) ASCs are unspecified.
                                            ASCSetting-TDD
}

PRACH-Partitioning-LCR-r4 ::=       SEQUENCE (SIZE (1..maxASC)) OF
    -- TABULAR: If only "NumASC+1" (with, NumASC+1 < maxASC) ASCSetting-TDD-LCR-r4 are listed,
    -- the remaining (NumASC+2 through maxASC) ASCs are unspecified.
                                            ASCSetting-TDD-LCR-r4

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,
            channelisationCodeList              TDD-PRACH-CCodeList,
            prach-Midamble                      PRACH-Midamble
        }
    }
}

PRACH-RACH-Info-LCR-r4 ::=          SEQUENCE {
    sync-UL-Info                        SYNC-UL-Info-r4,
    prach-DefinitionList                SEQUENCE (SIZE (1..maxPRACH-FPACH)) OF
                                            PRACH-Definition-LCR-r4
}

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-SystemInformation-LCR-r4 ::=  SEQUENCE {
    prach-RACH-Info-LCR                 PRACH-RACH-Info-LCR-r4,
    rach-TransportFormatSet-LCR         TransportFormatSet-LCR          OPTIONAL,
    prach-Partitioning-LCR              PRACH-Partitioning-LCR-r4       OPTIONAL
}

PRACH-SystemInformationList ::=     SEQUENCE (SIZE (1..maxPRACH)) OF
                                        PRACH-SystemInformation

PRACH-SystemInformationList-LCR-r4 ::=  SEQUENCE (SIZE (1..maxPRACH)) OF
                                            PRACH-SystemInformation-LCR-r4

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 should be ignored for 1.28Mcps TDD mode
        syncCase                            CHOICE {
            syncCase1                           SEQUENCE {
                timeslot                            TimeslotNumber
            },
            syncCase2                           SEQUENCE {
                timeslotSync2                       TimeslotSync2
            }
        }                                                                   OPTIONAL,
        cellParametersID                    CellParametersID                OPTIONAL,
        sctd-Indicator                      BOOLEAN
    }
}
```

```
PrimaryCCPCH-Info-r4 ::=            CHOICE {
    fdd                                 SEQUENCE {
        tx-DiversityIndicator               BOOLEAN
    },
    tdd                                 SEQUENCE {
        tddOption                           CHOICE {
            tdd384                              SEQUENCE {
                syncCase                            CHOICE {
                    syncCase1                           SEQUENCE {
                        timeslot                            TimeslotNumber
                    },
                    syncCase2                           SEQUENCE {
                        timeslotSync2                       TimeslotSync2
                    }
                }                                                               OPTIONAL
            },
            tdd128                              SEQUENCE {
                tstd-Indicator                      BOOLEAN
            }
        },
        cellParametersID                    CellParametersID                OPTIONAL,
        sctd-Indicator                      BOOLEAN
    }
}

PrimaryCCPCH-Info-LCR-r4 ::=        SEQUENCE {
    tstd-Indicator                      BOOLEAN,
    cellParametersID                    CellParametersID                OPTIONAL,
    sctd-Indicator                      BOOLEAN
}

-- For 1.28Mcps TDD, the following IE includes elements for the PCCPCH Info additional to those
-- in PrimaryCCPCH-Info
PrimaryCCPCH-Info-LCR-r4-ext ::=    SEQUENCE {
    tstd-Indicator                      BOOLEAN
}

PrimaryCCPCH-InfoPost ::=           SEQUENCE {
    syncCase                            CHOICE {
        syncCase1                           SEQUENCE {
            timeslot                            TimeslotNumber
        },
        syncCase2                           SEQUENCE {
            timeslotSync2                       TimeslotSync2
        }
    },
    cellParametersID                    CellParametersID,
    sctd-Indicator                      BOOLEAN
}

PrimaryCCPCH-InfoPostTDD-LCR-r4 ::= SEQUENCE {
    tstd-Indicator                      BOOLEAN,
    cellParametersID                    CellParametersID,
    sctd-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 {
            pusch-AllocationPeriodInfo          AllocationPeriodInfo,
            pusch-PowerControlInfo              UL-TargetSIR                OPTIONAL,
            configuration                       CHOICE {
```

```
				old-Configuration					SEQUENCE {
					tfcs-ID							TFCS-IdentityPlain			DEFAULT 1,
					pusch-Identity					PUSCH-Identity
				},
				new-Configuration					SEQUENCE {
					pusch-Info						PUSCH-Info,
					pusch-Identity					PUSCH-Identity		OPTIONAL
				}
			}
		}
	}
}

PUSCH-CapacityAllocationInfo-r4 ::= SEQUENCE {
	pusch-Allocation					CHOICE {
		pusch-AllocationPending				NULL,
		pusch-AllocationAssignment			SEQUENCE {
			pusch-AllocationPeriodInfo			AllocationPeriodInfo,
			pusch-PowerControlInfo				PUSCH-PowerControlInfo-r4	OPTIONAL,
			configuration						CHOICE {
				old-Configuration					SEQUENCE {
					tfcs-ID							TFCS-IdentityPlain			DEFAULT 1,
					pusch-Identity					PUSCH-Identity
				},
				new-Configuration					SEQUENCE {
					pusch-Info						PUSCH-Info-r4,
					pusch-Identity					PUSCH-Identity		OPTIONAL
				}
			}
		}
	}
}

PUSCH-Identity ::=					INTEGER (1..hiPUSCHidentities)

PUSCH-Info ::=						SEQUENCE {
	tfcs-ID								TFCS-IdentityPlain					DEFAULT 1,
	commonTimeslotInfo					CommonTimeslotInfo					OPTIONAL,
	pusch-TimeslotsCodes				UplinkTimeslotsCodes				OPTIONAL
}

PUSCH-Info-r4 ::=					SEQUENCE {
	tfcs-ID								TFCS-IdentityPlain					DEFAULT 1,
	commonTimeslotInfo					CommonTimeslotInfo					OPTIONAL,
	tddOption							CHOICE {
		tdd384								SEQUENCE {
			pusch-TimeslotsCodes				UplinkTimeslotsCodes		OPTIONAL
		},
		tdd128								SEQUENCE {
			pusch-TimeslotsCodes				UplinkTimeslotsCodes-LCR-r4 OPTIONAL
		}
	}
}

PUSCH-Info-LCR-r4 ::=				SEQUENCE {
	tfcs-ID								TFCS-IdentityPlain					DEFAULT 1,

	commonTimeslotInfo					CommonTimeslotInfo					OPTIONAL,
	pusch-TimeslotsCodes				UplinkTimeslotsCodes-LCR-r4			OPTIONAL
}

PUSCH-PowerControlInfo-r4 ::=		SEQUENCE {
	-- The IE ul-TargetSIR corresponds to PRX-PUSCHdes for 1.28Mcps TDD
	-- Actual value PRX-PUSCHdes = (value of IE "ul-TargetSIR" – 120)
	ul-TargetSIR						UL-TargetSIR,
	tddOption							CHOICE {
		tdd384								NULL,
		tdd128								SEQUENCE {
			tpc-StepSize						TPC-StepSizeTDD				OPTIONAL
		}
	}
}

PUSCH-SysInfo ::=					SEQUENCE {
	pusch-Identity						PUSCH-Identity,
	pusch-Info							PUSCH-Info,
	usch-TFS							TransportFormatSet					OPTIONAL,
	usch-TFCS							TFCS								OPTIONAL
```

```
}

PUSCH-SysInfo-HCR-r5 ::=                SEQUENCE {
    pusch-Identity                  PUSCH-Identity,
    pusch-Info                      PUSCH-Info,
    usch-TransportChannelsInfo      USCH-TransportChannelsInfo          OPTIONAL,
    usch-TFCS                       TFCS                                OPTIONAL
}

PUSCH-SysInfo-LCR-r4 ::=            SEQUENCE {
    pusch-Identity                  PUSCH-Identity,
    pusch-Info                      PUSCH-Info-LCR-r4,
    usch-TFS                        TransportFormatSet                  OPTIONAL,
    usch-TFCS                       TFCS                                OPTIONAL
}

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

PUSCH-SysInfoList-HCR-r5 ::=            SEQUENCE (SIZE (1..maxPUSCH)) OF PUSCH-SysInfo-HCR-r5

PUSCH-SysInfoList-LCR-r4 ::=        SEQUENCE (SIZE (1..maxPUSCH)) OF
                                    PUSCH-SysInfo-LCR-r4

PUSCH-SysInfoList-SFN ::=           SEQUENCE (SIZE (1..maxPUSCH)) OF
                                    SEQUENCE {
    pusch-SysInfo                       PUSCH-SysInfo,
    sfn-TimeInfo                        SFN-TimeInfo                    OPTIONAL
}

PUSCH-SysInfoList-SFN-HCR-r5 ::=            SEQUENCE (SIZE (1..maxPUSCH)) OF
                                    SEQUENCE {
    pusch-SysInfo                       PUSCH-SysInfo-HCR-r5,
    sfn-TimeInfo                        SFN-TimeInfo                    OPTIONAL
}

PUSCH-SysInfoList-SFN-LCR-r4 ::=        SEQUENCE (SIZE (1..maxPUSCH)) OF
                                    SEQUENCE {
    pusch-SysInfo                       PUSCH-SysInfo-LCR-r4,
    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 could just as well be NULL also.
    repetitionPeriod2                   INTEGER (1..1),
    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)
}

RepPerLengthOffset-MICH ::=         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 {
    dl-restrictedTrCh-Type              DL-TrCH-Type,
    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,
-- dummy is not used in this version of specification
-- and it should be ignored.
    tfci-CombiningIndicatordummy                BOOLEAN,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH                  OPTIONAL
}

RL-AdditionInformation-r6 ::=       SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    dl-dpchInfo                         CHOICE {
        dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL-r5,
        dl-FDPCH-InfoPerRL                  DL-FDPCH-InfoPerRL-r6
    },
    tfci-CombiningIndicator             BOOLEAN,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH                  OPTIONAL
}

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

RL-AdditionInformationList-r6 ::=   SEQUENCE (SIZE (1..maxRL-1)) OF
                                        RL-AdditionInformation-r6
```

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

RL-RemovalInformationList ::=       SEQUENCE (SIZE (1..maxRL)) 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,
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            fach-PCH-InformationList            FACH-PCH-InformationList,
            sib-ReferenceListFACH               SIB-ReferenceListFACH
        },
        tdd                             SEQUENCE {
            fach-PCH-InformationList            FACH-PCH-InformationList
        }
    }
}

SCCPCH-InfoForFACH-r4 ::=               SEQUENCE {
    secondaryCCPCH-Info                 SecondaryCCPCH-Info-r4,
    tfcs                                TFCS,
    fach-PCH-InformationList            FACH-PCH-InformationList,
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            sib-ReferenceListFACH           SIB-ReferenceListFACH
        },
        tdd                             NULL
    }
}

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

SCCPCH-SystemInformation-LCR-r4-ext ::= SEQUENCE {
    secondaryCCPCH-LCR-Extensions   SecondaryCCPCH-Info-LCR-r4-ext,
    -- pich-Info in the SCCPCH-SystemInformation IE shall be absent,
    -- and instead the following used.
    pich-Info                       PICH-Info-LCR-r4                        OPTIONAL
}

SCCPCH-SystemInformation-MBMS-r6-ext ::= SEQUENCE {
    mcch-ConfigurationInfo              MBMS-MCCH-ConfigurationInfo-r6      OPTIONAL
}

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

-- SCCPCH-SystemInformationList-LCR-r4-ext includes elements additional to those in
-- SCCPCH-SystemInformationList for the 1.28Mcps TDD. The order of the IEs
-- indicates which SCCPCH-SystemInformation-LCR-r4-ext IE extends which
-- SCCPCH-SystemInformation IE.
SCCPCH-SystemInformationList-LCR-r4-ext ::= SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                                SCCPCH-SystemInformation-LCR-r4-ext

-- The SCCPCH-SystemInformationList-MBMS-r6-ext includes elements additional to those in the
-- SCCPCH-SystemInformationList for the mapping of MCCH onto an S-CCPCH common for both MBMS
```

```
-- and non-MBMS purposes.The order of the IEs indicates which SCCPCH-SystemInformation-MBMS-r6-ext
-- IE extends which SCCPCH-SystemInformation IE.
SCCPCH-SystemInformationList-MBMS-r6-ext ::= SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                        SCCPCH-SystemInformation-MBMS-r6-ext

-- The SCCPCH-SystemInformation-MBMS-r6 is used for an S-CCPCH dedicated for MBMS purposes.
SCCPCH-SystemInformation-MBMS-r6 ::= SEQUENCE {
    secondaryCCPCHInfo-MBMS             SecondaryCCPCHInfo-MBMS-r6,
    transportFormatCombinationSet       TFCS,
    fachCarryingMCCH                    SEQUENCE {
        transportFormatSet                  TransportFormatSet,
        mcch-ConfigurationInfo              MBMS-MCCH-ConfigurationInfo-r6
    },
    fachCarryingMTCH-List               MBMS-FACHCarryingMTCH-List          OPTIONAL,
    schedulingInformation               SEQUENCE {
        fachCarryingMSCH                    TransportFormatSet,
        mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6
    }       OPTIONAL
}

ScramblingCodeChange ::=            ENUMERATED {
                                        codeChange, noCodeChange }

ScramblingCodeType ::=              ENUMERATED {
                                        shortSC,
                                        longSC }

SecondaryCCPCH-Info ::=             SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            -- dummy1 is not used in this version of the specification and should be ignored.
            dummy1                          PCPICH-UsageForChannelEst,
            -- dummy2 is not used in this version of the specification.  It should not
            -- be sent and if received it should be ignored.
            dummy2                          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
        }
    }
}

SecondaryCCPCH-Info-r4 ::=      SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            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,
            tddOption                       CHOICE {
                tdd384                          SEQUENCE {
                    individualTimeslotInfo          IndividualTimeslotInfo
                },
                tdd128                          SEQUENCE {
                    individualTimeslotInfo          IndividualTimeslotInfo-LCR-r4
                }
            },
            channelisationCode              SCCPCH-ChannelisationCodeList
        }
    }
}
```

```
SecondaryCCPCH-Info-LCR-r4-ext ::=  SEQUENCE {
    individualTimeslotLCR-Ext           IndividualTimeslotInfo-LCR-r4-ext
}

SecondaryCCPCHInfo-MBMS-r6 ::=      SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            secondaryScramblingCode         SecondaryScramblingCode         OPTIONAL,
            sttd-Indicator                  BOOLEAN,
            sf-AndCodeNumber                SF256-AndCodeNumber,
            tfci-Existence                  BOOLEAN,
            positionFixedOrFlexible         PositionFixedOrFlexible,
            timingOffset                    TimingOffset                    DEFAULT 0
        },
        tdd384                          DownlinkTimeslotsCodes,
        tdd128                          DownlinkTimeslotsCodes-LCR-r4
    }
}

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
}

-- actual scheduling value = 2^(signalled value +1) and is the periodicity of sending special burst frames
SpecialBurstScheduling ::=              INTEGER (0..7)
```

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

SRB-delay ::=                       INTEGER (0..7)

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
}

SSDT-Information-r4 ::=             SEQUENCE {
    s-Field                             S-Field,
    codeWordSet                         CodeWordSet,
    ssdt-UL-r4                          SSDT-UL                             OPTIONAL
}

SSDT-UL ::=                         ENUMERATED {
                                        ul, ul-AndDL }

SynchronisationParameters-r4 ::=    SEQUENCE {
    sync-UL-CodesBitmap                 BIT STRING {
                                            code7(0),
                                            code6(1),
                                            code5(2),
                                            code4(3),
                                            code3(4),
                                            code2(5),
                                            code1(6),
                                            code0(7)
                                            } (SIZE (8)),
    fpach-Info                          FPACH-Info-r4,
    -- Actual value prxUpPCHdes = IE value - 120
    prxUpPCHdes                         INTEGER (0..62),
    sync-UL-Procedure                   SYNC-UL-Procedure-r4                OPTIONAL
}

SYNC-UL-Procedure-r4 ::=            SEQUENCE {
    max-SYNC-UL-Transmissions           ENUMERATED { tr1, tr2, tr4, tr8 },
    powerRampStep                       INTEGER (0..3)
}

SYNC-UL-Info-r4 ::=                 SEQUENCE {
    sync-UL-Codes-Bitmap                BIT STRING {
                                            code7(0),
                                            code6(1),
                                            code5(2),
                                            code4(3),
                                            code3(4),
                                            code2(5),
                                            code1(6),
                                            code0(7)
                                            } ( SIZE (8)),
    -- Actual value prxUpPCHdes = IE value - 120
    prxUpPCHdes                         INTEGER (0..62),
    powerRampStep                       INTEGER (0..3),
    max-SYNC-UL-Transmissions           ENUMERATED { tr1, tr2, tr4, tr8 } ,
    mmax                                INTEGER(1..32)
}

TDD-FPACH-CCode16-r4 ::=            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-UL-Interference ::=             INTEGER (-110..-52)

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-CCode-LCR-r4 ::=          ENUMERATED {
                                        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 }

TDD-PRACH-CCodeList ::=             CHOICE {
    sf8                                 SEQUENCE (SIZE (1..8)) OF
                                            TDD-PRACH-CCode8,
-- Channelisation codes cc16-9, cc16-10, cc16-11, cc16-12, cc16-13, cc16-14,
-- cc16-15 and cc16-16 shall not be used
    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 }

TGCFN ::=                           INTEGER (0..255)

-- In TGD, 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,
                                        multi-carrier }

TGP-Sequence ::=                    SEQUENCE {
    tgpsi                               TGPSI,
    tgps-Status                         CHOICE {
        activate                            SEQUENCE {
            tgcfn                               TGCFN
        },
        deactivate                          NULL
    },
    tgps-ConfigurationParams            TGPS-ConfigurationParams            OPTIONAL
}

TGPS-Reconfiguration-CFN ::=        INTEGER (0..255)

TGP-SequenceList ::=                SEQUENCE (SIZE (1..maxTGPS)) OF
                                        TGP-Sequence

TGP-SequenceShort ::=               SEQUENCE {
    tgpsi                               TGPSI,
    tgps-Status                         CHOICE {
        activate                            SEQUENCE {
            tgcfn                               TGCFN
        },
        deactivate                          NULL
    }
}
```

```
TGPL ::=                            INTEGER (1..144)

-- TABULAR: In TGPRC, value 0 represents "infinity" in the tabular description.
TGPRC ::=                           INTEGER (0..511)

TGPS-ConfigurationParams ::=        SEQUENCE {
    tgmp                                TGMP,
    tgprc                               TGPRC,
    tgsn                                TGSN,
    tgl1                                TGL,
    tgl2                                TGL                                 OPTIONAL,
    tgd                                 TGD,
    tgpl1                               TGPL,
    -- dummy is not used in this version of the specification, it should
    -- not be sent and if received it shall be ignored.
    dummy                           TGPL                                OPTIONAL,
    rpp                                 RPP,
    itp                                 ITP,
    -- TABULAR: Compressed mode method is nested inside UL-DL-Mode
    ul-DL-Mode                          UL-DL-Mode,
    dl-FrameType                        DL-FrameType,
    deltaSIR1                           DeltaSIR,
    deltaSIRAfter1                      DeltaSIR,
    deltaSIR2                           DeltaSIR                            OPTIONAL,
    deltaSIRAfter2                      DeltaSIR                            OPTIONAL,
    nidentifyAbort                      NidentifyAbort                      OPTIONAL,
    treconfirmAbort                     TreconfirmAbort                     OPTIONAL
}

TGPSI ::=                           INTEGER (1..maxTGPS)

TGSN ::=                            INTEGER (0..14)

TimeInfo ::=                        SEQUENCE {
    activationTime                      ActivationTime                      OPTIONAL,
    durationTimeInfo                    DurationTimeInfo                    OPTIONAL
}

TimeslotList ::=                    SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotNumber

TimeslotList-r4 ::=                 CHOICE {
    tdd384                              SEQUENCE (SIZE (1..maxTS)) OF
                                            TimeslotNumber,
    tdd128                              SEQUENCE (SIZE (1..maxTS-LCR)) OF
                                            TimeslotNumber-LCR-r4
}

-- If TimeslotNumber is included for a 1.28Mcps TDD description, it shall take values from 0..6
TimeslotNumber ::=                      INTEGER (0..14)

TimeslotNumber-LCR-r4 ::=               INTEGER (0..6)

TimeslotNumber-PRACH-LCR-r4 ::=     INTEGER (1..6)

TimeslotSync2 ::=               INTEGER (0..6)

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

TPC-CombinationIndex ::=            INTEGER (0..5)

-- Actual value TPC-StepSizeFDD = IE value + 1
TPC-StepSizeFDD ::=                 INTEGER (0..1)

TPC-StepSizeTDD ::=                 INTEGER (1..3)

-- Actual value TreconfirmAbort = IE value * 0.5 seconds
TreconfirmAbort ::= INTEGER (1..20)

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-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    ul-TargetSIR                        UL-TargetSIR,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes                OPTIONAL
}

UL-CCTrCH-r4 ::=                    SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    -- The IE ul-TargetSIR corresponds to PRX-DPCHdes for 1.28Mcps TDD
    -- Actual value PRX-DPCHdes = (value of IE "ul-TargetSIR" – 120)
    ul-TargetSIR                        UL-TargetSIR,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    tddOption                           CHOICE {
        tdd384                              SEQUENCE {
            ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes        OPTIONAL
        },
        tdd128                              SEQUENCE {
            ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes-LCR-r4 OPTIONAL
        }
    }
}

UL-CCTrCHList ::=                   SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        UL-CCTrCH

UL-CCTrCHList-r4 ::=                SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        UL-CCTrCH-r4

UL-CCTrCHListToRemove ::=           SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        TFCS-IdentityPlain

UL-CCTrChTPCList ::=                SEQUENCE (SIZE (0..maxCCTrCH)) OF
                                            TFCS-Identity

UL-ChannelRequirement ::=           CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info,
    cpch-SetInfo                        CPCH-SetInfo
}

UL-ChannelRequirement-r4 ::=        CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r4,
    cpch-SetInfo                        CPCH-SetInfo
}

UL-ChannelRequirement-r5 ::=        CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r5,
    cpch-SetInfo                        CPCH-SetInfo
}

UL-ChannelRequirement-r6 ::=        CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r6,
    cpch-SetInfo                        CPCH-SetInfo
}

UL-ChannelRequirementWithCPCH-SetID ::= CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info,
    cpch-SetInfo                        CPCH-SetInfo,
    cpch-SetID                          CPCH-SetID
}

UL-ChannelRequirementWithCPCH-SetID-r4 ::=  CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r4,
    cpch-SetInfo                        CPCH-SetInfo,
    cpch-SetID                          CPCH-SetID
}

UL-ChannelRequirementWithCPCH-SetID-r5 ::=  CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r5,
```

```
    cpch-SetInfo                        CPCH-SetInfo,
    cpch-SetID                          CPCH-SetID
}

UL-ChannelRequirementWithCPCH-SetID-r6 ::=  CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r6,
    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-and-dl                               SEQUENCE {
        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 is conditional based on history
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvanceControl     OPTIONAL,
            ul-CCTrCHList                       UL-CCTrCHList               OPTIONAL,
            ul-CCTrCHListToRemove               UL-CCTrCHListToRemove       OPTIONAL
        }
    }
}

UL-DPCH-Info-r4 ::=                 SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo-r4         OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            numberOfDPDCH                       NumberOfDPDCH               DEFAULT 1,
            spreadingFactor                     SpreadingFactor,
            tfci-Existence                      BOOLEAN,
            -- numberOfFBI-Bits is conditional based on history
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvanceControl-r4  OPTIONAL,
            ul-CCTrCHList                       UL-CCTrCHList-r4            OPTIONAL,
            ul-CCTrCHListToRemove               UL-CCTrCHListToRemove       OPTIONAL
        }
    }
}

UL-DPCH-Info-r5 ::=                 SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo-r5         OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            numberOfDPDCH                       NumberOfDPDCH               DEFAULT 1,
            spreadingFactor                     SpreadingFactor,
            tfci-Existence                      BOOLEAN,
            -- numberOfFBI-Bits is conditional based on history
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL,
```

```
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvanceControl-r4  OPTIONAL,
            ul-CCTrCHList                       UL-CCTrCHList-r4            OPTIONAL,
            ul-CCTrCHListToRemove               UL-CCTrCHListToRemove       OPTIONAL
        }
    }
}

UL-DPCH-Info-r6 ::=                 SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo-r6         OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            numberOfDPDCH                       NumberOfDPDCH               DEFAULT 1,
            spreadingFactor                     SpreadingFactor,
            tfci-Existence                      BOOLEAN,
            -- numberOfFBI-Bits is conditional based on history
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvanceControl-r4  OPTIONAL,
            ul-CCTrCHList                       UL-CCTrCHList-r4            OPTIONAL,
            ul-CCTrCHListToRemove               UL-CCTrCHListToRemove       OPTIONAL
        }
    }
}

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-InfoPostTDD-LCR-r4 ::=      SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoPostTDD-LCR-r4,
    ul-TimingAdvance                    UL-TimingAdvanceControl-LCR-r4              OPTIONAL,
    ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes-LCR-r4
}

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,
        sRB-delay                           SRB-delay,
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
        powerControlAlgorithm               PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        ul-TargetSIR                        UL-TargetSIR                OPTIONAL,
        ul-OL-PC-Signalling                 CHOICE {
            broadcast-UL-OL-PC-info             NULL,
            individuallySignalled               SEQUENCE {
                individualTS-InterferenceList       IndividualTS-InterferenceList,
```

```
                dpch-ConstantValue                  ConstantValueTdd,
                primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power
            }
        }                                                               OPTIONAL
    }
}

UL-DPCH-PowerControlInfo-r4 ::=     CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        pc-Preamble                         PC-Preamble,
        sRB-delay                           SRB-delay,
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
        powerControlAlgorithm               PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        -- The IE ul-TargetSIR corresponds to PRX-DPCHdes for 1.28Mcps TDD
        -- Actual value PRX-DPCHdes = (value of IE "ul-TargetSIR" – 120)
        ul-TargetSIR                        UL-TargetSIR                OPTIONAL,
        ul-OL-PC-Signalling                 CHOICE {
            broadcast-UL-OL-PC-info             NULL,
            individuallySignalled               SEQUENCE {
                tddOption                           CHOICE {
                    tdd384                              SEQUENCE {
                        individualTS-InterferenceList       IndividualTS-InterferenceList,
                        dpch-ConstantValue                  ConstantValue
                    },
                    tdd128                              SEQUENCE {
                        tpc-StepSize                        TPC-StepSizeTDD
                    }
                },
                primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power
            }
        }
    }
}

UL-DPCH-PowerControlInfo-r5 ::=     CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        pc-Preamble                         PC-Preamble,
        sRB-delay                           SRB-delay,
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
        powerControlAlgorithm               PowerControlAlgorithm,
        deltaACK                            DeltaACK    OPTIONAL,
        deltaNACK                           DeltaNACK   OPTIONAL,
        ack-NACK-repetition-factor          ACK-NACK-repetitionFactor   OPTIONAL
    },
    tdd                                 SEQUENCE {
        -- The IE ul-TargetSIR corresponds to PRX-DPCHdes for 1.28Mcps TDD
        -- Actual value PRX-DPCHdes = (value of IE "ul-TargetSIR" – 120)
        ul-TargetSIR                        UL-TargetSIR                OPTIONAL,
        ul-OL-PC-Signalling                 CHOICE {
            broadcast-UL-OL-PC-info             NULL,
            individuallySignalled               SEQUENCE {
                tddOption                           CHOICE {
                    tdd384                              SEQUENCE {
                        individualTS-InterferenceList       IndividualTS-InterferenceList,
                        dpch-ConstantValue                  ConstantValue
                    },
                    tdd128                              SEQUENCE {
                        tpc-StepSize                        TPC-StepSizeTDD
                    }
                },
                primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power
            }
        }
    }
}

UL-DPCH-PowerControlInfo-r6 ::=     CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        pc-Preamble                         PC-Preamble,
        sRB-delay                           SRB-delay,
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
        powerControlAlgorithm               PowerControlAlgorithm,
        deltaACK                            DeltaACK    OPTIONAL,
```

```
        deltaNACK                           DeltaNACK   OPTIONAL,
        ack-NACK-repetition-factor          ACK-NACK-repetitionFactor   OPTIONAL,
        harq-Preamble-Mode                  HARQ-Preamble-Mode          OPTIONAL
    },
    tdd                                 SEQUENCE {
        -- The IE ul-TargetSIR corresponds to PRX-DPCHdes for 1.28Mcps TDD
        -- Actual value PRX-DPCHdes = (value of IE "ul-TargetSIR" – 120)
        ul-TargetSIR                        UL-TargetSIR                OPTIONAL,
        ul-OL-PC-Signalling                 CHOICE {
            broadcast-UL-OL-PC-info             NULL,
            individuallySignalled               SEQUENCE {
                tddOption                           CHOICE {
                    tdd384                              SEQUENCE {
                        individualTS-InterferenceList       IndividualTS-InterferenceList,
                        dpch-ConstantValue                  ConstantValue
                    },
                    tdd128                              SEQUENCE {
                        tpc-StepSize                        TPC-StepSizeTDD
                    }
                },
                primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power
            }
        }
    }
}

UL-DPCH-PowerControlInfoPostFDD ::= SEQUENCE {
    -- DPCCH-PowerOffset2 has a smaller range to save bits
    dpcch-PowerOffset                   DPCCH-PowerOffset2,
    pc-Preamble                         PC-Preamble,
    sRB-delay                           SRB-delay
}

UL-DPCH-PowerControlInfoPostTDD ::= SEQUENCE {
    ul-TargetSIR                        UL-TargetSIR,
    ul-TimeslotInterference             TDD-UL-Interference
}

UL-DPCH-PowerControlInfoPostTDD-LCR-r4 ::=  SEQUENCE {
    -- The IE ul-TargetSIR corresponds to PRX-DPCHdes for 1.28Mcps TDD
    -- Actual value PRX-DPCHdes = (value of IE "ul-TargetSIR" – 120)
    ul-TargetSIR                        UL-TargetSIR
}

UL-DPCH-PowerControlInfoPredef ::=      CHOICE {
    fdd                                 SEQUENCE {
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
        powerControlAlgorithm               PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        -- dpch-ConstantValue shall be ignored if in 1.28Mcps TDD mode.
        dpch-ConstantValue                  ConstantValueTdd
    }
}

UL-EDCH-Information-r6 ::=          SEQUENCE {
    e-DPCCH-Info                        E-DPCCH-Info                        OPTIONAL,
    e-DPDCH-Info                        E-DPDCH-Info                        OPTIONAL
}

UL-Interference ::=                 INTEGER (-110..-70)

UL-ScramblingCode ::=               INTEGER (0..16777215)


UL-SynchronisationParameters-r4 ::= SEQUENCE {
    stepSize                            INTEGER (1..8),
    frequency                           INTEGER (1..8)
}

-- Actual value UL-TargetSIR = (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-TimingAdvanceControl-r4 ::=      CHOICE {
    disabled                            NULL,
    enabled                             SEQUENCE {
        tddOption                           CHOICE {
            tdd384                              SEQUENCE {
                ul-TimingAdvance                    UL-TimingAdvance                OPTIONAL,
                activationTime                      ActivationTime                  OPTIONAL
            },
            tdd128                              SEQUENCE {
                ul-SynchronisationParameters        UL-SynchronisationParameters-r4 OPTIONAL,
                synchronisationParameters           SynchronisationParameters-r4    OPTIONAL
            }
        }
    }
}

UL-TimingAdvanceControl-LCR-r4 ::=  CHOICE {
    disabled                            NULL,
    enabled                             SEQUENCE {
        ul-SynchronisationParameters        UL-SynchronisationParameters-r4 OPTIONAL,
        synchronisationParameters           SynchronisationParameters-r4    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
        }
    }
}

UplinkAdditionalTimeslots-LCR-r4 ::=    SEQUENCE {
    parameters                          CHOICE {
        sameAsLast                          SEQUENCE {
            timeslotNumber                      TimeslotNumber
        },
        newParameters                       SEQUENCE {
            individualTimeslotInfo                  IndividualTimeslotInfo-LCR-r4,
            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
```

```
        }
    }
}

UplinkTimeslotsCodes-LCR-r4 ::=     SEQUENCE {
    dynamicSFusage                      BOOLEAN,
    firstIndividualTimeslotInfo         IndividualTimeslotInfo-LCR-r4,
    ul-TS-ChannelisationCodeList        UL-TS-ChannelisationCodeList,
    moreTimeslots                       CHOICE {
        noMore                              NULL,
        additionalTimeslots                 CHOICE {
            consecutive                         SEQUENCE {
                numAdditionalTimeslots              INTEGER (1..maxTS-LCR-1)
            },
            timeslotList                        SEQUENCE (SIZE (1..maxTS-LCR-1)) OF
                                                    UplinkAdditionalTimeslots-LCR-r4
        }
    }
}

Wi-LCR ::=                                                              INTEGER(1..4)

-- ***************************************************
--
--     MEASUREMENT INFORMATION ELEMENTS (10.3.7)
--
-- ***************************************************

AcquisitionSatInfo ::=              SEQUENCE {
    satID                               SatID,
    -- Actual value dopplerOthOrder = IE value * 2.5
    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


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, spare12, spare11,
                                        spare10, spare9, spare8, spare7, spare6,
                                        spare5, spare4, spare3, spare2, spare1 }

AzimuthAndElevation ::=             SEQUENCE {
    -- Actual value azimuth = IE value * 11.25
    azimuth                             INTEGER (0..31),
```

```
    -- Actual value elevation = IE value * 11.25
    elevation                           INTEGER (0..7)
}

BadSatList ::=                      SEQUENCE (SIZE (1..maxSat)) OF
                                        INTEGER (0..63)

Frequency-Band ::=                  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 {
    -- Value maxCellMeas is not allowed for verifiedBSIC
    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
}

CellDCH-ReportCriteria-LCR-r4 ::=   CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria-LCR-r4,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

-- Actual value CellIndividualOffset = 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,
            readSFN-Indicator                   BOOLEAN
        }
    }
}

CellInfo-r4 ::=                     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-r4,
			primaryCCPCH-TX-Power				PrimaryCCPCH-TX-Power		OPTIONAL,
			timeslotInfoList					TimeslotInfoList-r4			OPTIONAL,
			readSFN-Indicator					BOOLEAN

		}
	}
}

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,
			readSFN-Indicator					BOOLEAN
		}
	},
	cellSelectionReselectionInfo		CellSelectReselectInfoSIB-11-12-RSCP		OPTIONAL
}

CellInfoSI-RSCP-LCR-r4 ::=			SEQUENCE {
	cellIndividualOffset				CellIndividualOffset				DEFAULT 0,
	referenceTimeDifferenceToCell		ReferenceTimeDifferenceToCell		OPTIONAL,
	primaryCCPCH-Info					PrimaryCCPCH-Info-LCR-r4,
	primaryCCPCH-TX-Power				PrimaryCCPCH-TX-Power				OPTIONAL,
	timeslotInfoList					TimeslotInfoList-LCR-r4				OPTIONAL,
	readSFN-Indicator					BOOLEAN,
	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,
			readSFN-Indicator					BOOLEAN
		}
	},
	cellSelectionReselectionInfo		CellSelectReselectInfoSIB-11-12-ECN0	OPTIONAL
}

CellInfoSI-ECN0-LCR-r4 ::=			SEQUENCE {
	cellIndividualOffset				CellIndividualOffset				DEFAULT 0,
	referenceTimeDifferenceToCell		ReferenceTimeDifferenceToCell		OPTIONAL,
	primaryCCPCH-Info					PrimaryCCPCH-Info-LCR-r4,
	primaryCCPCH-TX-Power				PrimaryCCPCH-TX-Power				OPTIONAL,
	timeslotInfoList					TimeslotInfoList-LCR-r4				OPTIONAL,
	readSFN-Indicator					BOOLEAN,
	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,
            readSFN-Indicator                   BOOLEAN
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-RSCP    OPTIONAL
}

CellInfoSI-HCS-RSCP-LCR-r4 ::=      SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    primaryCCPCH-Info                   PrimaryCCPCH-Info-LCR-r4,
    primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power               OPTIONAL,
    timeslotInfoList                    TimeslotInfoList-LCR-r4             OPTIONAL,
    readSFN-Indicator                   BOOLEAN,
    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,
            readSFN-Indicator                   BOOLEAN
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-ECN0    OPTIONAL
}

CellInfoSI-HCS-ECN0-LCR-r4 ::=      SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    primaryCCPCH-Info                   PrimaryCCPCH-Info-LCR-r4,
    primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power               OPTIONAL,
    timeslotInfoList                    TimeslotInfoList-LCR-r4             OPTIONAL,
    readSFN-Indicator                   BOOLEAN,
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-ECN0    OPTIONAL
}

CellMeasuredResults ::=             SEQUENCE {
    cellIdentity                        CellIdentity                        OPTIONAL,
    -- dummy is not used in this version of the specification, it should
    -- not be sent and if received it should be ignored.
    dummy           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,
            pathloss                            Pathloss                    OPTIONAL,
            timeslotISCP-List                   TimeslotISCP-List           OPTIONAL
        }
    }
}
```

```
CellMeasurementEventResults ::=     CHOICE {
    fdd                                 SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            PrimaryCPICH-Info,
    tdd                                 SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            PrimaryCCPCH-Info
}

CellMeasurementEventResults-LCR-r4 ::=  SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            PrimaryCCPCH-Info-LCR-r4

CellReportingQuantities ::=         SEQUENCE {
    -- dummy is not used in this version of the specification, it should
    -- not be sent and if received it should be ignored.
    dummy                   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
        }
    }
}

CellSelectReselectInfo-v590ext ::= SEQUENCE {
    deltaQrxlevmin                  DeltaQrxlevmin                  OPTIONAL,
    deltaQhcs                       DeltaRSCP                       OPTIONAL
}

CellSelectReselectInfoPCHFACH-v5b0ext ::= SEQUENCE {
    q-Hyst-l-S-PCH              Q-Hyst-S-Fine                       OPTIONAL,
    q-Hyst-l-S-FACH             Q-Hyst-S-Fine                       OPTIONAL,
    q-Hyst-2-S-PCH              Q-Hyst-S-Fine                       OPTIONAL,
    q-Hyst-2-S-FACH             Q-Hyst-S-Fine                       OPTIONAL,
    t-Reselection-S-PCH         T-Reselection-S                     OPTIONAL,
    t-Reselection-S-FACH        T-Reselection-S-Fine                OPTIONAL
}

CellSelectReselectInfoTreselectionScaling-v5c0ext ::= SEQUENCE {
    -- For speed detection, the same HCS parameters are utilised
    non-HCS-t-CR-Max                            T-CRMax                                 OPTIONAL,
    speedDependentScalingFactor                 SpeedDependentScalingFactor             OPTIONAL,
    interFrequencyTreselectionScalingFactor     TreselectionScalingFactor               OPTIONAL,
    interRATTreselectionScalingFactor           TreselectionScalingFactor               OPTIONAL
}

CellsForInterFreqMeasList ::=       SEQUENCE (SIZE  (1..maxCellMeas)) OF
                                        InterFreqCellID
CellsForInterRATMeasList ::=            SEQUENCE (SIZE  (1..maxCellMeas)) OF
                                        InterRATCellID
CellsForIntraFreqMeasList ::=       SEQUENCE (SIZE  (1..maxCellMeas)) OF
                                        IntraFreqCellID

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     OPTIONAL
        }
    }
}

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 {
    -- Actual value countC-SFN-High = IE value * 256
    countC-SFN-High                 INTEGER(0..15),
    off                             INTEGER(0..255)
}

-- SPARE: CPICH-Ec-No, Max = 49
-- Values above Max are spare
CPICH-Ec-N0 ::=                     INTEGER (0..63)

-- SPARE: CPICH- RSCP, Max = 91
-- Values above Max are spare
CPICH-RSCP ::=                      INTEGER (0..127)


DeltaPRC ::=                        INTEGER (-127..127)

--Actual value DeltaQrxlevmin = IE value * 2
DeltaQrxlevmin ::= INTEGER (-2..-1)

DeltaRSCP ::= INTEGER (-5..-1)

DeltaRSCPPerCell ::= SEQUENCE {
    deltaRSCP                       DeltaRSCP   OPTIONAL
}

-- Actual value DeltaRRC = IE value * 0.032
DeltaRRC ::=                        INTEGER (-7..7)

DGPS-CorrectionSatInfo ::=          SEQUENCE {
    satID                               SatID,
    iode                                IODE,
    udre                                UDRE,
    prc                                 PRC,
    rrc                                 RRC,
-- dummy1 and dummy2 are not used in this version of the specification and should be ignored.
    dummy1                          DeltaPRC,
    dummy2                          DeltaRRC,
    -- dummy3 and dummy4 are not used in this version of the specification. They should not
    -- be sent and if received they should be ignored.
    dummy3                          DeltaPRC            OPTIONAL,
    dummy4                          DeltaRRC            OPTIONAL
}

DGPS-CorrectionSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
                                        DGPS-CorrectionSatInfo

DiffCorrectionStatus ::=            ENUMERATED {
                                        udre-1-0, udre-0-75, udre-0-5, udre-0-3,
                                        udre-0-2, udre-0-1, noData, invalidData }

DL-TransportChannelBLER ::=         INTEGER (0..63)

DopplerUncertainty ::=              ENUMERATED {
                                        hz12-5, hz25, hz50, hz100, hz200,
                                        spare3, spare2, spare1 }
```

```
EllipsoidPoint ::=                  SEQUENCE {
    latitudeSign        ENUMERATED { north, south },
    latitude            INTEGER (0..8388607),
    longitude           INTEGER (-8388608..8388607)
}


EllipsoidPointAltitude ::=          SEQUENCE {
    latitudeSign        ENUMERATED { north, south },
    latitude            INTEGER (0..8388607),
    longitude           INTEGER (-8388608..8388607),
    altitudeDirection   ENUMERATED {height, depth},
    altitude            INTEGER (0..32767)
}


EllipsoidPointAltitudeEllipsoide ::=    SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude                INTEGER (0..8388607),
    longitude               INTEGER (-8388608..8388607),
    altitudeDirection       ENUMERATED {height, depth},
    altitude                INTEGER (0..32767),
    uncertaintySemiMajor    INTEGER (0..127),
    uncertaintySemiMinor    INTEGER (0..127),
    -- Actual value orientationMajorAxis = IE value * 2
    orientationMajorAxis    INTEGER (0..89),
    uncertaintyAltitude     INTEGER (0..127),
    confidence              INTEGER (0..100)
}


EllipsoidPointUncertCircle ::=      SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude                INTEGER (0..8388607),
    longitude               INTEGER (-8388608..8388607),
    uncertaintyCode         INTEGER (0..127)
}


EllipsoidPointUncertEllipse ::=     SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude                INTEGER (0..8388607),
    longitude               INTEGER (-8388608..8388607),
    uncertaintySemiMajor    INTEGER (0..127),
    uncertaintySemiMinor    INTEGER (0..127),
    -- Actual value orientationMajorAxis = IE value * 2
    orientationMajorAxis    INTEGER (0..89),
    confidence              INTEGER (0..100)
}


EnvironmentCharacterisation ::=     ENUMERATED {
                                        possibleHeavyMultipathNLOS,
                                        lightMultipathLOS,
                                        notDefined,
                                        spare }

Event1a ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W,
    reportDeactivationThreshold         ReportDeactivationThreshold,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event1a-r4 ::=                      SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList-r4          OPTIONAL,
    w                                   W,
    reportDeactivationThreshold         ReportDeactivationThreshold,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}
```

```
Event1a-LCR-r4 ::=                  SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList-LCR-r4          OPTIONAL,
    w                                   W,
    reportDeactivationThreshold         ReportDeactivationThreshold,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event1b ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W
}

Event1b-r4 ::=                      SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList-r4          OPTIONAL,
    w                                   W
}

Event1b-LCR-r4 ::=                  SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList-LCR-r4          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 {
    -- dummy is not used in this version of the specification and should be ignored
    dummy                               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, spare2, spare1 }

EventIDInterRAT ::=					ENUMERATED {
										e3a, e3b, e3c, e3d }

EventIDIntraFreq ::=				ENUMERATED {
										e1a, e1b, e1c, e1d, e1e,
										e1f, e1g, e1h, e1i, spare7,
										spare6, spare5, spare4, spare3, spare2,
										spare1 }

EventResults ::=					CHOICE {
	intraFreqEventResults				IntraFreqEventResults,
	interFreqEventResults				InterFreqEventResults,
	interRATEventResults				InterRATEventResults,
	trafficVolumeEventResults			TrafficVolumeEventResults,
	qualityEventResults					QualityEventResults,
	ue-InternalEventResults				UE-InternalEventResults,
	ue-positioning-MeasurementEventResults		UE-Positioning-MeasurementEventResults,
	spare								NULL
}

ExtraDopplerInfo ::=				SEQUENCE {
	-- Actual value doppler1stOrder = IE value * 0.023
	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 is for 3.84Mcps TDD. For 1.28Mcps TDD, the IE in
    -- FACH-MeasurementOccasionInfo-LCR-r4-ext is used.
    inter-freq-TDD-meas-ind             BOOLEAN,
    inter-RAT-meas-ind                  SEQUENCE (SIZE (1..maxOtherRAT)) OF
                                            RAT-Type                        OPTIONAL
}

FACH-MeasurementOccasionInfo-LCR-r4-ext ::= SEQUENCE {
    inter-freq-TDD128-meas-ind                  BOOLEAN
}

FilterCoefficient ::=               ENUMERATED {
                                        fc0, fc1, fc2, fc3, fc4, fc5,
                                        fc6, fc7, fc8, fc9, fc11, fc13,
                                        fc15, fc17, fc19, spare1 }

-- Actual value FineSFN-SFN = IE value * 0.0625
FineSFN-SFN ::=                     INTEGER (0..15)

ForbiddenAffectCell ::=             CHOICE {
    fdd                                 PrimaryCPICH-Info,
    tdd                                 PrimaryCCPCH-Info
}

ForbiddenAffectCell-r4 ::=          CHOICE {
    fdd                                 PrimaryCPICH-Info,
    tdd                                 PrimaryCCPCH-Info-r4
}

ForbiddenAffectCell-LCR-r4 ::=      SEQUENCE {
    tdd                                 PrimaryCCPCH-Info-LCR-r4
}

ForbiddenAffectCellList ::=         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        ForbiddenAffectCell

ForbiddenAffectCellList-r4 ::=          SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        ForbiddenAffectCell-r4

ForbiddenAffectCellList-LCR-r4 ::=  SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        ForbiddenAffectCell-LCR-r4

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..1022),
    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,
    -- dummy is not used in this version of the specification, it should
    -- not be sent and if received it should be ignored.
    dummy                               INTEGER (46..173)                   OPTIONAL,
    bsicReported                        BSICReported,
    observedTimeDifferenceToGSM         ObservedTimeDifferenceToGSM         OPTIONAL
}

GSM-MeasuredResultsList ::=         SEQUENCE (SIZE (1..maxReportedGSMCells)) OF
                                        GSM-MeasuredResults
```

```
GPS-TOW-1msec ::=                   INTEGER (0..604799999)

GPS-TOW-Assist ::=                  SEQUENCE {
    satID                               SatID,
    tlm-Message                         BIT STRING (SIZE (14)),
    tlm-Reserved                        BIT STRING (SIZE (2)),
    alert                               BOOLEAN,
    antiSpoof                           BOOLEAN
}

GPS-TOW-AssistList ::=              SEQUENCE (SIZE (1..maxSat)) OF
                                        GPS-TOW-Assist

HCS-CellReselectInformation-RSCP ::=        SEQUENCE {
    -- TABULAR: The default value for penaltyTime is "notUsed"
    -- Temporary offset is nested inside PenaltyTime-RSCP
    penaltyTime                                 PenaltyTime-RSCP
}

HCS-CellReselectInformation-ECN0 ::=        SEQUENCE {
    -- TABULAR: The default value for penaltyTime is "notUsed"
    -- Temporary offset is nested inside PenaltyTime-ECN0
    penaltyTime                         PenaltyTime-ECN0
}

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 Hysteresis = IE value * 0.5
Hysteresis ::=                      INTEGER (0..15)

-- Actual value HysteresisInterFreq = IE value * 0.5
HysteresisInterFreq ::=             INTEGER (0..29)

InterFreqCell ::=                   SEQUENCE {
    frequencyInfo                       FrequencyInfo,
    nonFreqRelatedEventResults          CellMeasurementEventResults
}

InterFreqCell-LCR-r4 ::=            SEQUENCE {
    frequencyInfo                       FrequencyInfo,
    nonFreqRelatedEventResults          CellMeasurementEventResults-LCR-r4
}

InterFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

InterFreqCellInfoList ::=           SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellList                OPTIONAL,
    cellsForInterFreqMeasList           CellsForInterFreqMeasList           OPTIONAL
}

InterFreqCellInfoList-r4 ::=        SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellList-r4             OPTIONAL,
    cellsForInterFreqMeasList           CellsForInterFreqMeasList           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
}

InterFreqCellInfoSI-List-RSCP-LCR ::=		SEQUENCE {
	removedInterFreqCellList			RemovedInterFreqCellList			OPTIONAL,
	newInterFreqCellList				NewInterFreqCellSI-List-RSCP-LCR-r4		OPTIONAL
}

InterFreqCellInfoSI-List-ECN0-LCR ::=		SEQUENCE {
	removedInterFreqCellList			RemovedInterFreqCellList			OPTIONAL,
	newInterFreqCellList				NewInterFreqCellSI-List-ECN0-LCR-r4		OPTIONAL
}

InterFreqCellInfoSI-List-HCS-RSCP-LCR ::=		SEQUENCE {
	removedInterFreqCellList			RemovedInterFreqCellList			OPTIONAL,
	newInterFreqCellList				NewInterFreqCellSI-List-HCS-RSCP-LCR-r4 OPTIONAL
}
InterFreqCellInfoSI-List-HCS-ECN0-LCR ::=		SEQUENCE {
	removedInterFreqCellList			RemovedInterFreqCellList			OPTIONAL,
	newInterFreqCellList				NewInterFreqCellSI-List-HCS-ECN0-LCR-r4 OPTIONAL
}

InterFreqCellList ::=				SEQUENCE (SIZE (1..maxFreq)) OF
										InterFreqCell

InterFreqCellList-LCR-r4-ext ::=	SEQUENCE (SIZE (1..maxFreq)) OF
										InterFreqCell-LCR-r4

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

--Following IE shall be used regardless of CPICH RSCP(FDD) or Primary CCPCH RSCP(TDD)
--The order of the list corresponds to the order of the cells in Inter-FrequencyMeasuredResultsList
InterFrequencyMeasuredResultsList-v590ext ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
												DeltaRSCPPerCell

Inter-FreqEventCriteria-v590ext ::= SEQUENCE {
	threholdUsedFrequency-delta				DeltaRSCP,
	threholdNonUsedFrequency-deltaList		ThreholdNonUsedFrequency-deltaList		OPTIONAL
}

--The order of the list corresponds to the order of the events in Inter-FreqEventList
Inter-FreqEventCriteriaList-v590ext ::= SEQUENCE (SIZE (1..maxMeasEvent)) OF
											Inter-FreqEventCriteria-v590ext

--The order of the list corresponds to the order of relevant events in Intra-FreqEventCriteriaList
--i.e. the first element of the list corresponds to the first occurance of event 1e, 1f, 1h, 1i,
--the second element of the list corresponds to the second occurance of event 1e, 1f, 1h, 1i
Intra-FreqEventCriteriaList-v590ext ::= SEQUENCE (SIZE (1..maxMeasEvent)) OF
											DeltaRSCP

--Following IE shall be used regardless of CPICH RSCP(FDD) or Primary CCPCH RSCP(TDD)
```

```
--The order of the list corresponds to the order of the cells in Intra-FrequencyMeasuredResultsList
IntraFrequencyMeasuredResultsList-v590ext ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                DeltaRSCPPerCell

IntraFreqReportingCriteria-1b-r5 ::= SEQUENCE {
    periodicReportingInfo-1b            PeriodicReportingInfo-1b
}

PeriodicReportingInfo-1b ::= SEQUENCE {
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

InterFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDInterFreq,
    interFreqCellList                   InterFreqCellList                   OPTIONAL
}

InterFreqEventResults-LCR-r4-ext ::=    SEQUENCE {
    eventID                             EventIDInterFreq,
    interFreqCellList                   InterFreqCellList-LCR-r4-ext        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
}

InterFreqMeasurementSysInfo-RSCP-LCR-r4 ::= SEQUENCE {
    interFreqCellInfoSI-List                InterFreqCellInfoSI-List-RSCP-LCR       OPTIONAL
}

InterFreqMeasurementSysInfo-ECN0-LCR-r4 ::=     SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-ECN0-LCR       OPTIONAL
}

InterFreqMeasurementSysInfo-HCS-RSCP-LCR-r4 ::=     SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-RSCP-LCR   OPTIONAL
```

```
}

InterFreqMeasurementSysInfo-HCS-ECN0-LCR-r4 ::=     SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-ECN0-LCR   OPTIONAL
}

InterFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    interFreqReportingCriteria          InterFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterFreqReportCriteria-r4 ::=      CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria-r4,
    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
}

InterFrequencyMeasurement-r4 ::=    SEQUENCE {
    interFreqCellInfoList               InterFreqCellInfoList-r4,
    interFreqMeasQuantity               InterFreqMeasQuantity               OPTIONAL,
    interFreqReportingQuantity          InterFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    interFreqSetUpdate                  UE-AutonomousUpdateMode             OPTIONAL,
    reportCriteria                      InterFreqReportCriteria-r4
}

InterRAT-TargetCellDescription ::=  SEQUENCE {
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            bsic                                BSIC,
            frequency-band                      Frequency-Band,
            bcch-ARFCN                          BCCH-ARFCN,
            ncMode                              NC-Mode             OPTIONAL
        },
        is-2000                             NULL,
        spare2                              NULL,
        spare1                              NULL
    }
}

InterRATCellID ::=              INTEGER (0..maxCellMeas-1)

InterRATCellInfoIndicator ::=       INTEGER (0..3)

InterRATCellInfoList ::=            SEQUENCE {
    removedInterRATCellList         RemovedInterRATCellList,
    -- NOTE: Future revisions of dedicated messages including IE newInterRATCellList
    -- should use a corrected version of this IE
    newInterRATCellList             NewInterRATCellList,
    cellsForInterRATMeasList            CellsForInterRATMeasList            OPTIONAL
}

InterRATCellInfoList-B ::=          SEQUENCE {
    removedInterRATCellList         RemovedInterRATCellList,
    -- NOTE: IE newInterRATCellList should be optional.  However, system information
    -- does not support message versions.  Hence, this can not be corrected
```

```
	newInterRATCellList				NewInterRATCellList-B
}

InterRATCellInfoList-r4 ::=			SEQUENCE {
	removedInterRATCellList				RemovedInterRATCellList,
	newInterRATCellList					NewInterRATCellList				OPTIONAL,
	cellsForInterRATMeasList			CellsForInterRATMeasList		OPTIONAL
}

InterRATCellIndividualOffset ::=		INTEGER (-50..50)

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 }

InterRATInfo-r6 ::=				SEQUENCE {
	rat								InterRATInfo,
	gsm-TargetCellInfoList			GSM-TargetCellInfoList			OPTIONAL
}

InterRATMeasQuantity ::=				SEQUENCE {
	measQuantityUTRAN-QualityEstimate		IntraFreqMeasQuantity			OPTIONAL,
	ratSpecificInfo						CHOICE {
		gsm									SEQUENCE {
			measurementQuantity					MeasurementQuantityGSM,
			filterCoefficient					FilterCoefficient		DEFAULT fc0,
			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-16)) OF
									InterRATMeasuredResults

InterRATMeasurement ::=			SEQUENCE {
	interRATCellInfoList			InterRATCellInfoList				OPTIONAL,
	interRATMeasQuantity			InterRATMeasQuantity				OPTIONAL,
	interRATReportingQuantity		InterRATReportingQuantity		OPTIONAL,
	reportCriteria					InterRATReportCriteria
}

InterRATMeasurement-r4 ::=			SEQUENCE {
	interRATCellInfoList			InterRATCellInfoList-r4			OPTIONAL,
	interRATMeasQuantity			InterRATMeasQuantity				OPTIONAL,
	interRATReportingQuantity		InterRATReportingQuantity		OPTIONAL,
	reportCriteria					InterRATReportCriteria
}

InterRATMeasurementSysInfo ::=	SEQUENCE {
	interRATCellInfoList			InterRATCellInfoList				OPTIONAL
}

InterRATMeasurementSysInfo-B ::=	SEQUENCE {
```

```
    interRATCellInfoList                InterRATCellInfoList-B          OPTIONAL
}

InterRATReportCriteria ::=      CHOICE {
    interRATReportingCriteria           InterRATReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterRATReportingCriteria ::=   SEQUENCE {
    interRATEventList               InterRATEventList               OPTIONAL
}

InterRATReportingQuantity ::=   SEQUENCE {
    utran-EstimatedQuality              BOOLEAN,
    ratSpecificInfo                 CHOICE {
        gsm                                 SEQUENCE {
            dummy                               BOOLEAN,
            observedTimeDifferenceGSM           BOOLEAN,
            gsm-Carrier-RSSI                    BOOLEAN
        }
    }
}

IntraFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

IntraFreqCellInfoList ::=           SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellList                OPTIONAL,
    cellsForIntraFreqMeasList           CellsForIntraFreqMeasList           OPTIONAL
}

IntraFreqCellInfoList-r4 ::=        SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellList-r4             OPTIONAL,
    cellsForIntraFreqMeasList           CellsForIntraFreqMeasList           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
}

IntraFreqCellInfoSI-List-RSCP-LCR-r4 ::=    SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-RSCP-LCR-r4
}

IntraFreqCellInfoSI-List-ECN0-LCR-r4 ::=        SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-ECN0-LCR-r4
}

IntraFreqCellInfoSI-List-HCS-RSCP-LCR-r4 ::=        SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-RSCP-LCR-r4
}

IntraFreqCellInfoSI-List-HCS-ECN0-LCR-r4 ::=        SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-ECN0-LCR-r4
}
```

```
IntraFreqEvent ::=                  CHOICE {
    e1a                                 Event1a,
    e1b                                 Event1b,
    e1c                                 Event1c,
    e1d                                 NULL,
    e1e                                 Event1e,
    e1f                                 Event1f,
    e1g                                 NULL,
    e1h                                 ThresholdUsedFrequency,
    e1i                                 ThresholdUsedFrequency
}

IntraFreqEvent-r4 ::=               CHOICE {
    e1a                                 Event1a-r4,
    e1b                                 Event1b-r4,
    e1c                                 Event1c,
    e1d                                 NULL,
    e1e                                 Event1e,
    e1f                                 Event1f,
    e1g                                 NULL,
    e1h                                 ThresholdUsedFrequency,
    e1i                                 ThresholdUsedFrequency
}

IntraFreqEvent-LCR-r4 ::=           CHOICE {
    e1a                                 Event1a-LCR-r4,
    e1b                                 Event1b-LCR-r4,
    e1c                                 Event1c,
    e1d                                 NULL,
    e1e                                 Event1e,
    e1f                                 Event1f,
    e1g                                 NULL,
    e1h                                 ThresholdUsedFrequency,
    e1i                                 ThresholdUsedFrequency
}

IntraFreqEvent-1d-r5 ::=        SEQUENCE {
    triggeringCondition                 TriggeringCondition2    OPTIONAL,
    useCIO                              BOOLEAN                 OPTIONAL
}

IntraFreqEventCriteria ::=          SEQUENCE {
    event                               IntraFreqEvent,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

IntraFreqEventCriteria-r4 ::=       SEQUENCE {
    event                               IntraFreqEvent-r4,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

IntraFreqEventCriteria-LCR-r4 ::=   SEQUENCE {
    event                               IntraFreqEvent-LCR-r4,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

IntraFreqEventCriteriaList ::=      SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        IntraFreqEventCriteria

IntraFreqEventCriteriaList-r4 ::=   SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        IntraFreqEventCriteria-r4

IntraFreqEventCriteriaList-LCR-r4 ::=   SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        IntraFreqEventCriteria-LCR-r4

IntraFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDIntraFreq,
    cellMeasurementEventResults         CellMeasurementEventResults
}

IntraFreqMeasQuantity ::=           SEQUENCE {
    filterCoefficient                   FilterCoefficient                   DEFAULT fc0,
```

```
    modeSpecificInfo                    CHOICE {
        fdd                             SEQUENCE {
            intraFreqMeasQuantity-FDD       IntraFreqMeasQuantity-FDD
        },
        tdd                             SEQUENCE {
            intraFreqMeasQuantity-TDDList   IntraFreqMeasQuantity-TDDList
        }
    }
}

-- If IntraFreqMeasQuantity-FDD is used in InterRATMeasQuantity, then only
-- cpich-Ec-N0 and cpich-RSCP are allowed.
-- dummy is not used in this version of the specification, it should
-- not be sent and if received it should be ignored.
IntraFreqMeasQuantity-FDD ::=       ENUMERATED {
                                        cpich-Ec-N0,
                                        cpich-RSCP,
                                        pathloss,
                                        dummy }

-- dummy is not used in this version of the specification, it should
-- not be sent and if received it should be ignored.
IntraFreqMeasQuantity-TDD ::=       ENUMERATED {
                                        primaryCCPCH-RSCP,
                                        pathloss,
                                        timeslotISCP,
                                        dummy }

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
}

IntraFreqMeasurementSysInfo-RSCP-LCR-r4 ::= SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-RSCP-LCR-r4    OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH-LCR-r4      OPTIONAL
}
```

```
IntraFreqMeasurementSysInfo-ECN0-LCR-r4 ::=     SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-ECN0-LCR-r4    OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH-LCR-r4      OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-RSCP-LCR-r4 ::= SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-RSCP-LCR-r4    OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH-LCR-r4      OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-ECN0-LCR-r4 ::= SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-ECN0-LCR-r4    OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH-LCR-r4      OPTIONAL
}

IntraFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

IntraFreqReportCriteria-r4 ::=      CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria-r4,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

IntraFreqReportingCriteria ::=      SEQUENCE {
    eventCriteriaList                   IntraFreqEventCriteriaList      OPTIONAL
}

IntraFreqReportingCriteria-r4 ::=   SEQUENCE {
    eventCriteriaList                   IntraFreqEventCriteriaList-r4   OPTIONAL
}

IntraFreqReportingCriteria-LCR-r4 ::=   SEQUENCE {
    eventCriteriaList                   IntraFreqEventCriteriaList-LCR-r4   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
}

IntraFrequencyMeasurement-r4 ::=    SEQUENCE {
    intraFreqCellInfoList               IntraFreqCellInfoList-r4            OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantity          IntraFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                      IntraFreqReportCriteria-r4          OPTIONAL
}

IODE ::=                            INTEGER (0..255)

IP-Length ::=                       ENUMERATED {
                                        ipl5, ipl10 }

IP-PCCPCH-r4 ::=                    BOOLEAN

IP-Spacing ::=                      ENUMERATED {
                                        e5, e7, e10, e15, e20,
                                        e30, e40, e50 }

IP-Spacing-TDD ::=                      ENUMERATED {
                                        e30, e40, e50, e70, e100}

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,
    ue-positioning-MeasuredResults      UE-Positioning-MeasuredResults,
    spare                               NULL
}

MeasuredResults-v390ext ::=                 SEQUENCE {
    ue-positioning-MeasuredResults-v390ext                  UE-Positioning-MeasuredResults-v390ext
}
```

```
MeasuredResults-v590ext ::= CHOICE {
    intraFrequencyMeasuredResultsList       IntraFrequencyMeasuredResultsList-v590ext,
    interFrequencyMeasuredResultsList       InterFrequencyMeasuredResultsList-v590ext
}

MeasuredResults-LCR-r4 ::=          CHOICE {
    intraFreqMeasuredResultsList        IntraFreqMeasuredResultsList,
    interFreqMeasuredResultsList        InterFreqMeasuredResultsList,
    interRATMeasuredResultsList     InterRATMeasuredResultsList,
    trafficVolumeMeasuredResultsList    TrafficVolumeMeasuredResultsList,
    qualityMeasuredResults              QualityMeasuredResults,
    ue-InternalMeasuredResults          UE-InternalMeasuredResults-LCR-r4,
    ue-positioniing-MeasuredResults     UE-Positioning-MeasuredResults,
    spare                               NULL
}

MeasuredResultsList ::=             SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasuredResults

MeasuredResultsList-LCR-r4-ext ::=  SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasuredResults-LCR-r4

MeasuredResultsOnRACH ::=           SEQUENCE {
    currentCell                         SEQUENCE {
        modeSpecificInfo                    CHOICE {
            fdd                                 SEQUENCE {
                measurementQuantity                 CHOICE {
                    cpich-Ec-N0                         CPICH-Ec-N0,
                    cpich-RSCP                          CPICH-RSCP,
                    pathloss                            Pathloss,
                    spare                               NULL
                }
            },
            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
}

MeasurementCommand-r4 ::=           CHOICE {
    setup                               MeasurementType-r4,
    modify                              SEQUENCE {
        measurementType                     MeasurementType-r4              OPTIONAL
    },
    release                             NULL
}

MeasurementControlSysInfo ::=       SEQUENCE {
    -- CHOICE cellSelectQualityMeasure represents PCCPCH-RSCP in TDD mode.
    use-of-HCS                          CHOICE  {
        hcs-not-used                        SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-RSCP
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-RSCP    OPTIONAL
                },
                cpich-Ec-N0             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-ECN0
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-ECN0    OPTIONAL
                }
            },
            interRATMeasurementSysInfo      InterRATMeasurementSysInfo-B        OPTIONAL
        },
        hcs-used                            SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
```

```
				cpich-RSCP				SEQUENCE	{
					intraFreqMeasurementSysInfo			IntraFreqMeasurementSysInfo-HCS-RSCP
	OPTIONAL,
					interFreqMeasurementSysInfo			InterFreqMeasurementSysInfo-HCS-RSCP
	OPTIONAL
				},
				cpich-Ec-N0				SEQUENCE	{
					intraFreqMeasurementSysInfo			IntraFreqMeasurementSysInfo-HCS-ECN0
	OPTIONAL,
					interFreqMeasurementSysInfo			InterFreqMeasurementSysInfo-HCS-ECN0
	OPTIONAL				}
			},
			interRATMeasurementSysInfo		InterRATMeasurementSysInfo		OPTIONAL
		}
	},

	trafficVolumeMeasSysInfo			TrafficVolumeMeasSysInfo			OPTIONAL,
	-- dummy is not used in this version of specification and it shall be ignored by the UE.
	dummy		UE-InternalMeasurementSysInfo		OPTIONAL
}

MeasurementControlSysInfo-LCR-r4-ext ::=	SEQUENCE {
	-- CHOICE use-of-HCS shall have the same value as the use-of-HCS
	-- in MeasurementControlSysInfo
	-- CHOICE cellSelectQualityMeasure represents PCCPCH-RSCP in TDD mode.
	use-of-HCS							CHOICE	{
		hcs-not-used					SEQUENCE	{
			-- CHOICE cellSelectQualityMeasure shall have the same value as the
			-- cellSelectQualityMeasure in MeasurementControlSysInfo
			cellSelectQualityMeasure	CHOICE	{
				cpich-RSCP				SEQUENCE	{
					intraFreqMeasurementSysInfo IntraFreqMeasurementSysInfo-RSCP-LCR-r4 OPTIONAL,
					interFreqMeasurementSysInfo InterFreqMeasurementSysInfo-RSCP-LCR-r4 OPTIONAL
				},
				cpich-Ec-N0				SEQUENCE	{
					intraFreqMeasurementSysInfo IntraFreqMeasurementSysInfo-ECN0-LCR-r4 OPTIONAL,
					interFreqMeasurementSysInfo InterFreqMeasurementSysInfo-ECN0-LCR-r4 OPTIONAL
				}
			}
		},
		hcs-used						SEQUENCE	{
			-- CHOICE cellSelectQualityMeasure shall have the same value as the
			-- cellSelectQualityMeasure in MeasurementControlSysInfo
			cellSelectQualityMeasure	CHOICE	{
				cpich-RSCP				SEQUENCE	{
					intraFreqMeasurementSysInfo IntraFreqMeasurementSysInfo-HCS-RSCP-LCR-r4
	OPTIONAL,
					interFreqMeasurementSysInfo InterFreqMeasurementSysInfo-HCS-RSCP-LCR-r4 OPTIONAL
				},
				cpich-Ec-N0				SEQUENCE	{
					intraFreqMeasurementSysInfo IntraFreqMeasurementSysInfo-HCS-ECN0-LCR-r4
	OPTIONAL,
					interFreqMeasurementSysInfo InterFreqMeasurementSysInfo-HCS-ECN0-LCR-r4 OPTIONAL
				}
			}
		}
	}
}

MeasurementIdentity ::=		INTEGER (1..16)

MeasurementQuantityGSM ::=			ENUMERATED {
										gsm-CarrierRSSI,
										dummy }

MeasurementReportingMode ::=		SEQUENCE {
	measurementReportTransferMode		TransferMode,
	periodicalOrEventTrigger			PeriodicalOrEventTrigger
}

MeasurementType ::=					CHOICE {
	intraFrequencyMeasurement			IntraFrequencyMeasurement,
	interFrequencyMeasurement			InterFrequencyMeasurement,
	interRATMeasurement					InterRATMeasurement,
	ue-positioning-Measurement			UE-Positioning-Measurement,
	trafficVolumeMeasurement			TrafficVolumeMeasurement,
	qualityMeasurement					QualityMeasurement,
	ue-InternalMeasurement				UE-InternalMeasurement
```

```
}

MeasurementType-r4 ::=              CHOICE {
    intraFrequencyMeasurement           IntraFrequencyMeasurement-r4,
    interFrequencyMeasurement           InterFrequencyMeasurement-r4,
    interRATMeasurement                 InterRATMeasurement-r4,
    up-Measurement                      UE-Positioning-Measurement-r4,
    trafficVolumeMeasurement            TrafficVolumeMeasurement,
    qualityMeasurement                  QualityMeasurement,
    ue-InternalMeasurement              UE-InternalMeasurement-r4
}

MeasurementValidity ::=             SEQUENCE {
    ue-State                            ENUMERATED {
                                            cell-DCH, all-But-Cell-DCH, all-States }
}

MonitoredCellRACH-List ::=          SEQUENCE (SIZE (1..8)) 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,
                spare                               NULL
            }                                                               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,
    ephemerisParameter                  EphemerisParameter      OPTIONAL
}

NavigationModelSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
                                        NavigationModelSatInfo

EphemerisParameter ::=                  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,
			uE-RX-TX-TimeDifferenceType2Info	UE-RX-TX-TimeDifferenceType2Info	OPTIONAL
		},
		tdd							SEQUENCE {
			neighbourAndChannelIdentity	CellAndChannelIdentity				OPTIONAL
		}
	},
	neighbourQuality				NeighbourQuality,
	sfn-SFN-ObsTimeDifference2		SFN-SFN-ObsTimeDifference2}

Neighbour-v390ext ::=				SEQUENCE {
	modeSpecificInfo				CHOICE {
		fdd							SEQUENCE {
			frequencyInfo					FrequencyInfo
		},
		tdd							NULL
	}
}

NeighbourList ::=				SEQUENCE (SIZE (1..maxCellMeas)) OF
									Neighbour

-- The order of the cells in IE NeighbourList-v390ext shall be the
-- same as the order in IE NeighbourList
NeighbourList-v390ext ::=			SEQUENCE (SIZE (1..maxCellMeas)) OF
									Neighbour-v390ext

NeighbourQuality ::=			SEQUENCE {
	ue-Positioning-OTDOA-Quality	UE-Positioning-OTDOA-Quality
}

NewInterFreqCell ::=			SEQUENCE {
	interFreqCellID					InterFreqCellID					OPTIONAL,
	frequencyInfo					FrequencyInfo					OPTIONAL,
	cellInfo						CellInfo
}

NewInterFreqCell-r4 ::=			SEQUENCE {
	interFreqCellID					InterFreqCellID					OPTIONAL,
	frequencyInfo					FrequencyInfo					OPTIONAL,
	cellInfo						CellInfo-r4
}

NewInterFreqCellList ::=		SEQUENCE (SIZE (1..maxCellMeas)) OF
									NewInterFreqCell

NewInterFreqCellList-r4 ::=		SEQUENCE (SIZE (1..maxCellMeas)) OF
									NewInterFreqCell-r4

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-RSCP-LCR-r4 ::=       SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-RSCP-LCR-r4
}

NewInterFreqCellSI-ECN0-LCR-r4 ::=       SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-ECN0-LCR-r4
}

NewInterFreqCellSI-HCS-RSCP-LCR-r4 ::=   SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-HCS-RSCP-LCR-r4
}

NewInterFreqCellSI-HCS-ECN0-LCR-r4 ::=   SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI-HCS-ECN0-LCR-r4
}

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

NewInterFreqCellSI-List-ECN0-LCR-r4 ::=     SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-ECN0-LCR-r4

NewInterFreqCellSI-List-HCS-RSCP-LCR-r4 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-HCS-RSCP-LCR-r4

NewInterFreqCellSI-List-HCS-ECN0-LCR-r4 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-HCS-ECN0-LCR-r4

NewInterFreqCellSI-List-RSCP-LCR-r4 ::=     SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCellSI-RSCP-LCR-r4

NewInterRATCell ::=             SEQUENCE {
    interRATCellID                      InterRATCellID          OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12     OPTIONAL,
            interRATCellIndividualOffset        InterRATCellIndividualOffset,
            bsic                                BSIC,
            frequency-band                      Frequency-Band,
            bcch-ARFCN                          BCCH-ARFCN,
            -- dummy is not used in this version of the specification, it should
            -- not be sent and if received it should be ignored.
            dummy                               NULL                OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        -- ASN.1 inconsistency: NewInterRATCellList should be optional within
        -- InterRATCellInfoList. The UE shall consider IE NewInterRATCell with
```

```
        -- technologySpecificInfo set to "absent" as valid and handle the
        -- message as if the IE NewInterRATCell was absent
        absent                              NULL,
        spare1                              NULL
    }
}

NewInterRATCell-B ::=               SEQUENCE {
    interRATCellID                      InterRATCellID              OPTIONAL,
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12     OPTIONAL,
            interRATCellIndividualOffset        InterRATCellIndividualOffset,
            bsic                                BSIC,
            frequency-band                      Frequency-Band,
            bcch-ARFCN                          BCCH-ARFCN,
            -- dummy is not used in this version of the specification, it should
            -- not be sent and if received it should be ignored.
            dummy                               NULL                OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        -- ASN.1 inconsistency: NewInterRATCellList-B should be optional within
        -- InterRATCellInfoList-B. The UE shall consider IE NewInterRATCell-B with
        -- technologySpecificInfo set to "absent" as valid and handle the
        -- message as if the IE NewInterRATCell-B was absent
        absent                              NULL,
        spare1                              NULL
    }
}

NewInterRATCellList ::=         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                    NewInterRATCell

NewInterRATCellList-B ::=           SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterRATCell-B

NewIntraFreqCell ::=                SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfo
}

NewIntraFreqCell-r4 ::=             SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfo-r4
}

NewIntraFreqCellList ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewIntraFreqCell

NewIntraFreqCellList-r4 ::=         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewIntraFreqCell-r4

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-RSCP-LCR-r4 ::=      SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-RSCP-LCR-r4
}
```

```
NewIntraFreqCellSI-ECN0-LCR-r4 ::=      SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-ECN0-LCR-r4
}
NewIntraFreqCellSI-HCS-RSCP-LCR-r4 ::=  SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-HCS-RSCP-LCR-r4
}

NewIntraFreqCellSI-HCS-ECN0-LCR-r4 ::=  SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI-HCS-ECN0-LCR-r4
}

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

NewIntraFreqCellSI-List-RSCP-LCR-r4 ::=     SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            NewIntraFreqCellSI-RSCP-LCR-r4

NewIntraFreqCellSI-List-ECN0-LCR-r4 ::=     SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewIntraFreqCellSI-ECN0-LCR-r4

NewIntraFreqCellSI-List-HCS-RSCP-LCR-r4 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewIntraFreqCellSI-HCS-RSCP-LCR-r4

NewIntraFreqCellSI-List-HCS-ECN0-LCR-r4 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewIntraFreqCellSI-HCS-ECN0-LCR-r4

    -- IE "nonUsedFreqThreshold" is not needed in case of event 2a
    -- In case of event 2a UTRAN should include value 0 within IE "nonUsedFreqThreshold"
    -- In case of event 2a, the UE shall be ignore IE "nonUsedFreqThreshold"
    -- In later versions of the message including this IE, a special version of
    -- IE "NonUsedFreqParameterList" may be defined for event 2a, namely a
    -- version not including IE "nonUsedFreqThreshold"
NonUsedFreqParameter ::=            SEQUENCE {
    nonUsedFreqThreshold                Threshold,
    nonUsedFreqW                        W
}

NonUsedFreqParameterList ::=        SEQUENCE (SIZE (1..maxFreq)) OF
                                        NonUsedFreqParameter

ObservedTimeDifferenceToGSM ::=     INTEGER (0..4095)

OTDOA-SearchWindowSize ::=          ENUMERATED {
                                        c20, c40, c80, c160, c320,
                                        c640, c1280, moreThan1280 }

-- SPARE: Pathloss, Max = 158
-- Values above Max are spare
Pathloss ::=                        INTEGER (46..173)

PenaltyTime-RSCP ::=                CHOICE {
    notUsed                             NULL,
    pt10                                TemporaryOffset1,
    pt20                                TemporaryOffset1,
    pt30                                TemporaryOffset1,
    pt40                                TemporaryOffset1,
    pt50                                TemporaryOffset1,
    pt60                                TemporaryOffset1
}

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
}

PLMNIdentitiesOfNeighbourCells ::=  SEQUENCE {
        plmnsOfIntraFreqCellsList       PLMNsOfIntraFreqCellsList           OPTIONAL,
        plmnsOfInterFreqCellsList       PLMNsOfInterFreqCellsList           OPTIONAL,
        plmnsOfInterRATCellsList        PLMNsOfInterRATCellsList            OPTIONAL
}

PLMNsOfInterFreqCellsList ::=           SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            SEQUENCE {
    plmn-Identity                               PLMN-Identity               OPTIONAL
}

PLMNsOfIntraFreqCellsList ::=           SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            SEQUENCE {
    plmn-Identity                               PLMN-Identity               OPTIONAL
}

PLMNsOfInterRATCellsList ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            SEQUENCE {
    plmn-Identity                               PLMN-Identity               OPTIONAL
}

PositionEstimate ::=                CHOICE {
    ellipsoidPoint                      EllipsoidPoint,
    ellipsoidPointUncertCircle          EllipsoidPointUncertCircle,
    ellipsoidPointUncertEllipse         EllipsoidPointUncertEllipse,
    ellipsoidPointAltitude              EllipsoidPointAltitude,
    ellipsoidPointAltitudeEllipse       EllipsoidPointAltitudeEllipsoide
}

PositioningMethod ::=               ENUMERATED {
                                        otdoa,
                                        gps,
                                        otdoaOrGPS, cellID }

-- Actual value PRC = IE value * 0.32
PRC ::=                             INTEGER (-2047..2047)

-- SPARE: PrimaryCCPCH-RSCP, Max = 91
-- Values above Max are spare
PrimaryCCPCH-RSCP ::=               INTEGER (0..127)

Q-HCS ::=                           INTEGER (0..99)

Q-OffsetS-N ::=                     INTEGER (-50..50)

Q-QualMin ::=                       INTEGER (-24..0)

-- Actual value Q-RxlevMin = (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
        }
    }
}

RAT-Type ::=                        ENUMERATED {
                                        gsm, is2000 }

ReferenceCellPosition ::=           CHOICE {
    ellipsoidPoint                      EllipsoidPoint,
    ellipsoidPointWithAltitude          EllipsoidPointAltitude
}

-- ReferenceLocation, as defined in 23.032
ReferenceLocation ::=           SEQUENCE {
    ellipsoidPointAltitudeEllipsoide        EllipsoidPointAltitudeEllipsoide
}

ReferenceTimeDifferenceToCell ::=   CHOICE {
    -- Actual value accuracy40 = IE value * 40
    accuracy40                          INTEGER (0..960),
    -- Actual value accuracy256 = IE value * 256
    accuracy256                         INTEGER (0..150),
    -- Actual value accuracy2560 = 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,
    withinMonitoredAndOrVirtualActiveSetNonUsedFreq
                                        MaxNumberOfReportingCellsType1,
    allVirtualActSetplusMonitoredSetNonUsedFreq
                                        MaxNumberOfReportingCellsType3,
    withinActSetOrVirtualActSet-InterRATcells
                                        MaxNumberOfReportingCellsType2,
    withinActSetAndOrMonitoredUsedFreqOrVirtualActSetAndOrMonitoredNonUsedFreq
                                        MaxNumberOfReportingCellsType2
}

ReportingCellStatusOpt ::=          SEQUENCE {
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}


ReportingInfoForCellDCH ::=         SEQUENCE {
    intraFreqReportingQuantity          IntraFreqReportingQuantity,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteria                      CellDCH-ReportCriteria
}

ReportingInfoForCellDCH-LCR-r4 ::=  SEQUENCE {
    intraFreqReportingQuantity          IntraFreqReportingQuantity,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteria                      CellDCH-ReportCriteria-LCR-r4
}

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 }
                                    -- When the value "ril0" is used, the UE behaviour is not
                                    -- defined.

-- Actual value ReportingRange = 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-RemovalInformationList           RL-RemovalInformationList           OPTIONAL
}
```

```
RLC-BuffersPayload ::=              ENUMERATED {
                                        pl0, pl4, pl8, pl16, pl32,
                                        pl64, pl128, pl256, pl512, pl1024,
                                        pl2k, pl4k, pl8k, pl16k, pl32k,
                                        pl64k, pl128k, pl256k, pl512k, pl1024k,
                                        spare12, spare11, spare10, spare9, spare8,
                                        spare7, spare6, spare5, spare4, spare3,
                                        spare2, spare1 }

-- Actual value RRC = IE value * 0.032
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,
                                        rev2,
                                        rev }

-- Identifies the satellite and is equal to (SV ID No - 1) where SV ID No is defined in [12].
SatID ::=                           INTEGER (0..63)

SFN-Offset-Validity ::=         ENUMERATED { false }

SFN-SFN-Drift ::=                   ENUMERATED {
                                        sfnsfndrift0, sfnsfndrift1, sfnsfndrift2,
                                        sfnsfndrift3, sfnsfndrift4, sfnsfndrift5,
                                        sfnsfndrift8, sfnsfndrift10, sfnsfndrift15,
                                        sfnsfndrift25, sfnsfndrift35, sfnsfndrift50,
                                        sfnsfndrift65, sfnsfndrift80, sfnsfndrift100,
                                        sfnsfndrift-1, sfnsfndrift-2, sfnsfndrift-3,
                                        sfnsfndrift-4, sfnsfndrift-5, sfnsfndrift-8,
                                        sfnsfndrift-10, sfnsfndrift-15, sfnsfndrift-25,
                                        sfnsfndrift-35, sfnsfndrift-50, sfnsfndrift-65,
                                        sfnsfndrift-80, sfnsfndrift-100}

SFN-SFN-ObsTimeDifference ::=       CHOICE {
    type1                               SFN-SFN-ObsTimeDifference1,
    type2                               SFN-SFN-ObsTimeDifference2
}

-- SPARE: SFN-SFN-ObsTimeDifference1, Max = 9830399
-- For 1.28Mcps TDD, Max value of SFN-SFN-ObsTimeDifference1 is 3276799.
-- Values above Max are spare
SFN-SFN-ObsTimeDifference1 ::=      INTEGER (0..16777215)

-- SPARE: SFN-SFN-ObsTimeDifference2, Max = 40961
-- For 1.28Mcps TDD, Max value of SFN-SFN-ObsTimeDifference2 is 27649.
-- Values above Max are spare
SFN-SFN-ObsTimeDifference2 ::=      INTEGER (0..65535)

SFN-SFN-OTD-Type ::=                ENUMERATED {
                                        noReport,
                                        type1,
                                        type2 }

SFN-SFN-RelTimeDifference1 ::=      SEQUENCE {
    sfn-Offset                          INTEGER (0 .. 4095),
    sfn-sfn-Reltimedifference           INTEGER (0.. 38399)
}

SFN-TOW-Uncertainty ::=             ENUMERATED {
                                        lessThan10,
                                        moreThan10 }


SIR ::=                             INTEGER (0..63)
```

```
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

-- SubFrame1Reserved, 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-ADVinfo ::=                       SEQUENCE {
                t-ADV                   INTEGER(0..2047),
                sfn                     INTEGER(0..4095)
}

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 }

TemporaryOffset1 ::=                ENUMERATED {
                                        to3, to6, to9, to12, to15,
                                        to18, to21, infinite }

TemporaryOffset2 ::=                ENUMERATED {
                                        to2, to3, to4, to6, to8,
                                        to10, to12, infinite }

TemporaryOffsetList ::=             SEQUENCE    {
        temporaryOffset1                TemporaryOffset1,
        temporaryOffset2                TemporaryOffset2
}

Threshold ::=                       INTEGER (-115..0)

-- The order of the list corresponds to the order of frequency defined in Inter-FreqEventCriteria
ThreholdNonUsedFrequency-deltaList ::= SEQUENCE (SIZE (1..maxFreq)) OF
                                            DeltaRSCPPerCell

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 TimeInterval = IE value * 20.
TimeInterval ::=                    INTEGER (1..13)


TimeslotInfo ::=                    SEQUENCE {
    timeslotNumber                      TimeslotNumber,
    burstType                           BurstType
}

TimeslotInfo-LCR-r4 ::=             SEQUENCE {
    timeslotNumber                      TimeslotNumber-LCR-r4
}

TimeslotInfoList ::=                SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotInfo

TimeslotInfoList-LCR-r4 ::=         SEQUENCE (SIZE (1..maxTS-LCR)) OF
                                        TimeslotInfo-LCR-r4

TimeslotInfoList-r4 ::=             CHOICE {
    tdd384                              SEQUENCE (SIZE (1..maxTS)) OF
                                            TimeslotInfo,
    tdd128                              SEQUENCE (SIZE (1..maxTS-LCR)) OF
                                            TimeslotInfo-LCR-r4
}

-- SPARE: TimeslotISCP, Max = 91
-- Values above Max are spare
TimeslotISCP ::=                    INTEGER (0..127)


-- TimeslotISCP-List shall not include more than 6 elements in 1.28Mcps TDD mode.
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     UL-TrCH-Identity,
    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,
    -- dummy is not used in this version of specification, it should
    -- not be sent and if received it should be ignored.
    dummy                               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
                                            UL-TrCH-Identity

TrafficVolumeReportCriteria ::=     CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

TrafficVolumeReportCriteriaSysInfo ::=  CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

TrafficVolumeReportingCriteria ::= SEQUENCE {
    -- NOTE: transChCriteriaList should be mandatory in later versions of this message
    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               UL-TrCH-Identity                    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,
    -- in 1.28 Mcps TDD ue-RX-TX-TimeDifferenceThreshold corresponds to T_ADV Threshold
    ue-RX-TX-TimeDifferenceThreshold    UE-RX-TX-TimeDifferenceThreshold
}

-- dummy and dummy2 are not used in this version of the specification, they should
-- not be sent and if received the UE behaviour is not specified.
UE-AutonomousUpdateMode ::=         CHOICE {
    dummy                               NULL,
    onWithNoReporting                   NULL,
    dummy2                              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,
    spare                               NULL
}

UE-InternalMeasQuantity ::=         SEQUENCE {
    measurementQuantity                 UE-MeasurementQuantity,
    filterCoefficient                   FilterCoefficient                  DEFAULT fc0
}

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-InternalMeasuredResults-LCR-r4 ::=   SEQUENCE {
        ue-TransmittedPowerTDD-List         UE-TransmittedPowerTDD-List     OPTIONAL,
        t-ADVinfo                           T-ADVinfo                       OPTIONAL
}

UE-InternalMeasurement ::=          SEQUENCE {
    ue-InternalMeasQuantity             UE-InternalMeasQuantity             OPTIONAL,
    ue-InternalReportingQuantity        UE-InternalReportingQuantity        OPTIONAL,
    reportCriteria                      UE-InternalReportCriteria
}

UE-InternalMeasurement-r4 ::=       SEQUENCE {
    ue-InternalMeasQuantity             UE-InternalMeasQuantity             OPTIONAL,
    ue-InternalReportingQuantity        UE-InternalReportingQuantity-r4     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-TimeDifference             BOOLEAN
        },
        tdd                                 SEQUENCE {
            appliedTA                           BOOLEAN
        }
    }
}

UE-InternalReportingQuantity-r4 ::= SEQUENCE {
    ue-TransmittedPower                 BOOLEAN,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ue-RX-TX-TimeDifference             BOOLEAN
        },
        tdd                                 SEQUENCE {
            tddOption                           CHOICE {
                tdd384                              SEQUENCE {
                    appliedTA                           BOOLEAN
                },
                tdd128                              SEQUENCE {
                    t-ADVinfo                           BOOLEAN
                }
            }
        }
    }
}

-- TABULAR: UE-MeasurementQuantity, for 3.84 Mcps TDD only the first two values
-- ue-TransmittedPower and utra-Carrier-RSSI are used.
-- For 1.28 Mcps TDD ue-RX-TX-TimeDifference corresponds to T-ADV in the tabular
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

-- SPARE: UE-RX-TX-TimeDifferenceType1, Max = 1280
-- Values above Max are spare
UE-RX-TX-TimeDifferenceType1 ::=            INTEGER (768..1791)


UE-RX-TX-TimeDifferenceType2 ::=    INTEGER (0..8191)

UE-RX-TX-TimeDifferenceType2Info ::=    SEQUENCE {
    ue-RX-TX-TimeDifferenceType2            UE-RX-TX-TimeDifferenceType2,
    neighbourQuality                        NeighbourQuality
}

-- In 1.28 Mcps TDD, actual value for
-- T-ADV Threshold = (UE-RX-TX-TimeDifferenceThreshold - 768) * 0.125
UE-RX-TX-TimeDifferenceThreshold ::= INTEGER (768..1280)

UE-TransmittedPower ::=             INTEGER (0..104)

UE-TransmittedPowerTDD-List ::=     SEQUENCE (SIZE (1..maxTS)) OF
                                        UE-TransmittedPower

UL-TrCH-Identity ::=                    CHOICE{
    dch                                 TransportChannelIdentity,
    -- Default transport channel in the UL is either RACH or CPCH, but not both.
    rachorcpch                          NULL,
    usch                                TransportChannelIdentity
}

UE-Positioning-Accuracy ::=                 BIT STRING (SIZE (7))


UE-Positioning-CipherParameters ::=         SEQUENCE {
    cipheringKeyFlag                    BIT STRING (SIZE (1)),
    cipheringSerialNumber               INTEGER (0..65535)
}

UE-Positioning-Error ::=                        SEQUENCE {
    errorReason                         UE-Positioning-ErrorCause,
    ue-positioning-GPS-additionalAssistanceDataRequest          UE-Positioning-GPS-
AdditionalAssistanceDataRequest OPTIONAL
}

UE-Positioning-ErrorCause ::=                   ENUMERATED {
                                        notEnoughOTDOA-Cells,
                                        notEnoughGPS-Satellites,
                                        assistanceDataMissing,
                                        notAccomplishedGPS-TimingOfCellFrames,
                                        undefinedError,
                                        requestDeniedByUser,
                                        notProcessedAndTimeout,
                                        referenceCellNotServingCell }

UE-Positioning-EventParam ::=                   SEQUENCE {
    reportingAmount                     ReportingAmount,
    reportFirstFix                      BOOLEAN,
    measurementInterval                 UE-Positioning-MeasurementInterval,
    eventSpecificInfo                   UE-Positioning-EventSpecificInfo
}

UE-Positioning-EventParamList ::=               SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        UE-Positioning-EventParam

UE-Positioning-EventSpecificInfo ::=            CHOICE {
    e7a                                 ThresholdPositionChange,
    e7b                                 ThresholdSFN-SFN-Change,
    e7c                                 ThresholdSFN-GPS-TOW
}

UE-Positioning-GPS-AcquisitionAssistance ::=    SEQUENCE {
    gps-ReferenceTime                   INTEGER (0..604799999),
    utran-GPSReferenceTime              UTRAN-GPSReferenceTime          OPTIONAL,
    satelliteInformationList            AcquisitionSatInfoList
}
```

```
UE-Positioning-GPS-AdditionalAssistanceDataRequest ::=      SEQUENCE {
    almanacRequest                      BOOLEAN,
    utcModelRequest                     BOOLEAN,
    ionosphericModelRequest             BOOLEAN,
    navigationModelRequest              BOOLEAN,
    dgpsCorrectionsRequest              BOOLEAN,
    referenceLocationRequest            BOOLEAN,
    referenceTimeRequest                BOOLEAN,
    aquisitionAssistanceRequest         BOOLEAN,
    realTimeIntegrityRequest            BOOLEAN,
    navModelAddDataRequest              UE-Positioning-GPS-NavModelAddDataReq       OPTIONAL
}

UE-Positioning-GPS-Almanac ::=                  SEQUENCE {
    wn-a                                BIT STRING (SIZE (8)),
    almanacSatInfoList                  AlmanacSatInfoList,
    sv-GlobalHealth                     BIT STRING (SIZE (364))             OPTIONAL
}

UE-Positioning-GPS-AssistanceData ::=           SEQUENCE {
    ue-positioning-GPS-ReferenceTime                UE-Positioning-GPS-ReferenceTime
    OPTIONAL,
    ue-positioning-GPS-ReferenceLocation            ReferenceLocation               OPTIONAL,
    ue-positioning-GPS-DGPS-Corrections             UE-Positioning-GPS-DGPS-Corrections
    OPTIONAL,
    ue-positioning-GPS-NavigationModel              UE-Positioning-GPS-NavigationModel
    OPTIONAL,
    ue-positioning-GPS-IonosphericModel             UE-Positioning-GPS-IonosphericModel
    OPTIONAL,
    ue-positioning-GPS-UTC-Model                    UE-Positioning-GPS-UTC-Model
    OPTIONAL,
    ue-positioning-GPS-Almanac                      UE-Positioning-GPS-Almanac
    OPTIONAL,
    ue-positioning-GPS-AcquisitionAssistance        UE-Positioning-GPS-AcquisitionAssistance
    OPTIONAL,
    ue-positioning-GPS-Real-timeIntegrity           BadSatList                          OPTIONAL,
    -- dummy is not used in this version of the specification, it should
    -- not be sent and if received it should be ignored.
    dummy           UE-Positioning-GPS-ReferenceCellInfo        OPTIONAL
}

UE-Positioning-GPS-DGPS-Corrections ::=     SEQUENCE {
    gps-TOW                             INTEGER (0..604799),
    statusHealth                        DiffCorrectionStatus,
    dgps-CorrectionSatInfoList          DGPS-CorrectionSatInfoList
}

UE-Positioning-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))
}

UE-Positioning-GPS-MeasurementResults ::=       SEQUENCE {
    referenceTime                       CHOICE {
        utran-GPSReferenceTimeResult        UTRAN-GPSReferenceTimeResult,
        gps-ReferenceTimeOnly               INTEGER (0..604799999)
    },
    gps-MeasurementParamList            GPS-MeasurementParamList
}

UE-Positioning-GPS-NavigationModel ::=          SEQUENCE {
    navigationModelSatInfoList          NavigationModelSatInfoList
}

UE-Positioning-GPS-NavModelAddDataReq ::=       SEQUENCE {
    gps-Week                            INTEGER (0..1023),
    -- SPARE: gps-Toe, Max = 167
    -- Values above Max are spare
    gps-Toe                             INTEGER (0..255),
    -- SPARE: tToeLimit, Max = 10
    -- Values above Max are spare
```

```
    tToeLimit                          INTEGER (0..15),
    satDataList                        SatDataList
}

UE-Positioning-GPS-ReferenceCellInfo ::=        SEQUENCE{
    modeSpecificInfo               CHOICE {
        fdd                            SEQUENCE {
            referenceIdentity              PrimaryCPICH-Info
        },
        tdd                            SEQUENCE {
            referenceIdentity              CellParametersID
        }
    }
}

UE-Positioning-GPS-ReferenceTime ::=            SEQUENCE {
    gps-Week                           INTEGER (0..1023),
    gps-tow-1msec                      GPS-TOW-1msec,  utran-GPSReferenceTime              UTRAN-
GPSReferenceTime                OPTIONAL,
    sfn-tow-Uncertainty                SFN-TOW-Uncertainty                 OPTIONAL,
    utran-GPS-DriftRate                UTRAN-GPS-DriftRate                 OPTIONAL,
    gps-TOW-AssistList                 GPS-TOW-AssistList                  OPTIONAL
}

UE-Positioning-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))
}

UE-Positioning-IPDL-Parameters ::=              SEQUENCE {
    ip-Spacing                         IP-Spacing,
    ip-Length                          IP-Length,
    ip-Offset                          INTEGER (0..9),
    seed                               INTEGER (0..63),
    burstModeParameters                BurstModeParameters         OPTIONAL
}

UE-Positioning-IPDL-Parameters-r4 ::=           SEQUENCE {
    modeSpecificInfo                   CHOICE {
        fdd                                SEQUENCE {
            ip-Spacing                         IP-Spacing,
            ip-Length                          IP-Length,
            ip-Offset                          INTEGER (0..9),
            seed                               INTEGER (0..63)
        },
        tdd                                SEQUENCE {
            ip-Spacing-TDD                     IP-Spacing-TDD,
            ip-slot                            INTEGER (0..14),
            ip-Start                           INTEGER (0..4095),
            ip-PCCPCG                          IP-PCCPCH-r4            OPTIONAL
        }
    },
    burstModeParameters                BurstModeParameters             OPTIONAL
}

UE-Positioning-IPDL-Parameters-TDD-r4-ext ::=   SEQUENCE {
    ip-Spacing                         IP-Spacing-TDD,
    ip-slot                            INTEGER (0..14),
    ip-Start                           INTEGER (0..4095),
    ip-PCCPCG                          IP-PCCPCH-r4                    OPTIONAL,
    burstModeParameters                BurstModeParameters
}

UE-Positioning-MeasuredResults ::=              SEQUENCE {
    ue-positioning-OTDOA-Measurement           UE-Positioning-OTDOA-Measurement
    OPTIONAL,
    ue-positioning-PositionEstimateInfo        UE-Positioning-PositionEstimateInfo
        OPTIONAL,
    ue-positioning-GPS-Measurement             UE-Positioning-GPS-MeasurementResults
        OPTIONAL,
    ue-positioning-Error                       UE-Positioning-Error
    OPTIONAL
```

```
}

UE-Positioning-MeasuredResults-v390ext ::=      SEQUENCE {
    ue-Positioning-OTDOA-Measurement-v390ext        UE-Positioning-OTDOA-Measurement-v390ext
}

UE-Positioning-Measurement ::=                  SEQUENCE {
    ue-positioning-ReportingQuantity                UE-Positioning-ReportingQuantity,
    reportCriteria                          UE-Positioning-ReportCriteria,
    ue-positioning-OTDOA-AssistanceData         UE-Positioning-OTDOA-AssistanceData
    OPTIONAL,
    ue-positioning-GPS-AssistanceData               UE-Positioning-GPS-AssistanceData
    OPTIONAL
}

UE-Positioning-Measurement-v390ext ::=          SEQUENCE {
    ue-positioning-ReportingQuantity-v390ext        UE-Positioning-ReportingQuantity-v390ext
    OPTIONAL,
    measurementValidity                     MeasurementValidity                 OPTIONAL,
    ue-positioning-OTDOA-AssistanceData-UEB         UE-Positioning-OTDOA-AssistanceData-UEB
    OPTIONAL
}

UE-Positioning-Measurement-r4 ::=               SEQUENCE {
    ue-positioning-ReportingQuantity                UE-Positioning-ReportingQuantity-r4,
    measurementValidity                             MeasurementValidity
    OPTIONAL,
    reportCriteria                                  UE-Positioning-ReportCriteria,
    ue-positioning-OTDOA-AssistanceData             UE-Positioning-OTDOA-AssistanceData-r4
    OPTIONAL,
    ue-positioning-GPS-AssistanceData               UE-Positioning-GPS-AssistanceData
    OPTIONAL
}

UE-Positioning-MeasurementEventResults ::=      CHOICE {
    event7a                             UE-Positioning-PositionEstimateInfo,
    event7b                             UE-Positioning-OTDOA-Measurement,
    event7c                             UE-Positioning-GPS-MeasurementResults,
    spare                               NULL
}

UE-Positioning-MeasurementInterval ::=          ENUMERATED {
                                        e5, e15, e60, e300,
                                        e900, e1800, e3600, e7200 }

UE-Positioning-MethodType ::=                   ENUMERATED {
                                        ue-Assisted,
                                        ue-Based,
                                        ue-BasedPreferred,
                                        ue-AssistedPreferred }

UE-Positioning-OTDOA-AssistanceData ::=     SEQUENCE {
    ue-positioning-OTDOA-ReferenceCellInfo          UE-Positioning-OTDOA-ReferenceCellInfo
    OPTIONAL,
    ue-positioning-OTDOA-NeighbourCellList              UE-Positioning-OTDOA-NeighbourCellList
        OPTIONAL
}

UE-Positioning-OTDOA-AssistanceData-r4 ::=  SEQUENCE {
    ue-positioning-OTDOA-ReferenceCellInfo          UE-Positioning-OTDOA-ReferenceCellInfo-r4
        OPTIONAL,
    ue-positioning-OTDOA-NeighbourCellList          UE-Positioning-OTDOA-NeighbourCellList-r4
        OPTIONAL
}

UE-Positioning-OTDOA-AssistanceData-r4ext ::= SEQUENCE {
    -- In case of TDD these IPDL parameters shall be used for the reference cell instead of
    -- IPDL Parameters in IE UE-Positioning-OTDOA-ReferenceCellInfo
    ue-Positioning-IPDL-Parameters-TDD-r4-ext       UE-Positioning-IPDL-Parameters-TDD-r4-ext
    OPTIONAL,
    -- These IPDL parameters shall be used for the neighbour cells in case of TDD instead of
    -- IPDL Parameters in IE UE-Positioning-OTDOA-NeighbourCellInfoList. The cells shall be
    -- listed in the same order as in IE UE-Positioning-OTDOA-NeighbourCellInfoList
    ue-Positioning-IPDL-Parameters-TDDList-r4-ext   UE-Positioning-IPDL-Parameters-TDDList-r4-ext
    OPTIONAL
}

UE-Positioning-OTDOA-AssistanceData-UEB ::=     SEQUENCE {
```

```
    ue-positioning-OTDOA-ReferenceCellInfo-UEB          UE-Positioning-OTDOA-ReferenceCellInfo-UEB
            OPTIONAL,
    ue-positioning-OTDOA-NeighbourCellList-UEB              UE-Positioning-OTDOA-NeighbourCellList-
UEB             OPTIONAL
}

UE-Positioning-IPDL-Parameters-TDDList-r4-ext ::=   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            UE-Positioning-IPDL-Parameters-TDD-r4-ext

UE-Positioning-OTDOA-Measurement ::=            SEQUENCE {
    sfn                                 INTEGER (0..4095),
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            referenceCellIDentity               PrimaryCPICH-Info,
            ue-RX-TX-TimeDifferenceType2Info    UE-RX-TX-TimeDifferenceType2Info
        },
        tdd                                 SEQUENCE {
            referenceCellIdentity           CellParametersID
        }
    },
    neighbourList                       NeighbourList                       OPTIONAL
}

UE-Positioning-OTDOA-Measurement-v390ext ::=            SEQUENCE {
    neighbourList-v390ext                       NeighbourList-v390ext
}

UE-Positioning-OTDOA-NeighbourCellInfo ::= SEQUENCE {
    modeSpecificInfo    CHOICE  {
        fdd                             SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                             SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    },
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    ue-positioning-IPDL-Paremeters                  UE-Positioning-IPDL-Parameters
    OPTIONAL,
    sfn-SFN-RelTimeDifference           SFN-SFN-RelTimeDifference1,
    sfn-SFN-Drift                       SFN-SFN-Drift                       OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    positioningMode     CHOICE{
        ueBased                                 SEQUENCE {},
        ueAssisted                              SEQUENCE {}
    }
}

UE-Positioning-OTDOA-NeighbourCellInfo-r4 ::= SEQUENCE {
    modeSpecificInfo    CHOICE  {
        fdd                             SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                             SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    },
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    ue-positioning-IPDL-Paremeters      UE-Positioning-IPDL-Parameters-r4   OPTIONAL,
    sfn-SFN-RelTimeDifference           SFN-SFN-RelTimeDifference1,
    sfn-Offset-Validity                 SFN-Offset-Validity                 OPTIONAL,
    sfn-SFN-Drift                       SFN-SFN-Drift                       OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    positioningMode     CHOICE {
        ueBased                                 SEQUENCE {
            relativeNorth                       INTEGER (-20000..20000)             OPTIONAL,
            relativeEast                        INTEGER (-20000..20000)             OPTIONAL,
            relativeAltitude                    INTEGER (-4000..4000)               OPTIONAL,
            fineSFN-SFN                         FineSFN-SFN                         OPTIONAL,
            -- actual value roundTripTime = (IE value * 0.0625) + 876
            roundTripTime                       INTEGER (0.. 32766)                 OPTIONAL
        },
        ueAssisted                              SEQUENCE {}
    }
}

UE-Positioning-OTDOA-NeighbourCellInfo-UEB ::= SEQUENCE {
    modeSpecificInfo    CHOICE  {
```

```
        fdd                             SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                             SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    },
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    ue-positioning-IPDL-Paremeters      UE-Positioning-IPDL-Parameters      OPTIONAL,
    sfn-SFN-RelTimeDifference           SFN-SFN-RelTimeDifference1,
    sfn-SFN-Drift                       SFN-SFN-Drift                       OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    relativeNorth                       INTEGER (-20000..20000)             OPTIONAL,
    relativeEast                        INTEGER (-20000..20000)             OPTIONAL,
    relativeAltitude                    INTEGER (-4000..4000)               OPTIONAL,
    fineSFN-SFN                         FineSFN-SFN,
    -- actual value roundTripTime = (IE value * 0.0625) + 876
    roundTripTime                       INTEGER (0..32766)                  OPTIONAL
}

UE-Positioning-OTDOA-NeighbourCellList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            UE-Positioning-OTDOA-NeighbourCellInfo

UE-Positioning-OTDOA-NeighbourCellList-r4 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                UE-Positioning-OTDOA-NeighbourCellInfo-r4

UE-Positioning-OTDOA-NeighbourCellList-UEB ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            UE-Positioning-OTDOA-NeighbourCellInfo-UEB

UE-Positioning-OTDOA-Quality ::=            SEQUENCE {
    stdResolution                       BIT STRING (SIZE (2)),
    numberOfOTDOA-Measurements          BIT STRING (SIZE (3)),
    stdOfOTDOA-Measurements             BIT STRING (SIZE (5))
}

UE-Positioning-OTDOA-ReferenceCellInfo ::=          SEQUENCE {
    sfn                                 INTEGER (0..4095)
    OPTIONAL,
    modeSpecificInfo CHOICE {
        fdd                                     SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                                     SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    },
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    positioningMode CHOICE {
        ueBased                                 SEQUENCE {},
        ueAssisted                              SEQUENCE {}
    },
    ue-positioning-IPDL-Paremeters              UE-Positioning-IPDL-Parameters  OPTIONAL
}

UE-Positioning-OTDOA-ReferenceCellInfo-r4 ::=   SEQUENCE {
    sfn                                 INTEGER (0..4095)
    OPTIONAL,
    modeSpecificInfo CHOICE {
        fdd                                     SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                                     SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    },
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    positioningMode CHOICE {
        ueBased                                 SEQUENCE {
            cellPosition                                ReferenceCellPosition   OPTIONAL,
            -- actual value roundTripTime = (IE value * 0.0625) + 876
            roundTripTime                       INTEGER (0..32766)              OPTIONAL
        },
        ueAssisted                              SEQUENCE {}
    },
    ue-positioning-IPDL-Paremeters              UE-Positioning-IPDL-Parameters-r4   OPTIONAL
}

UE-Positioning-OTDOA-ReferenceCellInfo-UEB ::=          SEQUENCE {
```

```
    sfn                                INTEGER (0..4095)                  OPTIONAL,
    modeSpecificInfo CHOICE {
        fdd                                    SEQUENCE {
            primaryCPICH-Info                  PrimaryCPICH-Info
        },
        tdd                                    SEQUENCE{
            cellAndChannelIdentity             CellAndChannelIdentity
        }
    },
    frequencyInfo                      FrequencyInfo                      OPTIONAL,
    cellPosition                       ReferenceCellPosition              OPTIONAL,
    -- actual value roundTripTime = (IE value * 0.0625) + 876
    roundTripTime                      INTEGER (0..32766)                 OPTIONAL,
    ue-positioning-IPDL-Paremeters     UE-Positioning-IPDL-Parameters     OPTIONAL
}

UE-Positioning-PositionEstimateInfo ::=                SEQUENCE {
    referenceTime                  CHOICE {
        utran-GPSReferenceTimeResult       UTRAN-GPSReferenceTimeResult,
        gps-ReferenceTimeOnly              INTEGER (0..604799999),
        cell-Timing                        SEQUENCE {
            sfn                                    INTEGER (0..4095),
            modeSpecificInfo               CHOICE {
                fdd                                SEQUENCE {
                    primaryCPICH-Info                  PrimaryCPICH-Info
                },
                tdd                                SEQUENCE{
                    cellAndChannelIdentity             CellAndChannelIdentity
                }
            }
        }
    },
    positionEstimate                   PositionEstimate
}

UE-Positioning-ReportCriteria ::=              CHOICE {
    ue-positioning-ReportingCriteria               UE-Positioning-EventParamList,
    periodicalReportingCriteria        PeriodicalReportingCriteria,
    noReporting                        NULL
}

UE-Positioning-ReportingQuantity ::=           SEQUENCE {
    methodType                         UE-Positioning-MethodType,
    positioningMethod                  PositioningMethod,
    -- dummy1 is not used in this version of specification and it should
    -- be ignored.
    dummy1                             UE-Positioning-ResponseTime,
    horizontal-Accuracy                UE-Positioning-Accuracy            OPTIONAL,
    gps-TimingOfCellWanted             BOOLEAN,
    -- dummy2 is not used in this version of specification and it should
    -- be ignored.
    dummy2                             BOOLEAN,
    additionalAssistanceDataRequest    BOOLEAN,
    environmentCharacterisation        EnvironmentCharacterisation        OPTIONAL
}

UE-Positioning-ReportingQuantity-v390ext ::=       SEQUENCE {
    vertical-Accuracy                          UE-Positioning-Accuracy
}

UE-Positioning-ReportingQuantity-r4 ::=        SEQUENCE {
    methodType                         UE-Positioning-MethodType,
    positioningMethod                  PositioningMethod,
    horizontalAccuracy                 UE-Positioning-Accuracy            OPTIONAL,
    verticalAccuracy                   UE-Positioning-Accuracy            OPTIONAL,
    gps-TimingOfCellWanted             BOOLEAN,
    additionalAssistanceDataReq        BOOLEAN,
    environmentCharacterisation        EnvironmentCharacterisation        OPTIONAL
}

UE-Positioning-ResponseTime ::=            ENUMERATED {
                                   s1, s2, s4, s8, s16,
                                   s32, s64, s128 }

-- SPARE: UTRA-CarrierRSSI, Max = 76
-- Values above Max are spare
UTRA-CarrierRSSI ::=               INTEGER (0..127)
```

```
UTRAN-GPS-DriftRate ::=            ENUMERATED {
                                   utran-GPSDrift0, utran-GPSDrift1, utran-GPSDrift2,
                                   utran-GPSDrift5, utran-GPSDrift10, utran-GPSDrift15,
                                   utran-GPSDrift25, utran-GPSDrift50, utran-GPSDrift-1,
                                   utran-GPSDrift-2, utran-GPSDrift-5, utran-GPSDrift-10,
                                   utran-GPSDrift-15, utran-GPSDrift-25, utran-GPSDrift-50}

UTRAN-GPSReferenceTime ::=             SEQUENCE {
    -- For utran-GPSTimingOfCell values above 2322431999999 are not
    -- used in this version of the specification
    -- Actual value utran-GPSTimingOfCell = (ms-part * 4294967296) + ls-part
    utran-GPSTimingOfCell          SEQUENCE {
        ms-part                        INTEGER (0..1023),
        ls-part                        INTEGER (0..4294967295)
    },
    modeSpecificInfo               CHOICE {
        fdd                            SEQUENCE {
            referenceIdentity              PrimaryCPICH-Info
        },
        tdd                            SEQUENCE {
            referenceIdentity              CellParametersID
        }
    }               OPTIONAL,
    sfn                                INTEGER (0..4095)
}

UTRAN-GPSReferenceTimeResult ::=               SEQUENCE {
    -- For ue-GPSTimingOfCell values above 37158911999999 are not
    -- used in this version of the specification
    -- Actual value ue-GPSTimingOfCell = (ms-part * 4294967296) + ls-part
    ue-GPSTimingOfCell          SEQUENCE {
        ms-part                        INTEGER (0.. 16383),
        ls-part                        INTEGER (0..4294967295)
    },
    modeSpecificInfo               CHOICE {
        fdd                            SEQUENCE {
            referenceIdentity              PrimaryCPICH-Info
        },
        tdd                            SEQUENCE {
            referenceIdentity              CellParametersID
        }
    },
    sfn                                INTEGER (0..4095)
}

VarianceOfRLC-BufferPayload ::=    ENUMERATED {
                                       plv0, plv4, plv8, plv16, plv32, plv64,
                                       plv128, plv256, plv512, plv1024,
                                       plv2k, plv4k, plv8k, plv16k, spare2, spare1 }

-- Actual value W = 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 BCCH-ModificationTime = 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)
ExpirationTimeFactor ::=                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))
}

GERAN-SystemInfoBlock ::=               OCTET STRING (SIZE (1..23))

GERAN-SystemInformation ::=             SEQUENCE (SIZE (1..maxGERAN-SI)) OF GERAN-SystemInfoBlock

GSM-BA-Range ::=                        SEQUENCE {
                                            gsmLowRangeUARFCN       UARFCN,
                                            gsmUpRangeUARFCN        UARFCN
}

GSM-BA-Range-List ::=                   SEQUENCE (SIZE (1..maxNumGSMFreqRanges)) OF
                                            GSM-BA-Range


-- This IE is formatted as 'TLV' and is coded in the same way as the Mobile Station Classmark 2
-- information element in [5]. The first octet is the Mobile station classmark 2 IEI and its value
-- shall be set to 33H. The second octet is the Length of mobile station classmark 2 and its value
-- shall be set to 3. The octet 3 contains the first octet of the value part of the Mobile Station
-- Classmark 2 information element, the octet 4 contains the second octet of the value part of the
-- Mobile Station Classmark 2 information element and so on. For each of these octets, the first/
-- leftmost/ most significant bit of the octet contains b8 of the corresponding octet of the Mobile
-- Station Classmark 2.
GSM-Classmark2 ::=                  OCTET STRING (SIZE (5))

-- This IE is formatted as 'V' and is coded in the same way as the value part in the Mobile station
-- classmark 3 information element in [5]
-- The value part is specified by means of CSN.1, which encoding results in a bit string, to which
-- final padding may be appended upto the next octet boundary [5]. The first/ leftmost bit of the
-- CSN.1 bit string is placed in the first/ leftmost/ most significant bit of the first
-- octet. This continues until the last bit of the CSN.1 bit string, which is placed in the last/
-- rightmost/ least significant bit of the last octet.
GSM-Classmark3 ::=                  OCTET STRING (SIZE (1..32))

GSM-MessageList ::=                 SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        BIT STRING (SIZE (1..512))

GsmSecurityCapability ::=           BIT STRING {
                                        -- For each bit value “0” means false/ not supported
                                        a5-7(0),
                                        a5-6(1),
                                        a5-5(2),
                                        a5-4(3),
                                        a5-3(4),
                                        a5-2(5),
                                        a5-1(6)
                                        }   (SIZE (7))


GSM-TargetCellInfoList ::=      SEQUENCE (SIZE (1..maxGSMTargetCells)) OF
                                            GSM-TargetCellInfo


GSM-TargetCellInfo ::=              SEQUENCE {
    bcch-ARFCN                          BCCH-ARFCN,
```

```
    frequency-band                      Frequency-Band,
    bsic                                BSIC            OPTIONAL
}

IdentificationOfReceivedMessage ::= SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        receivedMessageType             ReceivedMessageType
}

InterRAT-ChangeFailureCause ::=     CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    unspecified                         NULL,
    spare4                              NULL,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

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

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

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

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

InterRAT-UE-RadioAccessCapability-v590ext ::= SEQUENCE {
    geranIu-RadioAccessCapability       GERANIu-RadioAccessCapability
}

InterRAT-UE-SecurityCapability ::= CHOICE {
    gsm                                 SEQUENCE {
        gsmSecurityCapability           GsmSecurityCapability
    }
}

InterRAT-UE-SecurityCapList ::=     SEQUENCE (SIZE(1..maxInterSysMessages)) OF
                                        InterRAT-UE-SecurityCapability

InterRAT-HO-FailureCause ::=        CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    interRAT-ProtocolError              NULL,
    unspecified                         NULL,
    spare11                             NULL,
    spare10                             NULL,
    spare9                              NULL,
    spare8                              NULL,
    spare7                              NULL,
    spare6                              NULL,
    spare5                              NULL,
    spare4                              NULL,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

MasterInformationBlock ::=          SEQUENCE {
        mib-ValueTag                    MIB-ValueTag,
        -- TABULAR: The PLMN identity and ANSI-41 core network information
        -- are included in PLMN-Type.
        plmn-Type                       PLMN-Type,
        sibSb-ReferenceList             SIBSb-ReferenceList,
    -- Extension mechanism for non- release99 information
        v6xyNonCriticalExtensions           SEQUENCE {
```

```
			masterInformationBlock-v6xyext		MasterInformationBlock-v6xyext		OPTIONAL,
			nonCriticalExtensions			SEQUENCE {}				OPTIONAL
		}	OPTIONAL
}

MasterInformationBlock-v6xyext ::=	SEQUENCE {
	multiplePLMN-List				MultiplePLMN-List-r6			OPTIONAL
}

MIB-ValueTag ::=				INTEGER (1..8)

NCC ::=						INTEGER (0..7)

PLMN-ValueTag ::=				INTEGER (1..256)


PredefinedConfigIdentityAndValueTag ::= SEQUENCE {
	predefinedConfigIdentity				PredefinedConfigIdentity,
	predefinedConfigValueTag				PredefinedConfigValueTag
}

ProtocolErrorInformation ::=		SEQUENCE {
	diagnosticsType					CHOICE {
		type1							SEQUENCE {
			protocolErrorCause					ProtocolErrorCause
		},
		spare							NULL
	}
}

ReceivedMessageType ::=			ENUMERATED {
						activeSetUpdate,
						cellChangeOrderFromUTRAN,
						cellUpdateConfirm,
						counterCheck,
						downlinkDirectTransfer,
						interRATHandoverCommand,
						measurementControl,
						pagingType2,
						physicalChannelReconfiguration,
						physicalSharedChannelAllocation,
						radioBearerReconfiguration,
						radioBearerRelease,
						radioBearerSetup,
						rrcConnectionRelease,
						rrcConnectionReject,
						rrcConnectionSetup,
						securityModeCommand,
						signallingConnectionRelease,
						transportChannelReconfiguration,
						transportFormatCombinationControl,
						ueCapabilityEnquiry,
						ueCapabilityInformationConfirm,
						uplinkPhysicalChannelControl,
						uraUpdateConfirm,
						utranMobilityInformation,
						assistanceDataDelivery,
						spare6, spare5, spare4, spare3, spare2,
						spare1
}

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 TDD-UMTS-Frequency-List
	OPTIONAL,
							cdma2000-UMTS-Frequency-List	CDMA2000-UMTS-Frequency-
List	OPTIONAL
}

Rplmn-Information-r4 ::=		SEQUENCE {
	gsm-BA-Range-List			GSM-BA-Range-List				OPTIONAL,
	fdd-UMTS-Frequency-List			FDD-UMTS-Frequency-List				OPTIONAL,
	tdd384-UMTS-Frequency-List		TDD-UMTS-Frequency-List				OPTIONAL,
	tdd128-UMTS-Frequency-List		TDD-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 SFN-Prime = 2 * IE value
SFN-Prime ::=                       INTEGER (0..2047)


SIB-Data-fixed ::=                  BIT STRING (SIZE (222))


SIB-Data-variable ::=               BIT STRING (SIZE (1..214))

SIBOccurIdentity ::=            INTEGER (0..15)

SIBOccurrenceIdentityAndValueTag ::=    SEQUENCE {
    sibOccurIdentity                SIBOccurIdentity,
    sibOccurValueTag                SIBOccurValueTag
}

SIBOccurValueTag ::=            INTEGER (0..15)

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,
                                        systemInformationBlockType18,
                                        schedulingBlock1,
                                        schedulingBlock2,
                                        systemInformationBlockType15-5,
                                        systemInformationBlockType5bis,
                                        spare1 }

SIB-TypeAndTag ::=                  CHOICE {
    sysInfoType1                        PLMN-ValueTag,
    sysInfoType2                        CellValueTag,
    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                     SIBOccurrenceIdentityAndValueTag,
    sysInfoType15-3                     SIBOccurrenceIdentityAndValueTag,
    sysInfoType15-4                     CellValueTag,
    sysInfoType18                       CellValueTag,
    sysInfoType15-5                     CellValueTag,
    sysInfoType5bis                     CellValueTag,
    spare4                              NULL,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

SIBSb-TypeAndTag ::=                    CHOICE {
    sysInfoType1                        PLMN-ValueTag,
    sysInfoType2                        CellValueTag,
    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                     SIBOccurrenceIdentityAndValueTag,
    sysInfoType15-3                     SIBOccurrenceIdentityAndValueTag,
    sysInfoType15-4                     CellValueTag,
    sysInfoType18                       CellValueTag,
    sysInfoType15-5                     CellValueTag,
    sysInfoType5bis                     CellValueTag,
    spare2                              NULL,
    spare1                              NULL
}

SibOFF ::=                          ENUMERATED {
                                        so2, so4, so6, so8, so10,
                                        so12, so14, so16, so18,
                                        so20, so22, so24, so26,
                                        so28, so30, so32 }

SibOFF-List ::=                     SEQUENCE (SIZE (1..15)) OF
                                        SibOFF

SysInfoType1 ::=                    SEQUENCE {
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants           OPTIONAL,
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants           OPTIONAL,
    -- Extension mechanism for non- release99 information
        v3a0NonCriticalExtensions       SEQUENCE {
            sysInfoType1-v3a0ext        SysInfoType1-v3a0ext-IEs,
            nonCriticalExtensions       SEQUENCE {} OPTIONAL
        }                           OPTIONAL
}

SysInfoType1-v3a0ext-IEs ::= SEQUENCE {
    ue-ConnTimersAndConstants-v3a0ext       UE-ConnTimersAndConstants-v3a0ext,
    ue-IdleTimersAndConstants-v3a0ext       UE-IdleTimersAndConstants-v3a0ext
}

SysInfoType2 ::=                    SEQUENCE {
    -- UTRAN mobility IEs
        ura-IdentityList                URA-IdentityList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType3 ::=                    SEQUENCE {
        sib4indicator                   BOOLEAN,
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType3-v4b0ext            SysInfoType3-v4b0ext-IEs,
            v590NonCriticalExtension        SEQUENCE {
                sysInfoType3-v590ext            SysInfoType3-v590ext,
                v5c0NoncriticalExtension        SEQUENCE {
                    sysInfoType3-v5c0ext            SysInfoType3-v5c0ext-IEs,
                    v6xyNonCriticalExtension            SEQUENCE {
                        sysInfoType3-v6xyext                SysInfoType3-v6xyext,
                        nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
                    }                           OPTIONAL
                }                           OPTIONAL
            }                           OPTIONAL
        }                           OPTIONAL
}

SysInfoType3-v4b0ext-IEs ::= SEQUENCE {
    mapping-LCR                     Mapping-LCR-r4                          OPTIONAL
}

SysInfoType3-v590ext ::= SEQUENCE {
    cellSelectReselectInfo-v590ext      CellSelectReselectInfo-v590ext      OPTIONAL
}

SysInfoType3-v5c0ext-IEs ::= SEQUENCE {
```

```
    cellSelectReselectInfoTreselectionScaling-v5c0ext
                                    CellSelectReselectInfoTreselectionScaling-v5c0ext   OPTIONAL
}

SysInfoType3-v6xyext ::= SEQUENCE {
        domainSpecificAccessRestrictionParametersForPLMNOfMIB
                                DomainSpecificAccessRestrictionParam-v6xyext    OPTIONAL,
        domainSpecificAccessResticionForSharedNetwork
                                DomainSpecificAccessRestrictionForSharedNetwork-v6xyext OPTIONAL
}

SysInfoType4 ::=                    SEQUENCE {
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType4-v4b0ext            SysInfoType4-v4b0ext-IEs,
            v590NonCriticalExtension        SEQUENCE {
                sysInfoType4-v590ext            SysInfoType4-v590ext,
                v5b0NonCriticalExtension        SEQUENCE {
                    sysInfoType4-v5b0ext            SysInfoType4-v5b0ext-IEs,
                    v5c0NonCriticalExtension            SEQUENCE {
                        sysInfoType4-v5c0ext                SysInfoType4-v5c0ext-IEs,
                        nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
}

SysInfoType4-v4b0ext-IEs ::= SEQUENCE {
    mapping-LCR                     Mapping-LCR-r4                          OPTIONAL
}


SysInfoType4-v590ext ::= SEQUENCE {
    cellSelectReselectInfo-v590ext      CellSelectReselectInfo-v590ext      OPTIONAL
}

SysInfoType4-v5b0ext-IEs ::= SEQUENCE {
    cellSelectReselectInfoPCHFACH-v5b0ext   CellSelectReselectInfoPCHFACH-v5b0ext       OPTIONAL
}

SysInfoType4-v5c0ext-IEs ::= SEQUENCE {
    cellSelectReselectInfoTreselectionScaling-v5c0ext
                                    CellSelectReselectInfoTreselectionScaling-v5c0ext   OPTIONAL
}

SysInfoType5 ::=                    SEQUENCE {
        sib6indicator                   BOOLEAN,
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset
            },
            tdd                             SEQUENCE {
    -- If PDSCH/PUSCH is configured for 1.28Mcps TDD, the following IEs should be absent
    --   and the info included in the tdd128SpecificInfo instead.
    -- If PDSCH/PUSCH is configured for 3.84Mcps TDD in R5, HCR-r5-SpecificInfo should also be
    -- included.
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                openLoopPowerControl-TDD        OpenLoopPowerControl-TDD
            }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList,
        -- cbs-DRX-Level1Information is conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType5-v4b0ext            SysInfoType5-v4b0ext-IEs        OPTIONAL,
        -- Extension mechanism for non- rel-4 information
```

```
            v590NonCriticalExtensions       SEQUENCE {
                sysInfoType5-v590ext            SysInfoType5-v590ext-IEs        OPTIONAL,
                v650NonCriticalExtensions       SEQUENCE {
                    sysInfoType5-v650ext            SysInfoType5-v650ext-IEs        OPTIONAL,
                    v6xyNonCriticalExtensions       SEQUENCE {
                        sysInfoType5-v6xyext            SysInfoType5-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
}

SysInfoType5-v4b0ext-IEs ::= SEQUENCE {
    --The following IE PNBSCH-Allocation-r4 shall be used for 3.84Mcps TDD only.
    pNBSCH-Allocation-r4            PNBSCH-Allocation-r4            OPTIONAL,
    -- In case of TDD, the following IE is included instead of the
    -- IE up-IPDL-Parameter in up-OTDOA-AssistanceData.
    openLoopPowerControl-IPDL-TDD   OpenLoopPowerControl-IPDL-TDD-r4    OPTIONAL,
-- If SysInfoType5 is sent to describe a 1.28Mcps TDD cell, the IE PRACH-RACH-Info included in
-- PRACH-SystemInformationList shall be ignored, the IE PRACH-Partitioning and the
-- IE rach-TransportFormatSet shall be absent and the corresponding IE in the following
-- PRACH-SystemInformationList-LCR-r4 shall be used
    prach-SystemInformationList-LCR-r4  PRACH-SystemInformationList-LCR-r4  OPTIONAL,
    tdd128SpecificInfo              SEQUENCE {
        pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN-LCR-r4    OPTIONAL,
        pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN-LCR-r4    OPTIONAL,
        pCCPCH-LCR-Extensions           PrimaryCCPCH-Info-LCR-r4-ext    OPTIONAL,
        sCCPCH-LCR-ExtensionsList       SCCPCH-SystemInformationList-LCR-r4-ext
    }                                                               OPTIONAL,
    frequencyBandIndicator          RadioFrequencyBandFDD           OPTIONAL
}

SysInfoType5-v590ext-IEs ::= SEQUENCE {
    hcr-r5-SpecificInfo             SEQUENCE {
        pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN-HCR-r5    OPTIONAL,
        pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN-HCR-r5    OPTIONAL
    }                                                                   OPTIONAL
}

SysInfoType5-v650ext-IEs ::= SEQUENCE {
    frequencyBandIndicator2         RadioFrequencyBandFDD2
}

SysInfoType5-v6xyext-IEs ::=        SEQUENCE {
    sccpch-SystemInformation-MBMS       CHOICE {
        sccpch-CommonForMBMSAndNonMBMS      SCCPCH-SystemInformationList-MBMS-r6-ext,
        sccpch-DedicatedForMBMS             SCCPCH-SystemInformation-MBMS-r6
    }       OPTIONAL
}

-- SysInfoType5bis uses the same structure as SysInfoType5
SysInfoType5bis ::= SysInfoType5

SysInfoType6 ::=                    SEQUENCE {
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset,
                -- dummy is not used in this version of specification, it should
                -- not be sent and if received it should be ignored.
                dummy                           CSICH-PowerOffset           OPTIONAL
            },
            tdd                             SEQUENCE {
                -- If PDSCH/PUSCH is configured for 1.28Mcps TDD, pusch-SysInfoList-SFN,
                -- pdsch-SysInfoList-SFN and openLoopPowerControl-TDD should be absent
                -- and the info included in the tdd128SpecificInfo instead.
                -- If PDSCH/PUSCH is configured for 3.84Mcps TDD in R5, HCR-r5-SpecificInfo should
                -- also be included.
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       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
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType6-v4b0ext            SysInfoType6-v4b0ext-IEs        OPTIONAL,
        -- Extension mechanism for non- rel-4 information
            v590NonCriticalExtensions   SEQUENCE {
                sysInfoType6-v590ext            SysInfoType6-v590ext-IEs        OPTIONAL,
                v650nonCriticalExtensions       SEQUENCE {
                    sysInfoType6-v650ext            SysInfoType6-v650ext-IEs        OPTIONAL,
            nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
                }                           OPTIONAL
            }                           OPTIONAL
        }                           OPTIONAL
}

SysInfoType6-v4b0ext-IEs ::= SEQUENCE {
    -- openLoopPowerControl-IPDL-TDD is present only if IPDLs are applied for TDD
    openLoopPowerControl-IPDL-TDD   OpenLoopPowerControl-IPDL-TDD-r4    OPTIONAL,
    -- If SysInfoType6 is sent to describe a 1.28Mcps TDD cell, the IE PRACH-RACH-Info included
    -- in PRACH-SystemInformationList shall be ignored, the IE PRACH-Partitioning and the
    -- IE rach-TransportFormatSet shall be absent and the corresponding IEs in the following
    -- PRACH-SystemInformationList-LCR-r4 shall be used
    prach-SystemInformationList-LCR-r4  PRACH-SystemInformationList-LCR-r4  OPTIONAL,
    tdd128SpecificInfo              SEQUENCE {
        pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN-LCR-r4    OPTIONAL,
        pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN-LCR-r4    OPTIONAL,
        pCCPCH-LCR-Extensions           PrimaryCCPCH-Info-LCR-r4-ext    OPTIONAL,
        sCCPCH-LCR-ExtensionsList       SCCPCH-SystemInformationList-LCR-r4-ext OPTIONAL
    }                                                               OPTIONAL,
    frequencyBandIndicator          RadioFrequencyBandFDD           OPTIONAL
}

SysInfoType6-v590ext-IEs ::= SEQUENCE {
    hcr-r5-SpecificInfo             SEQUENCE {
        pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN-HCR-r5    OPTIONAL,
        pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN-HCR-r5    OPTIONAL
    }                                                                   OPTIONAL
}

SysInfoType6-v650ext-IEs ::= SEQUENCE {
    frequencyBandIndicator2         RadioFrequencyBandFDD2
}

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

SysInfoType8 ::=                    SEQUENCE {
    -- User equipment IEs
        cpch-Parameters                 CPCH-Parameters,
    -- Physical channel IEs
        cpch-SetInfoList                CPCH-SetInfoList,
        csich-PowerOffset               CSICH-PowerOffset,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType9 ::=                    SEQUENCE {
    -- Physical channel IEs
        cpch-PersistenceLevelsList      CPCH-PersistenceLevelsList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType10 ::=                   SEQUENCE {
```

```
    -- User equipment IEs
        drac-SysInfoList                DRAC-SysInfoList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType11 ::=                   SEQUENCE {
        sib12indicator                  BOOLEAN,
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo        OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType11-v4b0ext           SysInfoType11-v4b0ext-IEs       OPTIONAL,
            v590NonCriticalExtension        SEQUENCE {
                sysInfoType11-v590ext           SysInfoType11-v590ext-IEs,
                nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
            }                           OPTIONAL
        }                           OPTIONAL
}

SysInfoType11-v4b0ext-IEs ::= SEQUENCE {
    fach-MeasurementOccasionInfo-LCR-Ext    FACH-MeasurementOccasionInfo-LCR-r4-ext OPTIONAL,
    measurementControlSysInfo-LCR           MeasurementControlSysInfo-LCR-r4-ext
}

SysInfoType11-v590ext-IEs ::= SEQUENCE {
    --The order of the list corresponds to the order of cell in newIntraFrequencyCellInfoList
    newIntraFrequencyCellInfoList-v590ext   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                CellSelectReselectInfo-v590ext  OPTIONAL,
    --The order of the list corresponds to the order of cell in newInterFrequencyCellInfoList
    newInterFrequencyCellInfoList-v590ext   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                CellSelectReselectInfo-v590ext  OPTIONAL,
    --The order of the list corresponds to the order of cell in newInterRATCellInfoList
    newInterRATCellInfoList-v590ext         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                CellSelectReselectInfo-v590ext  OPTIONAL,
    intraFreqEventCriteriaList-v590ext      Intra-FreqEventCriteriaList-v590ext     OPTIONAL,
    intraFreqReportingCriteria-1b-r5        IntraFreqReportingCriteria-1b-r5    OPTIONAL,
    intraFreqEvent-1d-r5                    IntraFreqEvent-1d-r5                OPTIONAL
}

SysInfoType12 ::=                   SEQUENCE {
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo        OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType12-v4b0ext           SysInfoType12-v4b0ext-IEs       OPTIONAL,
            v590NonCriticalExtension        SEQUENCE {
                sysInfoType12-v590ext           SysInfoType12-v590ext-IEs,
                nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
            }                           OPTIONAL
        }                           OPTIONAL
}

SysInfoType12-v4b0ext-IEs ::= SEQUENCE {
    fach-MeasurementOccasionInfo-LCR-Ext    FACH-MeasurementOccasionInfo-LCR-r4-ext OPTIONAL,
    measurementControlSysInfo-LCR           MeasurementControlSysInfo-LCR-r4-ext
}

SysInfoType12-v590ext-IEs ::= SEQUENCE {
    --The order of the list corresponds to the order of cell in newIntraFrequencyCellInfoList
    newIntraFrequencyCellInfoList-v590ext   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                CellSelectReselectInfo-v590ext  OPTIONAL,
    --The order of the list corresponds to the order of cell in newInterFrequencyCellInfoList
    newInterFrequencyCellInfoList-v590ext   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                CellSelectReselectInfo-v590ext  OPTIONAL,
    --The order of the list corresponds to the order of cell in newInterRATCellInfoList
    newInterRATCellInfoList-v590ext         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                CellSelectReselectInfo-v590ext  OPTIONAL,
    intraFreqEventCriteriaList-v590ext      Intra-FreqEventCriteriaList-v590ext     OPTIONAL,
    intraFreqReportingCriteria-1b-r5        IntraFreqReportingCriteria-1b-r5    OPTIONAL,
    intraFreqEvent-1d-r5                    IntraFreqEvent-1d-r5                OPTIONAL
}

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
        v3a0NonCriticalExtensions           SEQUENCE {
            sysInfoType13-v3a0ext           SysInfoType13-v3a0ext-IEs,
            v4b0NonCriticalExtensions       SEQUENCE {
                sysInfoType13-v4b0ext           SysInfoType13-v4b0ext-IEs,
            -- Extension mechanism for non- release99 information
                nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
            }                           OPTIONAL
        }                           OPTIONAL
}

SysInfoType13-v3a0ext-IEs ::= SEQUENCE {
    ue-IdleTimersAndConstants-v3a0ext       UE-IdleTimersAndConstants-v3a0ext
}

SysInfoType13-v4b0ext-IEs ::= SEQUENCE {
    capabilityUpdateRequirement-r4Ext   CapabilityUpdateRequirement-r4-ext  OPTIONAL
}

SysInfoType13-1 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-RAND-Information        ANSI-41-RAND-Information,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType13-2 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-UserZoneID-Information  ANSI-41-UserZoneID-Information,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType13-3 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-PrivateNeighbourListInfo ANSI-41-PrivateNeighbourListInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType13-4 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-GlobalServiceRedirectInfo
                                        ANSI-41-GlobalServiceRedirectInfo,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType14 ::=                   SEQUENCE {
    -- Physical channel IEs
        individualTS-InterferenceList   IndividualTS-InterferenceList,
        expirationTimeFactor            ExpirationTimeFactor                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType15 ::=                   SEQUENCE {
    -- Measurement IEs

        ue-positioning-GPS-CipherParameters     UE-Positioning-CipherParameters     OPTIONAL,
        ue-positioning-GPS-ReferenceLocation    ReferenceLocation,
        ue-positioning-GPS-ReferenceTime        UE-Positioning-GPS-ReferenceTime,

        ue-positioning-GPS-Real-timeIntegrity       BadSatList                          OPTIONAL,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions           SEQUENCE {
            sysInfoType15-v4b0ext               SysInfoType15-v4b0ext-IEs,
        -- Extension mechanism for non- release4 information
            nonCriticalExtensions               SEQUENCE {}             OPTIONAL
        }   OPTIONAL
}

SysInfoType15-v4b0ext-IEs ::= SEQUENCE {
    up-Ipdl-Parameters-TDD          UE-Positioning-IPDL-Parameters-TDD-r4-ext   OPTIONAL
}
```

```
SysInfoType15-1 ::=                 SEQUENCE {
    -- DGPS corrections
        ue-positioning-GPS-DGPS-Corrections         UE-Positioning-GPS-DGPS-Corrections,

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

SysInfoType15-2 ::=                 SEQUENCE {
    -- Ephemeris and clock corrections
        transmissionTOW                 INTEGER (0..604799),
        satID                           SatID,
        ephemerisParameter              EphemerisParameter,

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

SysInfoType15-3 ::=                 SEQUENCE {
    -- Almanac and other data
        transmissionTOW                 INTEGER (0.. 604799),
        ue-positioning-GPS-Almanac                  UE-Positioning-GPS-Almanac
    OPTIONAL,
        ue-positioning-GPS-IonosphericModel         UE-Positioning-GPS-IonosphericModel
    OPTIONAL,
        ue-positioning-GPS-UTC-Model                UE-Positioning-GPS-UTC-Model
    OPTIONAL,
        satMask                         BIT STRING (SIZE (1..32))   OPTIONAL,
        lsbTOW                          BIT STRING (SIZE (8))       OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                 OPTIONAL
}

SysInfoType15-4 ::=                 SEQUENCE {
    -- Measurement IEs
        ue-positioning-OTDOA-CipherParameters   UE-Positioning-CipherParameters         OPTIONAL,
        ue-positioning-OTDOA-AssistanceData     UE-Positioning-OTDOA-AssistanceData,
        v3a0NonCriticalExtensions           SEQUENCE {
            sysInfoType15-4-v3a0ext             SysInfoType15-4-v3a0ext,
        -- Extension mechanism for non- release99 information
            v4b0NonCriticalExtensions           SEQUENCE {
                sysInfoType15-4-v4b0ext             SysInfoType15-4-v4b0ext,
                nonCriticalExtensions               SEQUENCE {}     OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
}

SysInfoType15-4-v3a0ext ::= SEQUENCE {
    sfn-Offset-Validity             SFN-Offset-Validity     OPTIONAL
}

SysInfoType15-4-v4b0ext ::= SEQUENCE {
    ue-Positioning-OTDOA-AssistanceData-r4ext   UE-Positioning-OTDOA-AssistanceData-r4ext   OPTIONAL
}

SysInfoType15-5 ::=                 SEQUENCE {
    -- Measurement IEs
        ue-positioning-OTDOA-AssistanceData-UEB     UE-Positioning-OTDOA-AssistanceData-UEB,
        v3a0NonCriticalExtensions           SEQUENCE {
            sysInfoType15-5-v3a0ext             SysInfoType15-5-v3a0ext,
        -- Extension mechanism for non- release99 information
            nonCriticalExtensions               SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

SysInfoType15-5-v3a0ext ::= SEQUENCE {
    sfn-Offset-Validity         SFN-Offset-Validity     OPTIONAL
}

SysInfoType16 ::=                   SEQUENCE {
    -- Radio bearer IEs
        preDefinedRadioConfiguration    PreDefRadioConfiguration,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType17 ::=                   SEQUENCE {
```

```
    -- Physical channel IEs
        -- If PDSCH/PUSCH is configured for 1.28Mcps TDD, pusch-SysInfoList and
        -- pdsch-SysInfoList should be absent and the info included in the
        -- tdd128SpecificInfo instead.
        -- If PDSCH/PUSCH is configured for 3.84Mcps TDD in R5, HCR-r5-SpecificInfo should also be
        -- included.
        pusch-SysInfoList               PUSCH-SysInfoList               OPTIONAL,
        pdsch-SysInfoList               PDSCH-SysInfoList               OPTIONAL,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType17-v4b0ext           SysInfoType17-v4b0ext-IEs,
            v590NonCriticalExtensions   SEQUENCE {
                sysInfoType17-v590ext           SysInfoType17-v590ext-IEs       OPTIONAL,
                nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
            }                               OPTIONAL
        }                           OPTIONAL
}

SysInfoType17-v4b0ext-IEs ::= SEQUENCE {
    tdd128SpecificInfo              SEQUENCE {
        pusch-SysInfoList               PUSCH-SysInfoList-LCR-r4        OPTIONAL,
        pdsch-SysInfoList               PDSCH-SysInfoList-LCR-r4        OPTIONAL
    }                                                                   OPTIONAL
}

SysInfoType17-v590ext-IEs ::= SEQUENCE {
    hcr-r5-SpecificInfo             SEQUENCE {
        pusch-SysInfoList           PUSCH-SysInfoList-HCR-r5    OPTIONAL,
        pdsch-SysInfoList           PDSCH-SysInfoList-HCR-r5    OPTIONAL
    }                                                           OPTIONAL
}

SysInfoType18 ::=                       SEQUENCE {
        idleModePLMNIdentities          PLMNIdentitiesOfNeighbourCells      OPTIONAL,
        connectedModePLMNIdentities PLMNIdentitiesOfNeighbourCells      OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

SysInfoTypeSB1 ::=                  SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoTypeSB2 ::=                  SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

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))

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

```
--
--     MBMS INFORMATION ELEMENTS (10.3.9a)
--
-- ***************************************************

MBMS-AccessProbabilityFactor ::=    ENUMERATED {
                                        apf0, apf32, apf64, apf96, apf128, apf160, apf192,
                                        apf224, apf256, apf288, apf320, apf352, apf384, apf416,
                                        apf448, apf480, apf512, apf544, apf576, apf608, apf640,
                                        apf672, apf704, apf736, apf768, apf800, apf832, apf864,
                                        apf896, apf928, apf960, apf1000 }

MBMS-CellGroupIdentity-r6 ::=       BIT STRING (SIZE (12))

MBMS-CommonCCTrChIdentity ::=       INTEGER (1..32)

MBMS-CommonPhyChIdentity ::=        INTEGER (1..32)

MBMS-CommonRBIdentity ::=           INTEGER (1..32)

MBMS-CommonRBInformation-r6 ::=     SEQUENCE {
    commonRBIdentity                    MBMS-CommonRBIdentity,
    pdcp-Info                           PDCP-Info-r4,
    rlc-Info                            RLC-Info-r6
}

MBMS-CommonRBInformationList-r6 ::= SEQUENCE (SIZE (1..maxMBMS-CommonRB)) OF
                                        MBMS-CommonRBInformation-r6

MBMS-CommonTrChIdentity ::=         INTEGER (1..32)

MBMS-CurrentCell-SCCPCH-r6 ::=      SEQUENCE {
    sccpchIdentity                      MBMS-SCCPCHIdentity                 OPTIONAL,
    secondaryCCPCH-Info                 MBMS-CommonPhyChIdentity,
    transpCh-InfoCommonForAllTrCh       MBMS-CommonCCTrChIdentity,
    transpCHInformation                 MBMS-TrCHInformation-CommList
}

MBMS-CurrentCell-SCCPCHList-r6 ::=  SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                        MBMS-CurrentCell-SCCPCH-r6

MBMS-FACHCarryingMTCH-List ::=      SEQUENCE (SIZE (1..maxFACHPCH)) OF
                                            TransportFormatSet

MBMS-JoinedInformation-r6 ::=       SEQUENCE {
    p-TMSI                              P-TMSI-GSM-MAP                      OPTIONAL
}

MBMS-L1CombiningSchedule-32 ::=     SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..7)                      OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..7),
        periodDuration                      INTEGER (1..8)
    }
}

MBMS-L1CombiningSchedule-64 ::=     SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..15)                     OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..15),
        periodDuration                      INTEGER (1..16)
    }
}

MBMS-L1CombiningSchedule-128 ::=    SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..31)                     OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..31),
        periodDuration                      INTEGER (1..32)
    }
}

MBMS-L1CombiningSchedule-256 ::=    SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..63)                     OPTIONAL,
```

```
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..63),
        periodDuration                      INTEGER (1..64)
    }
}

MBMS-L1CombiningSchedule-512 ::=    SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..127)                        OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..127),
        periodDuration                      INTEGER (1..128)
    }
}

MBMS-L1CombiningSchedule-1024 ::=   SEQUENCE {
    -- Actual L1 combining schedule values (offset, start, duration) = IE value * 4
    cycleOffset                         INTEGER (0..255)                        OPTIONAL,
    mtch-L1CombiningPeriodList          SEQUENCE (SIZE (1..maxMBMS-L1CP)) OF SEQUENCE {
        periodStart                         INTEGER (0..255),
        periodDuration                      INTEGER (1..256)
    }
}

MBMS-L1CombiningSchedule ::=        CHOICE {
    cycleLength-32                      MBMS-L1CombiningSchedule-32,
    cycleLength-64                      MBMS-L1CombiningSchedule-64,
    cycleLength-128                     MBMS-L1CombiningSchedule-128,
    cycleLength-256                     MBMS-L1CombiningSchedule-256,
    cycleLength-512                     MBMS-L1CombiningSchedule-512,
    cycleLength-1024                    MBMS-L1CombiningSchedule-1024
}

MBMS-L1CombiningTransmTimeDiff ::=  INTEGER (0..3)

MBMS-L23Configuration ::=           CHOICE {
    sameAsCurrent                       SEQUENCE {
        currentCell-SCCPCH                  MBMS-SCCPCHIdentity,
        mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6
    },
    different                           SEQUENCE {
        transpCh-InfoCommonForAllTrCh       MBMS-CommonCCTrChIdentity,
        transpCHInformation                 MBMS-TrCHInformation-NeighbList
    }
}

MBMS-LogicalChIdentity ::=          INTEGER (1..15)

MBMS-MCCH-ConfigurationInfo-r6 ::=  SEQUENCE {
    accessInfoPeriodCoefficient         INTEGER (0..3),
    repetitionPeriodCoefficient         INTEGER (0..3),
    modificationPeriodCoefficient       INTEGER (7..10),
    rlc-Info                            RLC-Info-r6,
    tctf-Presence                       MBMS-TCTF-Presence                  OPTIONAL
}

MBMS-MICHConfigurationInfo-r6 ::=   SEQUENCE {
    michPowerOffset                     MBMS-MICHPowerOffset,
    mode                                CHOICE {
        fdd                                 SEQUENCE {
            channelisationCode256               ChannelisationCode256,
            ni-CountPerFrame                    MBMS-NI-CountPerFrame,
            sttd-Indicator                      BOOLEAN
        },
        tdd384                              SEQUENCE {
            timeslot                            TimeslotNumber,
            midambleShiftAndBurstType           MidambleShiftAndBurstType,
            channelisationCode                  DL-TS-ChannelisationCode,
            repetitionPeriodLengthOffset        RepPerLengthOffset-MICH     OPTIONAL,
            mbmsNotificationIndLength           MBMS-MICHNotificationIndLength  DEFAULT mn4
        },
        tdd128                              SEQUENCE {
            timeslot                            TimeslotNumber-LCR-r4,
            midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
            channelisationCodeList              SEQUENCE (SIZE (1..2)) OF
                                                    DL-TS-ChannelisationCode,
            repetitionPeriodLengthOffset        RepPerLengthOffset-MICH     OPTIONAL,
            mbmsNotificationIndLength           MBMS-MICHNotificationIndLength  DEFAULT mn4
```

```
        }
    }
}

MBMS-MICHNotificationIndLength ::=  ENUMERATED { mn4, mn8, mn16 }

MBMS-MICHPowerOffset ::=            INTEGER (-10..5)

MBMS-ModifedService-r6 ::=          SEQUENCE {
    mbms-TransmissionIdentity           MBMS-TransmissionIdentity,
    mbms-RequiredUEAction               MBMS-RequiredUEAction-Mod,
    mbms-PreferredFrequency             CHOICE {
        mcch                                MBMS-PFLIndex,
        dcch                                MBMS-PFLInfo
    }       OPTIONAL,
    continueMCCHReading                 BOOLEAN
}

MBMS-ModifedServiceList-r6 ::=      SEQUENCE (SIZE (1..maxMBMSservModif)) OF
                                        MBMS-ModifedService-r6

MBMS-MSCHConfigurationInfo-r6 ::=   SEQUENCE {
    mschShedulingInfo                   MBMS-MSCHSchedulingInfo             OPTIONAL,
    rlc-Info                            RLC-Info-r6                         OPTIONAL,
    tctf-Presence                       MBMS-TCTF-Presence                  OPTIONAL
}

MBMS-MSCHSchedulingInfo ::=         CHOICE {
    schedulingPeriod-32-Offset          INTEGER (0..31),
    schedulingPeriod-64-Offset          INTEGER (0..63),
    schedulingPeriod-128-Offset         INTEGER (0..127),
    schedulingPeriod-256-Offset         INTEGER (0..255),
    schedulingPeriod-512-Offset         INTEGER (0..511),
    schedulingPeriod-1024-Offset        INTEGER (0..1023)
}

MBMS-NeighbouringCellSCCPCH-r6 ::=  SEQUENCE {
    secondaryCCPCH-Info                 MBMS-CommonPhyChIdentity,
    rakeCombinableGroupId               MBMS-RakeCombinableGroupId          OPTIONAL,
    layer1Combining                     CHOICE {
        fdd                                 SEQUENCE {
            typeOfL1Combining                   MBMS-TypeOfL1Combining,
            mbms-L1CombiningSchedule            MBMS-L1CombiningSchedule    OPTIONAL
        },
        tdd                                 NULL
    }       OPTIONAL,
    mbms-L23Configuration               MBMS-L23Configuration
}

MBMS-NeighbouringCellSCCPCHList-r6 ::= SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                        MBMS-NeighbouringCellSCCPCH-r6

MBMS-NI-CountPerFrame ::=           ENUMERATED { ni18, ni36, ni72, ni144 }

MBMS-PFLIndex ::=                   INTEGER (1..maxMBMS-Freq)

MBMS-PFLInfo ::=                    FrequencyInfo

MBMS-PhyChInformation-r6 ::=        SEQUENCE {
    mbms-CommonPhyChIdentity            MBMS-CommonPhyChIdentity,
    secondaryCCPCHInfo-MBMS             SecondaryCCPCHInfo-MBMS-r6
}

MBMS-PhyChInformationList-r6 ::=    SEQUENCE (SIZE (1..maxMBMS-CommonPhyCh)) OF
                                        MBMS-PhyChInformation-r6

MBMS-PL-ServiceRestrictInfo-r6 ::=  ENUMERATED { true }

MBMS-PreferredFreqRequest-r6 ::=    SEQUENCE {
    preferredFreqRequest                FrequencyInfo
}

MBMS-PreferredFrequencyInfo-r6 ::=  SEQUENCE {
    mbmsPreferredFrequency              INTEGER (1..maxMBMS-Freq),
    layerConvergenceInformation         CHOICE {
        mbms-Qoffset                        INTEGER (0..7),
        mbms-HCSoffset                      INTEGER (0..7)
    }
```

```
}

MBMS-PreferredFrequencyList-r6 ::=  SEQUENCE (SIZE (1..maxMBMS-Freq)) OF
                                        MBMS-PreferredFrequencyInfo-r6

MBMS-PTM-RBInformation-C ::=        SEQUENCE {
    rbInformation                       MBMS-CommonRBIdentity,
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity
}

MBMS-PTM-RBInformation-CList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                        MBMS-PTM-RBInformation-C

MBMS-PTM-RBInformation-N ::=        SEQUENCE {
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity,
    layer1-CombiningStatus              ENUMERATED { true }                 OPTIONAL
}

MBMS-PTM-RBInformation-NList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                        MBMS-PTM-RBInformation-N

MBMS-PTM-RBInformation-S ::=        SEQUENCE {
    rbInformation                       MBMS-CommonRBIdentity,
    shortTransmissionID                 MBMS-ShortTransmissionID,
    logicalChIdentity                   MBMS-LogicalChIdentity
}

MBMS-PTM-RBInformation-SList ::=    SEQUENCE (SIZE (1..maxRBperTrCh)) OF
                                        MBMS-PTM-RBInformation-S

MBMS-RakeCombinableGroupId ::=      INTEGER (0..15)

MBMS-RequiredUEAction-Mod ::=       ENUMERATED {
                                        none,
                                        acquireCountingInfo,
                                        acquirePTM-RBInfo,
                                        establishPMMConnection,
                                        releasePTM-RB }

MBMS-RequiredUEAction-UMod ::=      ENUMERATED {
                                        none,
                                        acquirePTM-RBInfo,
                                        establishPMMConnection }

MBMS-SCCPCHIdentity ::=             INTEGER (1..maxSCCPCH)

MBMS-ServiceAccessInfo-r6 ::=       SEQUENCE {
    shortTransmissionID                 MBMS-ShortTransmissionID,
    accessprobabilityFactor-Idle        MBMS-AccessProbabilityFactor,
    accessprobabilityFactor-UraPCH      MBMS-AccessProbabilityFactor        OPTIONAL
}

MBMS-ServiceAccessInfoList-r6 ::=   SEQUENCE (SIZE (1..maxMBMSservCount)) OF
                                        MBMS-ServiceAccessInfo-r6

MBMS-ServiceIdentity ::=            SEQUENCE {
    serviceIdentity                     OCTET STRING (SIZE (3)),
    plmn-Identity                       CHOICE {
        -- The 'sameAsMIB-PLMN-Id' choice refers to the 'PLMN Identity' (R99) in MIB.
        sameAsMIB-PLMN-Id                   NULL,
        other                               CHOICE {
            -- The 'sameAsMIB-MultiPLMN-Id' choice refers to one of the (1..5) PLMN Identities
            -- provided in the 'Multiple PLMN List' (REL-6) in MIB.
            sameAsMIB-MultiPLMN-Id              INTEGER (1..5),
            explicitPLMN-Id                     PLMN-Identity
        }
    }
}

MBMS-ServiceSchedulingInfo-r6 ::=   SEQUENCE {
    mbms-TransmissionIdentity           MBMS-TransmissionIdentity,
    mbms-ServiceTransmInfoList          MBMS-ServiceTransmInfoList          OPTIONAL,
    nextSchedulingperiod                INTEGER (0..31)
}

MBMS-ServiceSchedulingInfoList-r6 ::= SEQUENCE (SIZE (1..maxMBMSservSched)) OF
```

```
                                        MBMS-ServiceSchedulingInfo-r6

MBMS-ServiceTransmInfo ::=          SEQUENCE {
    -- Actual values (start, duration) = IE values * 4
    start                               INTEGER (0..255),
    duration                            INTEGER (1..256)
}

MBMS-ServiceTransmInfoList ::=      SEQUENCE (SIZE (1..maxMBMSTransmis)) OF
                                        MBMS-ServiceTransmInfo

MBMS-SessionIdentity ::=            OCTET STRING (SIZE (1))

MBMS-ShortTransmissionID ::=        INTEGER (1..32)

MBMS-SIBType5-SCCPCH-r6 ::=         SEQUENCE {
    sccpchIdentity                      MBMS-SCCPCHIdentity,
    transpCHInformation                 MBMS-TrCHInformation-SIB5List
}

MBMS-SIBType5-SCCPCHList-r6 ::=     SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                        MBMS-SIBType5-SCCPCH-r6

MBMS-TCTF-Presence ::=              ENUMERATED { false }

MBMS-TimersAndCouneters-r6 ::=      SEQUENCE {
    t-318                               T-318                               DEFAULT ms1000
}

MBMS-TransmissionIdentity ::=       SEQUENCE {
    mbms-ServiceIdentity                MBMS-ServiceIdentity,
    mbms-SessionIdentity                MBMS-SessionIdentity                OPTIONAL
}

MBMS-TranspChInfoForCCTrCh-r6 ::=   SEQUENCE {
    commonCCTrChIdentity                MBMS-CommonCCTrChIdentity,
    transportFormatCombinationSet       TFCS
}

MBMS-TranspChInfoForEachCCTrCh-r6 ::= SEQUENCE (SIZE (1..maxMBMS-CommonCCTrCh)) OF
                                        MBMS-TranspChInfoForCCTrCh-r6

MBMS-TranspChInfoForEachTrCh-r6 ::= SEQUENCE (SIZE (1..maxMBMS-CommonTrCh)) OF
                                        MBMS-TranspChInfoForTrCh-r6

MBMS-TranspChInfoForTrCh-r6 ::=     SEQUENCE {
    commonTrChIdentity                  MBMS-CommonTrChIdentity,
    transportFormatSet                  TransportFormatSet
}

MBMS-TrCHInformation-Comm ::=       SEQUENCE {
    transpCh-Info                       MBMS-CommonTrChIdentity,
    rbInformation                       MBMS-PTM-RBInformation-CList        OPTIONAL,
    mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6       OPTIONAL
}

MBMS-TrCHInformation-CommList ::=   SEQUENCE (SIZE (1..maxTrChperSCCPCH)) OF
                                        MBMS-TrCHInformation-Comm

MBMS-TrCHInformation-Neighb ::=     SEQUENCE {
    transpCh-Info                       MBMS-CommonTrChIdentity,
    transpCh-CombiningStatus            BOOLEAN,
    rbInformation                       MBMS-PTM-RBInformation-NList        OPTIONAL,
    mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6       OPTIONAL
}

MBMS-TrCHInformation-NeighbList ::= SEQUENCE (SIZE (1..maxFACHPCH)) OF
                                        MBMS-TrCHInformation-Neighb

MBMS-TrCHInformation-SIB5 ::=       SEQUENCE {
    transpCh-Identity                   INTEGER (1..maxFACHPCH),
    rbInformation                       MBMS-PTM-RBInformation-SList        OPTIONAL,
    mschConfigurationInfo               MBMS-MSCHConfigurationInfo-r6       OPTIONAL
}

MBMS-TrCHInformation-SIB5List ::=   SEQUENCE (SIZE (1..maxTrChperSCCPCH)) OF
                                        MBMS-TrCHInformation-SIB5
```

```
MBMS-TypeOfL1Combining ::=          CHOICE {
    rake                                NULL,
    soft                                MBMS-L1CombiningTransmTimeDiff
}
MBMS-UnmodifiedService-r6 ::=       SEQUENCE {
    mbms-TransmissionIdentity           MBMS-TransmissionIdentity,
    mbms-RequiredUEAction               MBMS-RequiredUEAction-UMod,
    mbms-PreferredFrequency             MBMS-PFLIndex                       OPTIONAL
}

MBMS-UnmodifiedServiceList-r6 ::=   SEQUENCE (SIZE (1..maxMBMSservUnmodif)) OF
                                        MBMS-UnmodifiedService-r6

END
```

11.4 Constant definitions

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

BEGIN

hiPDSCHidentities           INTEGER ::= 64
hiPUSCHidentities           INTEGER ::= 64
hiRM                        INTEGER ::= 256
maxAC                       INTEGER ::= 16
maxAdditionalMeas           INTEGER ::= 4
maxASC                      INTEGER ::= 8
maxASCmap                   INTEGER ::= 7
maxASCpersist               INTEGER ::= 6
maxCCTrCH                   INTEGER ::= 8
maxCellMeas                 INTEGER ::= 32
maxCellMeas-1               INTEGER ::= 31
maxCNdomains                INTEGER ::= 4
maxCPCHsets                 INTEGER ::= 16
maxDPCH-DLchan              INTEGER ::= 8
maxDPDCH-UL                 INTEGER ::= 6
maxDRACclasses              INTEGER ::= 8
maxE-DCHMACdFlow            INTEGER ::= 1   -- FFS
maxE-DCHMACdFlow-1          INTEGER ::= 0   -- FFS
maxFACHPCH                  INTEGER ::= 8
maxFreq                     INTEGER ::= 8
maxFreqBandsFDD             INTEGER ::= 8
maxFreqBandsTDD             INTEGER ::= 4
maxFreqBandsGSM             INTEGER ::= 16
maxGERAN-SI                 INTEGER ::= 8
maxGSMTargetCells           INTEGER ::= 32
maxHarqRTT                  INTEGER ::= 1   -- FFS
maxHProcesses               INTEGER ::= 8
maxHSDSCHTBIndex            INTEGER ::= 64
maxHSDSCHTBIndex-tdd384     INTEGER ::= 512
maxHSSCCHs                  INTEGER ::= 4
maxInterSysMessages         INTEGER ::= 4
maxLoCHperRLC               INTEGER ::= 2
maxMAC-d-PDUsizes           INTEGER ::= 8
maxMBMS-CommonCCTrCh        INTEGER ::= 32
maxMBMS-CommonPhyCh         INTEGER ::= 32
maxMBMS-CommonRB            INTEGER ::= 32
maxMBMS-CommonTrCh          INTEGER ::= 32
maxMBMS-Freq                INTEGER ::= 4
maxMBMS-L1CP                INTEGER ::= 4
maxMBMSservCount            INTEGER ::= 4
maxMBMSservDedic            INTEGER ::= 4
maxMBMSservModif            INTEGER ::= 4
maxMBMSservSched            INTEGER ::= 16
maxMBMSservUnmodif          INTEGER ::= 32
maxMBMSTransmis             INTEGER ::= 4
maxMeasEvent                INTEGER ::= 8
maxMeasIntervals            INTEGER ::= 3
maxMeasParEvent             INTEGER ::= 2
maxNumCDMA2000Freqs         INTEGER ::=  8
maxNumGSMFreqRanges         INTEGER ::= 32
maxNumFDDFreqs              INTEGER ::=  8
maxNumTDDFreqs              INTEGER ::=  8
maxNoOfMeas                 INTEGER ::= 16
maxOtherRAT                 INTEGER ::= 15
maxOtherRAT-16              INTEGER ::= 16
maxPage1                    INTEGER ::= 8
```

```
maxPCPCH-APsig              INTEGER ::= 16
maxPCPCH-APsubCh            INTEGER ::= 12
maxPCPCH-CDsig              INTEGER ::= 16
maxPCPCH-CDsubCh            INTEGER ::= 12
maxPCPCH-SF                 INTEGER ::= 7
maxPCPCHs                   INTEGER ::= 64
maxPDCPAlgoType             INTEGER ::= 8
maxPDSCH                    INTEGER ::= 8
maxPDSCH-TFCIgroups         INTEGER ::= 256
maxPRACH                    INTEGER ::= 16
maxPRACH-FPACH              INTEGER ::= 8
maxPredefConfig             INTEGER ::= 16
maxPUSCH                    INTEGER ::= 8
maxQueueIDs                 INTEGER ::= 8
maxRABsetup                 INTEGER ::= 16
maxRAT                      INTEGER ::= 16
maxRB                       INTEGER ::= 32
maxRBallRABs                INTEGER ::= 27
maxRBMuxOptions             INTEGER ::= 8
maxRBperRAB                 INTEGER ::= 8
maxRBperTrCh                INTEGER ::= 16
maxReportedGSMCells         INTEGER ::= 8
maxRL                       INTEGER ::= 8
maxRL-1                     INTEGER ::= 7
maxRLCPDUsizePerLogChan     INTEGER ::= 1   -- FFS
maxRFC3095-CID              INTEGER ::= 16384
maxROHC-PacketSizes-r4      INTEGER ::= 16
maxROHC-Profile-r4          INTEGER ::= 8
maxSat                      INTEGER ::= 16
maxSCCPCH                   INTEGER ::= 16
maxSIB                      INTEGER ::= 32
maxSIB-FACH                 INTEGER ::= 8
maxSIBperMsg                INTEGER ::= 16
maxSRBsetup                 INTEGER ::= 8
maxSystemCapability         INTEGER ::= 16
maxTF                       INTEGER ::= 32
maxTF-CPCH                  INTEGER ::= 16
maxTFC                      INTEGER ::= 1024
maxTFCsub                   INTEGER ::= 1024
maxTFCI-2-Combs             INTEGER ::= 512
maxTGPS                     INTEGER ::= 6
maxTrCH                     INTEGER ::= 32
maxTrChperSCCPCH            INTEGER ::= 8
-- maxTrCHpreconf should be 16 but has been set to 32 for compatibility
maxTrCHpreconf              INTEGER ::= 32
maxTS                       INTEGER ::= 14
maxTS-1                     INTEGER ::= 13
maxTS-2                     INTEGER ::= 12
maxTS-LCR                   INTEGER ::= 6
maxTS-LCR-1                 INTEGER ::= 5
maxURA                      INTEGER ::= 8
maxURNTI-Group              INTEGER ::= 8

END
```

11.5 RRC information between network nodes

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

BEGIN

IMPORTS

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

-- Core Network IEs :
    CN-DomainIdentity,
    CN-DomainInformationList,
    CN-DomainInformationListFull,
```

```
    CN-DRX-CycleLengthCoefficient,
    NAS-SystemInformationGSM-MAP,
-- UTRAN Mobility IEs :
    CellIdentity,
    URA-Identity,
-- User Equipment IEs :
    AccessStratumReleaseIndicator,
    C-RNTI,
    ChipRateCapability,
    DL-CapabilityWithSimultaneousHS-DSCHConfig,
    DL-PhysChCapabilityFDD-v380ext,
    DL-PhysChCapabilityTDD,
    DL-PhysChCapabilityTDD-LCR-r4,
    GSM-Measurements,
    HSDSCH-physical-layer-category,
    FailureCauseWithProtErr,
    MaxHcContextSpace,
    MaximumAM-EntityNumberRLC-Cap,
    MaximumRLC-WindowSize,
    MaxNoPhysChBitsReceived,
    MaxPhysChPerFrame,
    MaxPhysChPerSubFrame-r4,
    MaxPhysChPerTS,
    MaxROHC-ContextSessions-r4,
    MaxTS-PerFrame,
    MaxTS-PerSubFrame-r4,
    MinimumSF-DL,
    MultiModeCapability,
    MultiRAT-Capability,
    NetworkAssistedGPS-Supported,
    RadioFrequencyBandTDDList,
    RLC-Capability,
    RRC-MessageSequenceNumber,
    SecurityCapability,
    SimultaneousSCCPCH-DPCH-Reception,
    STARTList,
    STARTSingle,
    START-Value,
    SupportOfDedicatedPilotsForChEstimation,
    TransportChannelCapability,
    TxRxFrequencySeparation,
    U-RNTI,
    UE-MultiModeRAT-Capability,
    UE-PowerClassExt,
    UE-RadioAccessCapabBandFDDList,
    UE-RadioAccessCapabBandFDDList2,
    UE-RadioAccessCapabBandFDDList-ext,
    UE-RadioAccessCapability,
    UE-RadioAccessCapability-v370ext,
    UE-RadioAccessCapability-v380ext,
    UE-RadioAccessCapability-v3a0ext,
    UE-RadioAccessCapability-v3g0ext,
    UE-RadioAccessCapability-v4b0ext,
    UE-RadioAccessCapability-v590ext,
    UE-RadioAccessCapability-v5c0ext,
    UE-RadioAccessCapability-v650ext,
    UL-PhysChCapabilityFDD,
    UL-PhysChCapabilityTDD,
    UL-PhysChCapabilityTDD-LCR-r4,
-- Radio Bearer IEs :
    PredefinedConfigStatusList,
    PredefinedConfigValueTag,
    RAB-InformationSetupList,
    RAB-InformationSetupList-r4,
    RAB-InformationSetupList-r5,
    RAB-InformationSetupList-r6-ext,
    RAB-InformationSetupList-r6,
    RB-Identity,
    SRB-InformationSetupList,
    SRB-InformationSetupList-r5,
    SRB-InformationSetupList-r6,
-- Transport Channel IEs :
    CPCH-SetID,
    DL-CommonTransChInfo,
    DL-CommonTransChInfo-r4,
    DL-AddReconfTransChInfoList,
    DL-AddReconfTransChInfoList-r4,
    DL-AddReconfTransChInfoList-r5,
```

```
    DRAC-StaticInformationList,
    UL-CommonTransChInfo,
    UL-CommonTransChInfo-r4,
    UL-AddReconfTransChInfoList,
    UL-AddReconfTransChInfoList-r6,
-- Physical Channel IEs :
    PrimaryCPICH-Info,
    TPC-CombinationIndex,
    ScramblingCodeChange,
    TGCFN,
    TGPSI,
    TGPS-ConfigurationParams,
-- Measurement IEs :
    Inter-FreqEventCriteriaList-v590ext,
    Intra-FreqEventCriteriaList-v590ext,
    IntraFreqEvent-1d-r5,
    IntraFreqReportingCriteria-1b-r5,
    InterRATCellInfoIndicator,
    MeasurementIdentity,
    MeasurementReportingMode,
    MeasurementType,
    MeasurementType-r4,
    AdditionalMeasurementID-List,
    PositionEstimate,
-- MBMS IEs :
    MBMS-JoinedInformation-r6,
-- Other IEs :
    GERANIu-RadioAccessCapability,
    InterRAT-UE-RadioAccessCapabilityList,
    InterRAT-UE-RadioAccessCapability-v590ext,
    UESpecificBehaviourInformation1idle,
    UESpecificBehaviourInformation1interRAT

FROM InformationElements

    maxCNdomains,
    maxNoOfMeas,

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

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

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

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

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


TargetRNC-ToSourceRNC-Container ::= CHOICE {
    radioBearerSetup                    RadioBearerSetup,
    radioBearerReconfiguration          RadioBearerReconfiguration,
    radioBearerRelease                  RadioBearerRelease,
    transportChannelReconfiguration     TransportChannelReconfiguration,
    physicalChannelReconfiguration      PhysicalChannelReconfiguration,
    rrc-FailureInfo                     RRC-FailureInfo,
```

```
    -- IE dl-DCCHmessage consists of an octet string that includes the IE DL-DCCH-Message
    dL-DCCHmessage                      OCTET STRING,
    extension                           NULL
}

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


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

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

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

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

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

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

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


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

SRNC-RelocationInfo-r3 ::= CHOICE {
    r3                              SEQUENCE {
        sRNC-RelocationInfo-r3          SRNC-RelocationInfo-r3-IEs,
        v380NonCriticalExtensions           SEQUENCE {
            sRNC-RelocationInfo-v380ext SRNC-RelocationInfo-v380ext-IEs,
```

```
				-- Reserved for future non critical extension
				v390NonCriticalExtensions			SEQUENCE {
					sRNC-RelocationInfo-v390ext			SRNC-RelocationInfo-v390ext-IEs,
					v3a0NonCriticalExtensions			SEQUENCE {
						sRNC-RelocationInfo-v3a0ext			SRNC-RelocationInfo-v3a0ext-IEs,
						v3b0NonCriticalExtensions			SEQUENCE {
							sRNC-RelocationInfo-v3b0ext			SRNC-RelocationInfo-v3b0ext-IEs,
							v3c0NonCriticalExtensions			SEQUENCE {
								sRNC-RelocationInfo-v3c0ext			SRNC-RelocationInfo-v3c0ext-IEs,
								laterNonCriticalExtensions			SEQUENCE {
									sRNC-RelocationInfo-v3d0ext			SRNC-RelocationInfo-v3d0ext-IEs,
									-- Container for additional R99 extensions
									sRNC-RelocationInfo-r3-add-ext		BIT STRING
												(CONTAINING SRNC-RelocationInfo-v3h0ext-IEs)		OPTIONAL,
									v3g0NonCriticalExtensions			SEQUENCE {
										sRNC-RelocationInfo-v3g0ext			SRNC-RelocationInfo-v3g0ext-IEs,
										v4b0NonCriticalExtensions			SEQUENCE {
											sRNC-RelocationInfo-v4b0ext			SRNC-RelocationInfo-v4b0ext-IEs,
											v590NonCriticalExtensions			SEQUENCE {
												sRNC-RelocationInfo-v590ext
																		SRNC-RelocationInfo-v590ext-IEs,
												v5a0NonCriticalExtensions			SEQUENCE {
													sRNC-RelocationInfo-v5a0ext
																		SRNC-RelocationInfo-v5a0ext-IEs,
													v5b0NonCriticalExtensions			SEQUENCE {
														sRNC-RelocationInfo-v5b0ext
																		SRNC-RelocationInfo-v5b0ext-IEs,
														v5c0NonCriticalExtensions			SEQUENCE {
															sRNC-RelocationInfo-v5c0ext
																			SRNC-RelocationInfo-v5c0ext-IE
															v6xyNonCriticalExtensions		SEQUENCE {
																sRNC-RelocationInfo-v6xyext
																		SRNC-RelocationInfo-v6xyext-IEs,
																-- Reserved for future non critical extension
																nonCriticalExtensions	SEQUENCE {}	OPTIONAL
															}		OPTIONAL
														}		OPTIONAL
													}		OPTIONAL
												}		OPTIONAL
											}		OPTIONAL
										}		OPTIONAL
									}		OPTIONAL
								}		OPTIONAL
							}		OPTIONAL
						}		OPTIONAL
					}		OPTIONAL
				}		OPTIONAL
			}		OPTIONAL
		},
		later-than-r3					CHOICE {
			r4							SEQUENCE {
				sRNC-RelocationInfo-r4			SRNC-RelocationInfo-r4-IEs,
				v4d0NonCriticalExtensions		SEQUENCE {
					sRNC-RelocationInfo-v4d0ext		SRNC-RelocationInfo-v4d0ext-IEs,
					-- Container for adding non critical extensions after freezing REL-5
					sRNC-RelocationInfo-r4-add-ext		BIT STRING
							(CONTAINING SRNC-RelocationInfo-v650ext1-IEs)		OPTIONAL,
					v590NonCriticalExtensions			SEQUENCE {
						sRNC-RelocationInfo-v590ext			SRNC-RelocationInfo-v590ext-IEs,
						v5a0NonCriticalExtensions			SEQUENCE {
							sRNC-RelocationInfo-v5a0ext			SRNC-RelocationInfo-v5a0ext-IEs,
							v5b0NonCriticalExtensions			SEQUENCE {
								sRNC-RelocationInfo-v5b0ext			SRNC-RelocationInfo-v5b0ext-IEs,
								v5c0NonCriticalExtensions			SEQUENCE {
									sRNC-RelocationInfo-v5c0ext			SRNC-RelocationInfo-v5c0ext-IEs,
									v6xyNonCriticalExtensions			SEQUENCE {
										sRNC-RelocationInfo-v6xyext
												SRNC-RelocationInfo-v6xyext-IEs,
										nonCriticalExtensions				SEQUENCE {} OPTIONAL
									}	OPTIONAL
								}	OPTIONAL
							}	OPTIONAL
						}	OPTIONAL
					}	OPTIONAL
				}	OPTIONAL
			},
			criticalExtensions				CHOICE {
				r5							SEQUENCE {
```

```
                sRNC-RelocationInfo-r5          SRNC-RelocationInfo-r5-IEs,
                sRNC-RelocationInfo-r5-add-ext  BIT STRING      OPTIONAL,
                v5a0NonCriticalExtensions       SEQUENCE {
                    sRNC-RelocationInfo-v5a0ext     SRNC-RelocationInfo-v5a0ext-IEs,
                    v5b0NonCriticalExtensions       SEQUENCE {
                        sRNC-RelocationInfo-v5b0ext     SRNC-RelocationInfo-v5b0ext-IEs,
                        v5c0NonCriticalExtensions           SEQUENCE {
                            sRNC-RelocationInfo-v5c0ext         SRNC-RelocationInfo-v5c0ext-IEs,
                            v650NonCriticalExtensions       SEQUENCE {
                                sRNC-RelocationInfo-v650ext2    SRNC-RelocationInfo-v650ext2-IEs,
                                v6xyNonCriticalExtensions       SEQUENCE {
                                    sRNC-RelocationInfo-v6xyext     SRNC-RelocationInfo-v6xyext-IEs,
                                    nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                                }   OPTIONAL
                            }   OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r6                              SEQUENCE {
                    sRNC-RelocationInfo-r6          SRNC-RelocationInfo-r6-IEs,
                    sRNC-RelocationInfo-r6-add-ext  BIT STRING      OPTIONAL,
                    nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                },
                criticalExtensions                  SEQUENCE {}
            }
        }
    }
}

SRNC-RelocationInfo-r3-IEs ::=      SEQUENCE {
    -- Non-RRC IEs
        stateOfRRC                      StateOfRRC,
        stateOfRRC-Procedure            StateOfRRC-Procedure,
    -- Ciphering related information IEs
    -- If the extension v380 is included use the extension for the ciphering status per CN domain
        cipheringStatus                 CipheringStatus,
        calculationTimeForCiphering     CalculationTimeForCiphering         OPTIONAL,
        -- The order of occurrence in the IE cipheringInfoPerRB-List is the
        -- same as the RBs in SRB-InformationSetupList in RAB-InformationSetupList.
        -- The signalling RBs are supposed to be listed
        -- first. Only UM and AM RBs that are ciphered are listed here
        cipheringInfoPerRB-List         CipheringInfoPerRB-List             OPTIONAL,
        count-C-List                    COUNT-C-List                        OPTIONAL,
        integrityProtectionStatus       IntegrityProtectionStatus,
         -- In the IE srb-SpecificIntegrityProtInfo, the first information listed corresponds to
         -- signalling radio bearer RB0 and after the order of occurrence is the same as the SRBs in
        -- SRB-InformationSetupList
        -- The target RNC may ignore the IE srb-SpecificIntegrityProtInfo if the
        -- IE integrityProtectionStatus has the value "not started".
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability,
        ue-Positioning-LastKnownPos     UE-Positioning-LastKnownPos         OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainInformationList        CN-DomainInformationList            OPTIONAL,
    -- Measurement IEs
        ongoingMeasRepList              OngoingMeasRepList                  OPTIONAL,
    -- Radio bearer IEs
        predefinedConfigStatusList      PredefinedConfigStatusList,
        srb-InformationList             SRB-InformationSetupList,
        rab-InformationList             RAB-InformationSetupList            OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-TransChInfoList              UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                transChDRAC-Info                DRAC-StaticInformationList  OPTIONAL
```

```
			},
			tdd								NULL
		},
		dl-CommonTransChInfo			DL-CommonTransChInfo				OPTIONAL,
		dl-TransChInfoList				DL-AddReconfTransChInfoList			OPTIONAL,
	-- Measurement report
		measurementReport				MeasurementReport					OPTIONAL
}

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

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

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

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

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

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

SRNC-RelocationInfo-v3g0ext-IEs ::= SEQUENCE {
		ue-RadioAccessCapability-v3g0ext	UE-RadioAccessCapability-v3g0ext		OPTIONAL
}

SRNC-RelocationInfo-v3h0ext-IEs ::= SEQUENCE {
		tpc-CombinationInfoList			TPC-CombinationInfoList		OPTIONAL,
		v650NonCriticalExtensions		SEQUENCE {
			ue-RadioAccessCapability-v650ext	UE-RadioAccessCapability-v650ext	OPTIONAL,
			nonCriticalExtension				SEQUENCE {}							OPTIONAL
	}	OPTIONAL
}

SRNC-RelocationInfo-v4d0ext-IEs ::= SEQUENCE {
		tpc-CombinationInfoList		TPC-CombinationInfoList		OPTIONAL
}

TPC-CombinationInfoList ::= SEQUENCE (SIZE (1..maxRL)) OF
		TPC-Combination-Info

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

SRNC-RelocationInfo-v4b0ext-IEs ::= SEQUENCE {
```

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        ue-RadioAccessCapability-v4b0ext    UE-RadioAccessCapability-v4b0ext        OPTIONAL
}

SRNC-RelocationInfo-v590ext-IEs ::= SEQUENCE {
        ue-RadioAccessCapability-v590ext    UE-RadioAccessCapability-v590ext        OPTIONAL,
        ue-RATSpecificCapability-v590ext    InterRAT-UE-RadioAccessCapability-v590ext   OPTIONAL
}

SRNC-RelocationInfo-v5a0ext-IEs ::= SEQUENCE {
        storedCompressedModeInfo        StoredCompressedModeInfo    OPTIONAL
}

SRNC-RelocationInfo-v5b0ext-IEs ::= SEQUENCE {
    interRATCellInfoIndicator           InterRATCellInfoIndicator           OPTIONAL
}

SRNC-RelocationInfo-v5c0ext-IEs ::= SEQUENCE {
        ue-RadioAccessCapability-v5c0ext    UE-RadioAccessCapability-v5c0ext        OPTIONAL
}

SRNC-RelocationInfo-v650ext1-IEs ::= SEQUENCE {
    ue-RadioAccessCapability-v650ext    UE-RadioAccessCapability-v650ext    OPTIONAL,
    nonCriticalExtension                SEQUENCE {}     OPTIONAL
}

SRNC-RelocationInfo-v650ext2-IEs ::= SEQUENCE {
        ue-RadioAccessCapability-v650ext        UE-RadioAccessCapability-v650ext
}

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

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

CipheringStatusCNdomain ::=             SEQUENCE {
        cn-DomainIdentity               CN-DomainIdentity,
        cipheringStatus                 CipheringStatus
}

CodeChangeStatusList ::= SEQUENCE (SIZE (1..maxRL)) OF
        CodeChangeStatus

CodeChangeStatus ::= SEQUENCE {
        primaryCPICH-Info                   PrimaryCPICH-Info,
        scramblingCodeChange                ScramblingCodeChange
}

StoredCompressedModeInfo ::= SEQUENCE {
        storedTGP-SequenceList      StoredTGP-SequenceList,
        codeChangeStatusList        CodeChangeStatusList    OPTIONAL
}

StoredTGP-SequenceList ::=          SEQUENCE (SIZE (1..maxTGPS)) OF
                                        StoredTGP-Sequence

StoredTGP-Sequence ::=              SEQUENCE {
    tgpsi                               TGPSI,
    current-tgps-Status                 CHOICE {
        active                              SEQUENCE {
            tgcfn                               TGCFN
        },
        inactive                            NULL
    },
    tgps-ConfigurationParams            TGPS-ConfigurationParams            OPTIONAL
}

SRNC-RelocationInfo-r4-IEs ::=          SEQUENCE {
    -- Non-RRC IEs
        -- IE rb-IdentityForHOMessage includes the identity of the RB used by the source SRNC
        -- to send the message contained in the IE "TargetRNC-ToSourceRNC-Container".
        -- Only included if type is "UE involved"
        rb-IdentityForHOMessage         RB-Identity                         OPTIONAL,
        stateOfRRC                      StateOfRRC,
        stateOfRRC-Procedure            StateOfRRC-Procedure,
    -- Ciphering related information IEs
        cipheringStatusList             CipheringStatusList-r4,
```

```
        latestConfiguredCN-Domain       CN-DomainIdentity,
        calculationTimeForCiphering     CalculationTimeForCiphering         OPTIONAL,
        count-C-List                    COUNT-C-List                        OPTIONAL,
        cipheringInfoPerRB-List         CipheringInfoPerRB-List-r4          OPTIONAL,
    -- Integrity protection related information IEs
        integrityProtectionStatus       IntegrityProtectionStatus,
        -- The target RNC may ignore the IE srb-SpecificIntegrityProtInfo if the
        -- IE integrityProtectionStatus has the value "not started".
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability-r4,
        ue-RadioAccessCapability-ext    UE-RadioAccessCapabBandFDDList      OPTIONAL,
        ue-Positioning-LastKnownPos     UE-Positioning-LastKnownPos         OPTIONAL,
        uESpecificBehaviourInformation1idle     UESpecificBehaviourInformation1idle     OPTIONAL,
        uESpecificBehaviourInformation1interRAT     UESpecificBehaviourInformation1interRAT
    OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainInformationList        CN-DomainInformationListFull        OPTIONAL,
    -- Measurement IEs
        ongoingMeasRepList              OngoingMeasRepList-r4               OPTIONAL,
    -- Radio bearer IEs
        predefinedConfigStatusList      PredefinedConfigStatusList,
        srb-InformationList             SRB-InformationSetupList,
        rab-InformationList             RAB-InformationSetupList-r4         OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-TransChInfoList              UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                transChDRAC-Info                DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-TransChInfoList              DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Measurement report
        measurementReport               MeasurementReport                   OPTIONAL,
        failureCause                    FailureCauseWithProtErr             OPTIONAL
}

SRNC-RelocationInfo-r5-IEs ::=          SEQUENCE {
    -- Non-RRC IEs
        -- IE rb-IdentityForHOMessage includes the identity of the RB used by the source SRNC
        -- to send the message contained in the IE “TargetRNC-ToSourceRNC-Container”.
        -- Only included if type is "UE involved"
        rb-IdentityForHOMessage         RB-Identity                         OPTIONAL,
        stateOfRRC                      StateOfRRC,
        stateOfRRC-Procedure            StateOfRRC-Procedure,
    -- Ciphering related information IEs
        cipheringStatusList             CipheringStatusList-r4,
        latestConfiguredCN-Domain       CN-DomainIdentity,
        calculationTimeForCiphering     CalculationTimeForCiphering         OPTIONAL,
        count-C-List                    COUNT-C-List                        OPTIONAL,
        cipheringInfoPerRB-List         CipheringInfoPerRB-List-r4          OPTIONAL,
    -- Integrity protection related information IEs
        integrityProtectionStatus       IntegrityProtectionStatus,
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList   OPTIONAL,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability-r5,
        ue-RadioAccessCapability-ext    UE-RadioAccessCapabBandFDDList      OPTIONAL,
        ue-Positioning-LastKnownPos     UE-Positioning-LastKnownPos         OPTIONAL,
        uESpecificBehaviourInformation1idle
                                        UESpecificBehaviourInformation1idle     OPTIONAL,
        uESpecificBehaviourInformation1interRAT
                                        UESpecificBehaviourInformation1interRAT     OPTIONAL,
    -- Other IEs
```

```
		ue-RATSpecificCapability		InterRAT-UE-RadioAccessCapabilityList-r5	OPTIONAL,
	-- UTRAN mobility IEs
		ura-Identity					URA-Identity						OPTIONAL,
	-- Core network IEs
		cn-CommonGSM-MAP-NAS-SysInfo	NAS-SystemInformationGSM-MAP,
		cn-DomainInformationList		CN-DomainInformationListFull		OPTIONAL,
	-- Measurement IEs
		ongoingMeasRepList				OngoingMeasRepList-r5				OPTIONAL,
	-- Radio bearer IEs
		predefinedConfigStatusList		PredefinedConfigStatusList,
		srb-InformationList				SRB-InformationSetupList-r5,
		rab-InformationList				RAB-InformationSetupList-r5			OPTIONAL,
	-- Transport channel IEs
		ul-CommonTransChInfo			UL-CommonTransChInfo-r4				OPTIONAL,
		ul-TransChInfoList				UL-AddReconfTransChInfoList			OPTIONAL,
		modeSpecificInfo				CHOICE {
			fdd								SEQUENCE {
				cpch-SetID						CPCH-SetID					OPTIONAL,
				transChDRAC-Info				DRAC-StaticInformationList	OPTIONAL
			},
			tdd								NULL
		}																	OPTIONAL,
		dl-CommonTransChInfo			DL-CommonTransChInfo-r4				OPTIONAL,
		dl-TransChInfoList				DL-AddReconfTransChInfoList-r5		OPTIONAL,
	-- PhyCH IEs
		tpc-CombinationInfoList			TPC-CombinationInfoList				OPTIONAL,
	-- Measurement report
		measurementReport				MeasurementReport					OPTIONAL,
	-- Other IEs
		failureCause					FailureCauseWithProtErr				OPTIONAL
}

SRNC-RelocationInfo-v6xyext-IEs ::= SEQUENCE {
	-- Radio bearer IEs
		rab-InformationSetupList		RAB-InformationSetupList-r6-ext		OPTIONAL,
	-- MBMS IEs
		mbms-JoinedInformation			MBMS-JoinedInformation-r6			OPTIONAL
}

SRNC-RelocationInfo-r6-IEs ::=			SEQUENCE {
	-- Non-RRC IEs
		-- IE rb-IdentityForHOMessage includes the identity of the RB used by the source SRNC
		-- to send the message contained in the IE “TargetRNC-ToSourceRNC-Container”.
		-- Only included if type is "UE involved"
		rb-IdentityForHOMessage			RB-Identity							OPTIONAL,
		stateOfRRC						StateOfRRC,
		stateOfRRC-Procedure			StateOfRRC-Procedure,
	-- Ciphering related information IEs
		cipheringStatusList				CipheringStatusList-r4,
		latestConfiguredCN-Domain		CN-DomainIdentity,
		calculationTimeForCiphering		CalculationTimeForCiphering			OPTIONAL,
		count-C-List					COUNT-C-List						OPTIONAL,
		cipheringInfoPerRB-List			CipheringInfoPerRB-List-r4			OPTIONAL,
	-- Integrity protection related information IEs
		integrityProtectionStatus		IntegrityProtectionStatus,
		srb-SpecificIntegrityProtInfo	SRB-SpecificIntegrityProtInfoList	OPTIONAL,
		implementationSpecificParams	ImplementationSpecificParams		OPTIONAL,
	-- User equipment IEs
		u-RNTI							U-RNTI,
		c-RNTI							C-RNTI								OPTIONAL,
		ue-RadioAccessCapability		UE-RadioAccessCapability-r5,
		ue-RadioAccessCapability-ext	UE-RadioAccessCapabBandFDDList		OPTIONAL,
		ue-Positioning-LastKnownPos		UE-Positioning-LastKnownPos			OPTIONAL,
		uESpecificBehaviourInformation1idle
										UESpecificBehaviourInformation1idle		OPTIONAL,
		uESpecificBehaviourInformation1interRAT
										UESpecificBehaviourInformation1interRAT		OPTIONAL,
	-- Other IEs
		ue-RATSpecificCapability		InterRAT-UE-RadioAccessCapabilityList-r5	OPTIONAL,
	-- UTRAN mobility IEs
		ura-Identity					URA-Identity						OPTIONAL,
	-- Core network IEs
		cn-CommonGSM-MAP-NAS-SysInfo	NAS-SystemInformationGSM-MAP,
		cn-DomainInformationList		CN-DomainInformationListFull		OPTIONAL,
	-- Measurement IEs
		ongoingMeasRepList				OngoingMeasRepList-r5				OPTIONAL,
		interRATCellInfoIndicator		InterRATCellInfoIndicator			OPTIONAL,
	-- Radio bearer IEs
```

```
        predefinedConfigStatusList      PredefinedConfigStatusList,
        srb-InformationList             SRB-InformationSetupList-r6,
        rab-InformationList             RAB-InformationSetupList-r6         OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-TransChInfoList              UL-AddReconfTransChInfoList-r6      OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                transChDRAC-Info                DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-TransChInfoList              DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- PhyCH IEs
        tpc-CombinationInfoList         TPC-CombinationInfoList             OPTIONAL,
        storedCompressedModeInfo        StoredCompressedModeInfo            OPTIONAL,
    -- Measurement report
        measurementReport               MeasurementReport                   OPTIONAL,
    -- Other IEs
        failureCause                    FailureCauseWithProtErr             OPTIONAL,
    -- MBMS IEs
        mbms-JoinedInformation          MBMS-JoinedInformation-r6           OPTIONAL
}

-- IE definitions

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

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

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

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

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


CipheringStatus ::=                 ENUMERATED {
                                        started, notStarted }

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

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

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

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

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

```
    tdd384-Measurements                 BOOLEAN                             OPTIONAL,
    tdd128-Measurements                 BOOLEAN                             OPTIONAL,
    gsm-Measurements                    GSM-Measurements                    OPTIONAL,
    multiCarrierMeasurements            BOOLEAN                             OPTIONAL
}

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

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

DL-PhysChCapabilityFDD-r4 ::=       SEQUENCE {
-- The IE "maxNoDPCH-PDSCH-Codes" only gives information on the maximum number of DPCH Codes.
    maxNoDPCH-PDSCH-Codes               INTEGER (1..8),
    maxNoPhysChBitsReceived             MaxNoPhysChBitsReceived,
    supportForSF-512                    BOOLEAN,
-- The RNC should ignore this IE on reception.
    supportOfPDSCHdummy                     BOOLEAN,
    simultaneousSCCPCH-DPCH-Reception   SimultaneousSCCPCH-DPCH-Reception,
    supportOfDedicatedPilotsForChEstimation     SupportOfDedicatedPilotsForChEstimation     OPTIONAL
}

DL-PhysChCapabilityFDD-r5 ::=       SEQUENCE {
-- The IE "maxNoDPCH-PDSCH-Codes" only gives information on the maximum number of DPCH Codes.
    maxNoDPCH-PDSCH-Codes               INTEGER (1..8),
    maxNoPhysChBitsReceived             MaxNoPhysChBitsReceived,
    supportForSF-512                    BOOLEAN,
-- The RNC should ignore this IE on reception.
    supportOfPDSCHdummy                     BOOLEAN,
    simultaneousSCCPCH-DPCH-Reception   SimultaneousSCCPCH-DPCH-Reception,
    supportOfDedicatedPilotsForChEstimation     SupportOfDedicatedPilotsForChEstimation     OPTIONAL,
    fdd-hspdsch                         CHOICE {
        supported                           SEQUENCE {
            hsdsch-physical-layer-category      HSDSCH-physical-layer-category,
            supportOfDedicatedPilotsForChannelEstimationOfHSDSCH    BOOLEAN,
            -- simultaneousSCCPCH-DPCH-HSDSCH-Reception shall be true only if the
            -- IE SimultaneousSCCPCH-DPCH-Reception indicates support of simultaneous
            -- reception of S-CCPCH and DPCH
            simultaneousSCCPCH-DPCH-HSDSCH-Reception    BOOLEAN
        },
        unsupported                         NULL
    }
}

DL-PhysChCapabilityTDD-r5 ::=       SEQUENCE {
    maxTS-PerFrame                      MaxTS-PerFrame,
    maxPhysChPerFrame                   MaxPhysChPerFrame,
    minimumSF                           MinimumSF-DL,
    supportOfPDSCH                      BOOLEAN,
    maxPhysChPerTS                      MaxPhysChPerTS,
    tdd384-hspdsch                      CHOICE {
        supported                           HSDSCH-physical-layer-category,
        unsupported                         NULL
    }
}

DL-PhysChCapabilityTDD-LCR-r5 ::=   SEQUENCE {
    maxTS-PerSubFrame                   MaxTS-PerSubFrame-r4,
    maxPhysChPerFrame                   MaxPhysChPerSubFrame-r4,
    minimumSF                           MinimumSF-DL,
    supportOfPDSCH                      BOOLEAN,
    maxPhysChPerTS                      MaxPhysChPerTS,
    supportOf8PSK                       BOOLEAN,
    tdd128-hspdsch                      CHOICE {
        supported                           HSDSCH-physical-layer-category,
        unsupported                         NULL
    }
}

DL-RFC3095-Context ::=              SEQUENCE {
    rfc3095-Context-Identity            INTEGER (0..16383),
    dl-mode                             ENUMERATED {u, o, r},
    dl-ref-ir                           OCTET STRING ( SIZE (1..3000)),
    dl-ref-time                         INTEGER (0..4294967295)     OPTIONAL,
    dl-curr-time                        INTEGER (0..4294967295)     OPTIONAL,
```

```
    dl-syn-offset-id                    INTEGER (0..65535)          OPTIONAL,
    dl-syn-slope-ts                     INTEGER (0..4294967295)     OPTIONAL,
    dl-dyn-changed                      BOOLEAN
}

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


IntegrityProtectionStatus ::=       ENUMERATED {
                                        started, notStarted }

InterRAT-UE-RadioAccessCapabilityList-r5 ::=    SEQUENCE {
    interRAT-UE-RadioAccessCapability   InterRAT-UE-RadioAccessCapabilityList,
    geranIu-RadioAccessCapability       GERANIu-RadioAccessCapability               OPTIONAL
}

-- dummy is not used in this version of the specification, it should
-- not be sent and if received it should be ignored.
MaxHcContextSpace-r5 ::=                ENUMERATED {
                                            dummy, by1024, by2048, by4096, by8192,
                                            by16384, by32768, by65536, by131072 }

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

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

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

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

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

OngoingMeasRep-r5 ::=               SEQUENCE {
    measurementIdentity                 MeasurementIdentity,
    -- TABULAR: The CHOICE Measurement in the tabular description is included
    -- in MeasurementCommandWithType-r4.
    measurementCommandWithType          MeasurementCommandWithType-r4,
    measurementReportingMode            MeasurementReportingMode            OPTIONAL,
    additionalMeasurementID-List        AdditionalMeasurementID-List        OPTIONAL,
    measurementCommand-v590ext          CHOICE {
        -- the choice "intra-frequency" shall be used for the case of intra-frequency measurement,
        -- as well as when intra-frequency events are configured for inter-frequency measurement
        intra-frequency                     Intra-FreqEventCriteriaList-v590ext,
        inter-frequency                     Inter-FreqEventCriteriaList-v590ext
    }       OPTIONAL,
    intraFreqReportingCriteria-1b-r5        IntraFreqReportingCriteria-1b-r5        OPTIONAL,
    intraFreqEvent-1d-r5                    IntraFreqEvent-1d-r5                    OPTIONAL
}

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

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

```
                                        OngoingMeasRep-r4

OngoingMeasRepList-r5 ::=           SEQUENCE (SIZE (1..maxNoOfMeas)) OF
                                        OngoingMeasRep-r5

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

PDCP-Capability-r5 ::=              SEQUENCE {
    losslessSRNS-RelocationSupport      BOOLEAN,
    supportForRfc2507                   CHOICE {
        notSupported                        NULL,
        supported                           MaxHcContextSpace-r5
    },
    supportForRfc3095                   CHOICE {
        notSupported                        NULL,
        supported                           SEQUENCE {
            maxROHC-ContextSessions             MaxROHC-ContextSessions-r4  DEFAULT s16,
            reverseCompressionDepth             INTEGER (0..65535)          DEFAULT 0,
            supportForRfc3095ContextRelocation  BOOLEAN
        }
    }
}

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

PhysicalChannelCapability-r5 ::=        SEQUENCE {
        fddPhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityFDD-r5,
            uplinkPhysChCapability              UL-PhysChCapabilityFDD
        }                                           OPTIONAL,
        tdd384-PhysChCapability             SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD-r5,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD
        }                                           OPTIONAL,
        tdd128-PhysChCapability             SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD-LCR-r5,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD-LCR-r4
        }                                           OPTIONAL
}

RF-Capability-r4 ::=                SEQUENCE {
        fddRF-Capability                SEQUENCE {
            ue-PowerClass                   UE-PowerClassExt,
            txRxFrequencySeparation         TxRxFrequencySeparation
        }                                                                   OPTIONAL,
        tdd384-RF-Capability            SEQUENCE {
            ue-PowerClass                   UE-PowerClassExt,
            radioFrequencyBandTDDList       RadioFrequencyBandTDDList,
            chipRateCapability              ChipRateCapability
        }                                                                   OPTIONAL,
        tdd128-RF-Capability            SEQUENCE {
            ue-PowerClass                   UE-PowerClassExt,
```

```
            radioFrequencyBandTDDList       RadioFrequencyBandTDDList,
            chipRateCapability              ChipRateCapability
        }                                                               OPTIONAL
}

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

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

RLC-Capability-r5 ::=               SEQUENCE {
    totalRLC-AM-BufferSize              TotalRLC-AM-BufferSize-r5,
    maximumRLC-WindowSize               MaximumRLC-WindowSize,
    maximumAM-EntityNumber              MaximumAM-EntityNumberRLC-Cap
}

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

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

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

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

TotalRLC-AM-BufferSize-r5 ::=       ENUMERATED {
                                        kb10, kb50, kb100, kb150, kb200,
                                        kb300, kb400, kb500, kb750, kb1000 }

TPC-Combination-Info ::= SEQUENCE {
        primaryCPICH-Info                   PrimaryCPICH-Info,
        tpc-CombinationIndex                TPC-CombinationIndex
}

UE-MultiModeRAT-Capability-r5 ::=   SEQUENCE {
    multiRAT-CapabilityList             MultiRAT-Capability,
    multiModeCapability                 MultiModeCapability,
    supportOfUTRAN-ToGERAN-NACC         BOOLEAN
}

UE-Positioning-Capability-r4 ::=    SEQUENCE {
    standaloneLocMethodsSupported           BOOLEAN,
    ue-BasedOTDOA-Supported                 BOOLEAN,
    networkAssistedGPS-Supported            NetworkAssistedGPS-Supported,
    supportForUE-GPS-TimingOfCellFrames     BOOLEAN,
    supportForIPDL                          BOOLEAN,
    rx-tx-TimeDifferenceType2Capable        BOOLEAN,
    validity-CellPCH-UraPCH                 ENUMERATED { true }     OPTIONAL,
    sfn-sfnType2Capability                  ENUMERATED { true }         OPTIONAL
}
```

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

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

UE-RadioAccessCapability-r5 ::=     SEQUENCE {
    accessStratumReleaseIndicator       AccessStratumReleaseIndicator,
    dl-CapabilityWithSimultaneousHS-DSCHConfig
                                        DL-CapabilityWithSimultaneousHS-DSCHConfig  OPTIONAL,
    pdcp-Capability                     PDCP-Capability-r5,
    rlc-Capability                      RLC-Capability-r5,
    transportChannelCapability          TransportChannelCapability,
    rf-Capability                       RF-Capability-r4,
    physicalChannelCapability           PhysicalChannelCapability-r5,
    ue-MultiModeRAT-Capability          UE-MultiModeRAT-Capability-r5,
    securityCapability                  SecurityCapability,
    ue-positioning-Capability           UE-Positioning-Capability-r4,
    measurementCapability               MeasurementCapability-r4        OPTIONAL
}

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

}

END
```

**** Next modified section ****

13.4.3a DSCH_RNTI

In TDD t~~T~~his variable stores the assigned DSCH-RNTI for this UE when in CELL_DCH state.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Cleared when entering UTRA RRC connected mode when not otherwise stated in the procedure. Cleared when leaving UTRA RRC connected mode.

**** Next modified section ****

B.3.1 CELL_DCH state

The CELL_DCH state is characterised by

- For 3.84 Mcps TDD: A dedicated physical channel is allocated to the UE in uplink and downlink or a dedicated physical channel is allocated to the UE in the uplink and HS_DSCH_RECEPTION is set to TRUE.

- A dedicated physical channel is allocated to the UE in uplink and downlink.
- The UE is known on cell level according to its current active set.
- Dedicated transport channels, downlink and uplink (TDD) shared transport channels, and a combination of these transport channels can be used by the UE.

The CELL_DCH-state is entered from the Idle Mode through the setup of an RRC connection, or by establishing a dedicated physical channel from the CELL_FACH state.

In TDD a~~A~~ PDSCH may be assigned to the UE in this state, to be used for a DSCH. ~~In TDD a~~A PUSCH may also be assigned to the UE in this state, to be used for a USCH. If PDSCH or PUSCH are used for TDD, a FACH transport channel may be assigned to the UE for reception of physical shared channel allocation messages.

3GPP TSG-RAN2 Meeting #47
Athens, Greece, Mai 9th to 13th 2005

Tdoc ⌘R2-051615

CR-Form-v7.1

CHANGE REQUEST

⌘	**25.331**	**CR**	**2587**	⌘ **rev**	**-**	⌘	Current version:	**5.12.1**	⌘

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

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

Title:	⌘	Feature Clean-up: Removal of DSCH (FDD)		
Source:	⌘	RAN WG2		
Work item code:	⌘	TEI5	***Date:*** ⌘	25/04/2005
Category:	⌘	**C** *Use one of the following categories:* ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	***Release:*** ⌘	Rel-5 *Use one of the following releases:* *Ph2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *Rel-4 (Release 4)* *Rel-5 (Release 5)* *Rel-6 (Release 6)* *Rel-7 (Release 7)*

Reason for change: ⌘ Removal of DSCH for FDD

Summary of change: ⌘ Removal of the IEs and their associated handling for FDD:

- "PDSCH code mapping"
- "PDSCH with SHO DCH Info"
- "New DSCH-RNTI"
- "TFCI combining indicator"
- "TFCI FIELD 2 Information"
- "PDSCH with SHO DCH Info"
- "PDSCH code mapping"
- "Downlink PDSCH information"
- "Support of PDSCH"
- "Simultaneous reception of SCCPCH, DPCH and PDSCH"
- "TFCS Information for DSCH (TFCI range method)"

Specifying that in the case the IE "RB mapping info" is set to "DCH+DSC"H or "DSCH" the UE behaviour is unspecified.

Removal of unnecessary calculation of the TB size for FDD DSCH.

Renaming of the IE "Max no DPCH/PDSCH codes" into Max no DPCH codes.

Specifying that the UE behaviour in the case the transport channel type in the IE "Added or Reconfigured DL TrCH information" or "Deleted DL TrCH information" is set to "DSCH" is unspecified.

		Removal of the TFCS split mode.
Consequences if not approved:	⌘	DSCH for FDD mode will remain specified

Clauses affected:	⌘	8.2.2.3, 8.2.11.3, 8.3.4.3, 8.5.21, 8.6.3.1, 8.6.3.9a, 8.6.4.8, 8.6.5.1, 8.6.5.12, 8.6.5.14, 8.6.6.9, 8.6.6.10, 10.2.8, 10.2.16a, 10.2.22, 10.2.27, 10.2.30, 10.2.33, 10.2.50, 10.3.3.9a, 10.3.3.25, 10.3.4.21, 10.3.5.1, 10.3.5.4, 10.3.5.12, 10.3.5.13, 10.3.5.14, 10.3.5.20, 10.3.6.27, 10.3.6.30, 10.3.6.31, 10.3.6.43, 10.3.6.47, 10.3.6.68, 10.3.6.81, 10.3.10, 11.1, 11.2, 11.3, 11.4, 11.5, 13.4.3a, B.3.1

		Y	N			
Other specs	⌘	Y		Other core specifications	⌘	25.211, 25.212, 25.213, 25.214, 25.301, 25.302, 25.303, 25.306, 25.321, 25.331, 25.401, 25.402, 25.420, 25.423, 25.424, 25.425, 25.427, 25.430, 25.433, 25.434, 25.435
affected:		Y		Test specifications		34.108, 34.123
			N	O&M Specifications		

Other comments:	⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

8.2 Radio Bearer control procedures

8.2.1 Radio bearer establishment

See subclause 8.2.2 Reconfiguration procedures.

8.2.2 Reconfiguration procedures

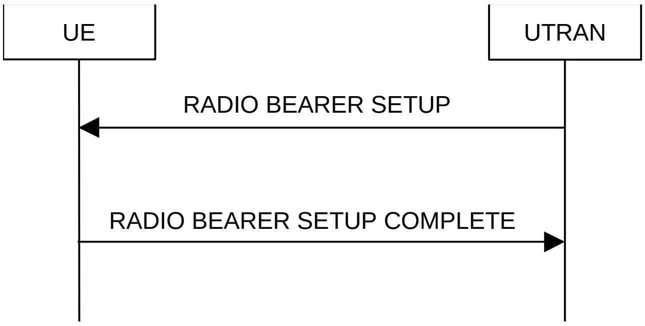

Figure 8.2.2-1: Radio Bearer Establishment, normal case

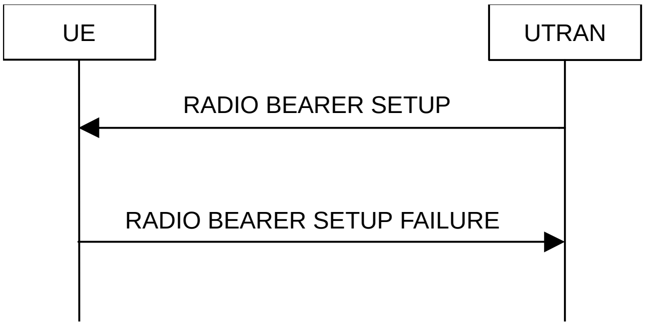

Figure 8.2.2-2: Radio Bearer Establishment, failure case

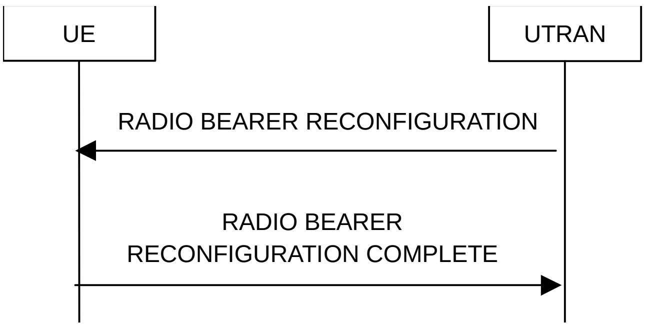

Figure 8.2.2-3: Radio bearer reconfiguration, normal flow

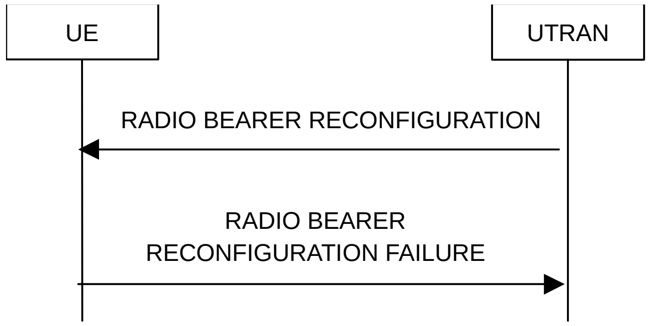

Figure 8.2.2-4: Radio bearer reconfiguration, failure case

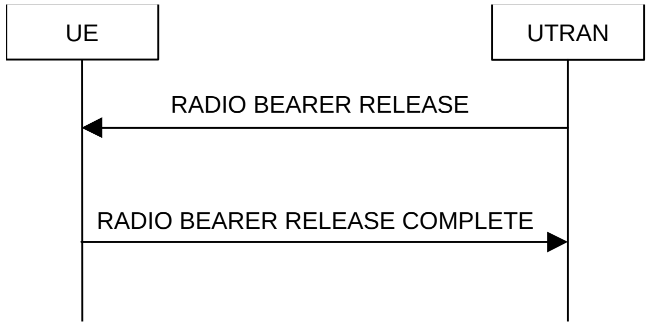

Figure 8.2.2-5: Radio Bearer Release, normal case

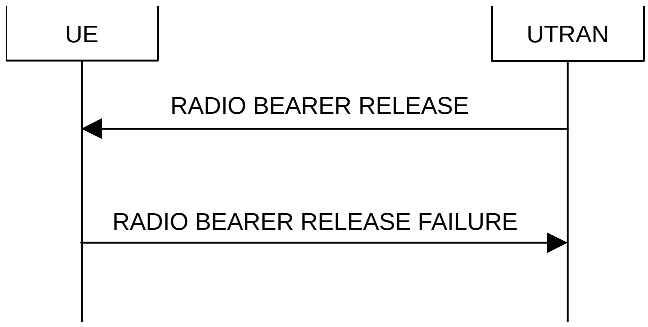

Figure 8.2.2-6: Radio Bearer Release, failure case

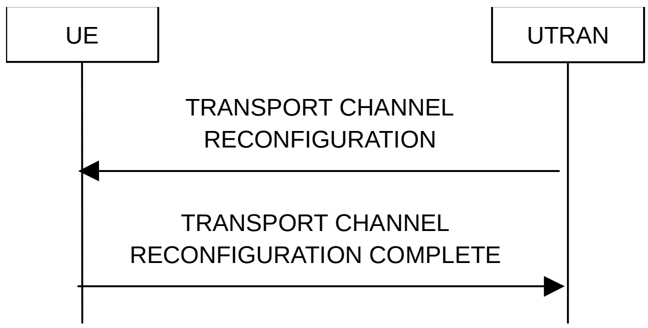

Figure 8.2.2-7: Transport channel reconfiguration, normal flow

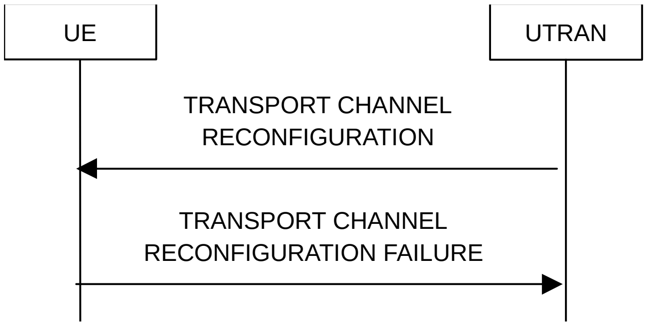

Figure 8.2.2-8: Transport channel reconfiguration, failure case

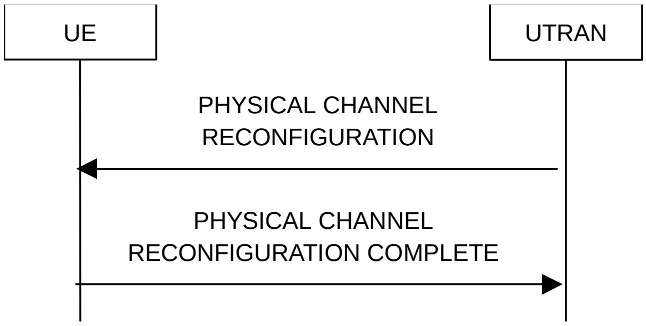

Figure 8.2.2-9: Physical channel reconfiguration, normal flow

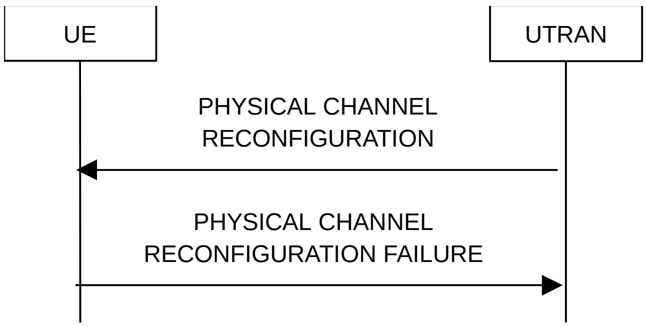

Figure 8.2.2-10: Physical channel reconfiguration, failure case

8.2.2.1 General

Reconfiguration procedures include the following procedures:

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

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

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

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

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

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

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

8.2.2.2 Initiation

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

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

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

1> for a radio bearer establishment procedure:

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

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

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

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

1> for a radio bearer reconfiguration procedure:

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

1> for a radio bearer release procedure:

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

1> for a transport channel reconfiguration procedure:

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

1> for a physical channel reconfiguration procedure:

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

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

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

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

  2> else:

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

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

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

  2> use the downlink DCCH using AM RLC.

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

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

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

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

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

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

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

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

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

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

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

8.2.2.2a Initiation of handover from GERAN *Iu mode*

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

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

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

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

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

The UE shall:

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

2> RADIO BEARER SETUP message; or

2> RADIO BEARER RECONFIGURATION message; or

2> RADIO BEARER RELEASE message; or

2> TRANSPORT CHANNEL RECONFIGURATION message; or

2> PHYSICAL CHANNEL RECONFIGURATION message;

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

In case the reconfiguration procedure is used to remove all existing RL(s) in the active set while new RL(s) are established the UE shall:

1> if the UE has a pending "TGPS reconfiguration CFN" at the activation time received in the reconfiguration message and the reconfiguration requests a timing re-initialised hard handover (see subclause 8.3.5.1), the UE may:

2> abort the pending CM activation;

2> set the CM_PATTERN_ACTIVATION_ABORTED to TRUE.

1> otherwise:

2> set the CM_PATTERN_ACTIVATION_ABORTED to FALSE.

If the UE receives:

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

it shall:

1> set the variable ORDERED_RECONFIGURATION to TRUE;

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

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

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

The UE may:

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

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

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

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

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

1> enter a state according to subclause 8.6.3.3.

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

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

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

In case the UE receives a RADIO BEARER RECONFIGURATION message with the IE "Specification mode" set to "Preconfiguration" while the message is not sent through GERAN *Iu mode*, the UE behaviour is unspecified.

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

1> in FDD; or

1> in TDD when "Primary CCPCH Info" is included indicating a new target cell and "New C-RNTI" is not specified:

2> remove any C-RNTI from MAC;

2> clear the variable C_RNTI.

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

1> clear any stored IE "Downlink HS-PDSCH information";

1> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25.

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

~~1> remove any DSCH-RNTI from MAC;~~

~~1> clear the variable DSCH_RNTI.~~

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

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

1> in TDD:

2> if "Primary CCPCH Info" is included indicating a new target cell and "New C-RNTI" is not specified:

3> remove any C-RNTI from MAC;

3> clear the variable C_RNTI.

2> if "Primary CCPCH Info" is included indicating a new target cell and "New H-RNTI" is not specified:

3> remove any H-RNTI from MAC;

3> clear the variable H_RNTI;

3> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25.

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

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

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

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

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

4> set the variable INVALID_CONFIGURATION to TRUE.

3> and the procedure ends.

2> adjust the radio link timing accordingly.

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

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

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

2> if the UE finds a suitable UTRA cell on that frequency:

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

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

4> when the cell update procedure completed successfully:

5> 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" and proceed as below.

2> else, if the UE can not find a suitable UTRA cell on that frequency but it finds a suitable UTRA cell on another frequency:

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

3> when the cell update procedure completed successfully:

4> 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" and proceed as below.

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

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

2> if the UE finds a suitable UTRA cell on the current frequency:

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

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

4> when the cell update procedure completed successfully:

5> 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" and proceed as below.

2> else, if the UE can not find a suitable UTRA cell on the current frequency but it finds a suitable UTRA cell on another frequency:

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

3> when the cell update procedure completed successfully:

4> 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" and proceed as below.

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

1> select PRACH according to subclause 8.5.17;

1> select Secondary CCPCH according to subclause 8.5.19;

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

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

2> ignore that IE and stop using DRX.

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

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

2> when the cell update procedure completed successfully:

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

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

4> proceed as below.

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

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

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

2> if the UE finds a suitable UTRA cell on that frequency:

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

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

4> when the cell update procedure completed successfully:

5> 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" and proceed as below.

2> else, if the UE can not find a suitable UTRA cell on that frequency but it finds a suitable UTRA cell on another frequency:

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

3> when the cell update procedure completed successfully:

4> 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" and proceed as below.

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

2> if the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD) is included the UE shall either:

3> ignore the content of the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD) and proceed as below;

2> or:

3> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CPCH info" (for TDD), and it is different from the current cell:

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

4> when the cell update procedure completed successfully:

5> 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" and proceed as below.

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

1> stop timer T305.

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

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

2> set the variable INVALID_CONFIGURATION to TRUE.

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

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

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

2> if the variable PDCP_SN_INFO is empty:

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

2> else:

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

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

2> re-establish the RLC entity for RB2;

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

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

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

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

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

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

5> initialise the HFN component of the uplink COUNT-C and downlink COUNT-C of SRB2 as indicated in subclause 8.1.12.3.1.

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

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

5> initialise the HFN component of the uplink COUNT-C and downlink COUNT-C of SRB2 to the most recently transmitted IE "START list" or IE "START" for the LATEST_CONFIGURED_CN_DOMAIN at the reception of the previous SECURITY MODE COMMAND.

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

3> else:

4> continue using the current ciphering configuration.

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

2> increment by one the downlink and uplink values of the HFN of COUNT-C for RB2;

2> calculate the START value according to subclause 8.5.9;

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

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

2> if the variable START_VALUE_TO_TRANSMIT is set:

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

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

3> calculate the START value according to subclause 8.5.9;

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

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

3> calculate the START value according to subclause 8.5.9;

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

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

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

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

2> if the reconfiguration message is not used to perform SRNS relocation with change of ciphering algorithm:

3> the UE behaviour is not specified.

2> if the message is used to perform a timing re-initialised hard handover:

3> if IE "Ciphering activation time for DPCH" is included:

4> the UE behaviour is not specified.

2> else:

3> if the reconfiguration message is used to setup radio bearer(s) using RLC-TM; or

3> if radio bearer(s) using RLC-TM already exist:

4> if IE "Ciphering activation time for DPCH" is not included:

5> the UE behaviour is not specified.

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

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

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

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

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

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

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

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

1> clear that entry;

1> if the variable PDCP_SN_INFO is not empty:

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

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

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

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

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

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

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

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

2> if the UE can not find a suitable UTRA cell on that frequency but it finds a suitable UTRA cell on another frequency:

3> proceed as below.

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

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

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C_RNTI;

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

1> select Secondary CCPCH according to subclause 8.5.19;

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

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

1> if the criteria for URA update caused by "URA reselection" according to subclause 8.3.1 are fulfilled after cell selection:

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

2> when the URA update procedure is successfully completed:

3> the procedure ends.

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

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

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

2> if the UE finds a suitable UTRA cell on that frequency:

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

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

4> proceed as below.

2> else, if the UE can not find a suitable UTRA cell on that frequency but it finds a suitable UTRA cell on another frequency:

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

3> proceed as below.

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

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

2> if the UE finds a suitable UTRA cell on the current frequency:

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

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

4> proceed as below.

2> else, if the UE can not find a suitable UTRA cell on the current frequency but it finds a suitable UTRA cell on another frequency:

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

3> proceed as below.

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C_RNTI;

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

1> select Secondary CCPCH according to subclause 8.5.19;

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

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

1> the procedure ends.

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

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

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

2> if the UE finds a suitable UTRA cell on that frequency:

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

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

4> proceed as below.

2> else, if the UE can not find a suitable UTRA cell on that frequency but it finds a suitable UTRA cell on another frequency:

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

3> proceed as below.

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

2> if the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD) is included the UE shall either:

3> ignore the content of the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD) and proceed as below;

2> or:

3> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CPCH info" (for TDD), and it is different from the current cell:

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

4> proceed as below.

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C_RNTI;

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

1> select Secondary CCPCH according to subclause 8.5.19;

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

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

1> the procedure ends.

**** Next modified section ****

8.2.11.3 ~~Runtime error due to overlapping compressed mode configuration and PDSCH reception~~Void

~~If UE is scheduled to receive a PDSCH frame at the same time instant as a compressed mode gap, UE shall perform the measurements according to the measurement purpose of the pattern sequence.~~

**** Next modified section ****

8.3.4 Active set update

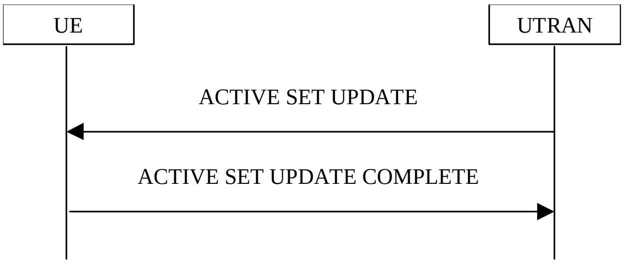

Figure 8.3.4-1: Active Set Update procedure, successful case

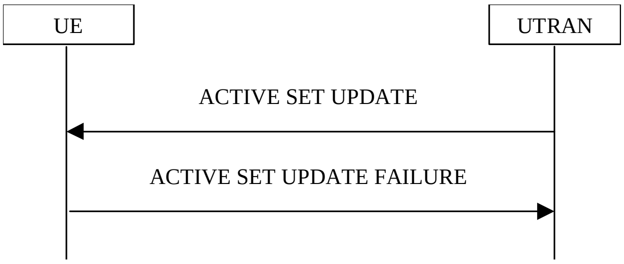

Figure 8.3.4-2: Active Set Update procedure, failure case

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:

1> prepare new additional radio link(s) in the UTRAN prior to the command to the UE.

In all cases, UTRAN should:

1> send an ACTIVE SET UPDATE message on downlink DCCH using AM or UM RLC;

1> create active sets that contain at least one common radio link across a DPCH frame boundary as the result of one or multiple (parallel) active set update procedures.

UTRAN should include the following information:

1> 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;

1> 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.

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

The UE may:

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

The UE shall:

1> first add the RLs indicated in the IE "Radio Link Addition Information";

1> 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;

1> perform the physical layer synchronisation procedure B as specified in [29];

~~1> if the IE "TFCI combining indicator" associated with a radio link to be added is set to TRUE:~~

~~2> if a DSCH transport channel is assigned and there is a 'hard' split in the TFCI field:~~

~~3> configure Layer 1 to soft-combine TFCI (field 2) of this new link with those links already in the TFCI (field 2) combining set.~~

1> if the radio link currently considered to be the serving HS-DSCH radio link is indicated in the IE "Radio Link Removal Information":

2> no longer consider any radio link as the serving HS-DSCH radio link;

2> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25.

1> 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

1> clear that entry;

1> transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC without waiting for the completion of the Physical Layer synchronisation B, as specified in [29];

1> the procedure ends on the UE side.

**** Next modified section ****

8.5.21 Actions related to Radio Bearer mapping

When the UE receives the IE "RB mapping info" and/or the IE "Transport format set", when transport channels or MAC-d flows are added or deleted, when the UE performs a cell reselection or a state transition, or when the UE releases a RB, the UE shall for each of the configured Radio Bearers:

1> upon moving to CELL_FACH state from CELL_DCH state to initiate a cell update procedure and upon subsequent cell reselections until the first successfully completed cell update procedure, perform the actions defined in the remainder of this subclause only for SRB1, SRB2, SRB3 and SRB4;

1> for FDD, select the multiplexing option according to the following:

2> if the UE is in CELL_FACH state:

3> if the RB has a multiplexing option with transport channel type "FACH" for the DL and transport channel type "RACH" for the UL:

4> select this multiplexing option.

2> if the UE is in CELL_DCH state:

3> if the RB has a multiplexing option with transport channel type "DCH + HS-DSCH" for the DL, and both the corresponding DCH transport channel and MAC-d flow are configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "DCH + DSCH" for the DL~~, and both the corresponding DCH and DSCH transport channels are configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured~~:

4> ~~select this multiplexing option~~the UE behaviour is unspecified; else

3> if the RB has a multiplexing option with transport channel type "HS-DSCH" for the DL, and the corresponding MAC-d flow is configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "DSCH" for the DL~~, and the corresponding DSCH transport channel is configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured~~:

4> ~~select this multiplexing option~~the UE behaviour is unspecified; else

3> if the RB has a multiplexing option with transport channel type "DCH" for the DL, and the corresponding DCH transport channel is configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option.

1> for TDD, select the multiplexing option according to the following:

2> if the UE is in CELL_FACH state:

3> if the RB has the multiplexing options with the transport channel types "FACH" and "DSCH" for the DL, and the corresponding FACH and DSCH transport channels are configured, and with the transport channel types "RACH" and "USCH" for the UL, and the corresponding RACH and USCH transport channels are configured:

4> if both PUSCH and PDSCH are allocated:

5> select the multiplexing option "DSCH" for DL and "USCH" for UL; else

4> if only PUSCH is allocated:

5> select the multiplexing option "FACH" for DL and "USCH" for UL; else

4> if only PDSCH is allocated:

5> select the multiplexing option "DSCH" for DL and "RACH" for UL; else

4> if neither PUSCH nor PDSCH is allocated:

5> select the multiplexing option "FACH" for DL and "RACH" for UL.

3> if the RB has a single multiplexing option with the transport channel type "FACH" for the DL and the transport channel type "RACH" for the UL:

4> select this multiplexing option; else

3> if the RB has a single multiplexing option with the transport channel type "DSCH" for the DL, and the corresponding DSCH transport channel is configured, and with the transport channel type "USCH" for the UL, and the corresponding USCH transport channel is configured:

4> select this multiplexing option; else

2> if the UE is in CELL_DCH state:

3> if the RB has a multiplexing option with transport channel type "DCH + HS-DSCH" for the DL, and both the corresponding DCH transport channel and MAC-d flow are configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "DCH + DSCH" for the DL, and both the corresponding DCH and DSCH transport channels are configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "HS-DSCH" for the DL, and the corresponding MAC-d flow is configured, and with transport channel type "DCH" for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if the RB has a multiplexing option with transport channel type "DCH" for the DL, and the corresponding DCH transport channel is configured, and with transport channel type “DCH” for the UL, and the corresponding DCH transport channel is configured:

4> select this multiplexing option; else

3> if theRB has a multiplexing option with transport channel type "DSCH" for the DL, and the corresponding DSCH transport channel is configured, and with transport channel "USCH" for the UL, and the corresponding USCH transport channel is configured:

4> select this multiplexing option.

1> configure the MAC with the appropriate transport format set (with computed transport block sizes) for the transport channel used by that RB;

1> determine the sets of RLC sizes that apply to the logical channels used by that RB, based on the IEs "RLC size list" and/or the IEs "Logical Channel List" included in the applicable "Transport format set" (either the ones received in the same message or the ones stored if none were received);

1> in case the selected multiplexing option is a multiplexing option on RACH:

2> ignore the RLC size indexes that do not correspond to any RLC size within the Transport Format Set stored for RACH.

2> if there is no remaining RLC size index corresponding to an RLC size within the Transport Format Set stored for RACH:

3> set the variable INVALID_CONFIGURATION to TRUE.

1> if RACH is the transport channel to be used on the uplink, if that RB has a multiplexing option on RACH and if it is using AM:

2> apply the largest size amongst the ones derived according to the previous bullet for the RLC size (or RLC sizes in case the RB is realised using two logical channels) for the corresponding RLC entity.

NOTE: The IE "RB mapping info" is only included in the IE "Predefined RB configurations" in system information when used for Inter-RAT handover to UTRAN and there is no AM RLC size change involved in this case.

1> if that RB is using AM and the RLC size applicable to the uplink logical channel transporting data PDUs is different from the one derived from the previously stored configuration; and

1> none of the following conditions is met:

- The RLC size change is caused by a CELL UPDATE CONFIRM and the CELL UPDATE CONFIRM message includes the IE "Downlink counter synchronisation info";
- The RLC size change is caused by a reconfiguration message, and a cell update procedure occurs during this reconfiguration procedure and the CELL UPDATE CONFIRM message includes the IE "RLC re-establish indicator" being set to TRUE for the corresponding radio bearer.

2> if the RLC size change is caused by a reconfiguration message or a CELL UPDATE CONFIRM; and

2> the IE "one sided RLC re-establishment" is included in that message and is set to TRUE:

3> re-establish the transmitting side of the corresponding RLC entity.

2> else:

3> re-establish the corresponding RLC entity.

2> configure the corresponding RLC entity with the new uplink RLC size;

2> for each AM RLC radio bearer in the CN domain as indicated in the IE "CN domain identity" in the IE "RAB info" in the variable ESTABLISHED_RABS whose RLC size is changed; and

2> for each AM RLC signalling radio bearer in the CN domain as indicated in the IE "CN domain identity" in the variable LATEST_CONFIGURED_CN_DOMAIN whose RLC size is changed:

3> if the IE "Status" in the variable CIPHERING_STATUS of this CN domain is set to "Started":

4> if the information causing the RLC re-establishment was included in system information:

5> set the HFN values for the corresponding RLC entity equal to the value of the IE "START" for this CN domain that will be included in the CELL UPDATE message following cell reselection.

NOTE: Since the UE cannot predict the START value at the time of the next CELL UPDATE transmission in the future, UTRAN should desist from changing the RLC size for a signalling radio bearer within a cell. Other than this case the change in RLC size for a signalling radio bearer is known to the UE when reading system information following cell reselection.

4> if the RLC re-establishment is caused by a CELL UPDATE CONFIRM:

5> if the whole RLC entity was re-established:

6> set the HFN values for the corresponding RLC entity in uplink and downlink equal to the value of the IE "START" included in the latest transmitted CELL UPDATE message for this CN domain.

5> if only the transmitting side of the RLC entity was re-established:

6> set the HFN value for the corresponding RLC entity in the uplink equal to the value of the IE "START" included in the latest transmitted CELL UPDATE message for this CN domain.

4> if the RLC re-establishment is caused by a reconfiguration message:

5> if the whole RLC entity was re-established:

6> set the HFN values for the corresponding RLC entity in uplink and downlink equal to the value of the IE "START" that will be included in the reconfiguration complete message for this CN domain.

5> if only the transmitting side of the RLC entity was re-established:

6> set the HFN value for the corresponding RLC entity in the direction uplink equal to the value of the IE "START" that will be included in the reconfiguration complete message for this CN domain.

NOTE1: If the UTRAN modifies the RLC size for RB2 on any reconfiguration message or Cell Update Confirm message, the UE behaviour is unspecified in this version of the specification.

NOTE2: The UE cannot rely on the configured Transport Formats to determine the RLC sizes to be used in downlink for a particular logical channel. This size can be signalled explicitly in the RLC Info IE.

1> if that RB is using UM:

2> indicate the largest RLC size applicable for uplink to the corresponding RLC entity.

1> configure MAC multiplexing according to the selected multiplexing option (MAC multiplexing shall only be configured for a logical channel if the transport channel it is mapped on according to the selected multiplexing option is the same as the transport channel another logical channel is mapped on according to the multiplexing option selected for it);

1> configure the MAC with the logical channel priorities according to selected multiplexing option;

1> configure the MAC with the set of applicable RLC Sizes for each of the logical channels used for that RB;

1> if there is no multiplexing option applicable for the transport channels and MAC-d flows to be used:

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if there is more than one multiplexing option applicable for the transport channels or MAC-d flows to be used:

2> set the variable INVALID_CONFIGURATION to TRUE.

If upon cell re-selection or upon moving to CELL_FACH state from CELL_DCH state to initiate cell update procedure the UE sets variable INVALID_CONFIGURATION to TRUE as a result of the actions defined in this subclause, the UE should:

1> move to idle mode;

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

1> perform other actions when entering idle mode from connected mode as specified in subclause 8.5.2.

**** Next modified section ****

8.6.3.1 Activation time

If the UE receives a message in which presence is needed for the IE "Activation time", and the value is other than the default value "Now", the UE shall:

1> let the "reference CCTrCH" be defined as the CCTrCh that includes any transport channel or is associated with any physical channel which is being added, re-configured or removed, or, in the case of ~~DSCH (FDD only) or~~ HS-DSCH, the CCTrCh including the associated DCH;

1> if the frame boundary immediately before the frame with the CFN (Connection Frame Number) value indicated by the IE "Activation Time" is at the TTI boundary common to all the transport channels that are multiplexed onto the reference CCTrCh:

2> select that frame boundary as the activation time T.

1> else:

2> select the next TTI boundary, which is common to all the transport channels that are multiplexed onto the reference CCTrCh, after the frame with the CFN (Connection Frame Number) value indicated by the IE "Activation Time", as the activation time T.

1> at the activation time T:

2> for a physical channel reconfiguration other than an HS-DSCH related reconfiguration, caused by the received message:

3> release the physical channel configuration, which was present before T;

3> initiate the establishment of the physical channel configuration as specified for the physical channel information elements in the received message as specified elsewhere.

2> for an HS-DSCH related reconfiguration in FDD or 1.28 Mcps TDD caused by the received message:

3> select the HS-SCCH subframe boundary immediately before the first HS-SCCH subframe, which entirely falls within the 10 ms frame following T;

3> start using, at that HS-SCCH subframe boundary, the new HS-DSCH configuration in the received message, replacing any old HS-DSCH configuration.

2> for an HS-DSCH related reconfiguration in 3.84 Mcps TDD caused by the received message:

3> start using, at activation time T, the new HS-DSCH configuration in the received message, replacing any old HS-DSCH configuration.

2> for actions, other than a physical channel reconfiguration, caused by the received message:

3> perform the actions for the information elements in the received message as specified elsewhere.

NOTE: In FDD an "HS-DSCH related reconfiguration" includes, in particular, reconfigurations that need to be time-aligned with the 2ms subframe of the HS-SCCH, HS-PDSCH and/or HS-DPCCH. For example, start and stop of HS-SCCH reception and serving HS-DSCH cell change.

If the UE receives a message in which presence is needed for the IE "Activation time", and the value is the default value "Now", the UE shall:

1> choose an activation time T as soon as possible after the reception of the message, respecting the performance requirements in subclause 13.5;

1> at the activation time T:

2> perform the actions for the information elements in the received message as specified elsewhere.

NOTE: In FDD, if the UE was in idle mode or CELL_FACH state upon reception of the message, regardless of the state the UE enters after reception of the message, and the value of the IE "Activation time" in the received message is different from "Now", the UE behaviour is unspecified. In TDD, if the UE was in idle mode or CELL_FACH state upon reception of the message, the value of the IE "Activation time" in the received message is relative to the CFN associated with the cell from which the message was received.

**** Next modified section ****

8.6.3.9a New DSCH-RNTI

In TDD ~~I~~if the IE "New DSCH-RNTI" is included, the UE shall:

~~1> in FDD:~~

~~2> if the UE will be in CELL_DCH at the end of the procedure where the received message included this IE:~~

~~3> if the UE supports DSCH as indicated in the IE "Physical Channel Capability" included in the IE "UE Radio Access Capability":~~

~~4> store the value in the variable DSCH_RNTI, replacing any old stored value;~~

~~4> use that DSCH-RNTI when using common transport channels of type DSCH in the current cell.~~

~~1> in TDD:~~

~~2~~1> if the UE will be in CELL_DCH or CELL_FACH at the end of the procedure where the received message included this IE:

~~3~~2> if the UE supports DSCH or USCH as indicated in the IE "Physical Channel Capability" included in the IE "UE Radio Access Capability":

~~4~~3> store the value in the variable DSCH_RNTI, replacing any old stored value;

~~4~~3> use that DSCH-RNTI when using SHCCH signalling in the current cell.

**** Next modified section ****

8.6.4.8 RB mapping info

If the IE "RB mapping info" is included, the UE shall:

1> for each multiplexing option of the RB:

2> if a multiplexing option that maps a logical channel corresponding to a TM-RLC entity onto RACH, CPCH, FACH, USCH or DSCH (only for TDD) or HS-DSCH is included:

3> set the variable INVALID_CONFIGURATION to TRUE.

2> if the multiplexing option realises the radio bearer on the uplink (resp. on the downlink) using two logical channels with different values of the IE "Uplink transport channel type" (resp. of the IE "Downlink transport channel type"):

3> set the variable INVALID_CONFIGURATION to TRUE.

2> if that RB is using TM and the IE "Segmentation indication" is set to TRUE and, based on the multiplexing configuration resulting from this message, the logical channel corresponding to it is mapped onto the same transport channel as another logical channel:

3> set the variable INVALID_CONFIGURATION to TRUE.

2> if the transport channel considered in that multiplexing option is different from RACH and if that RB is using AM and the set of RLC sizes applicable to the uplink logical channel transferring data PDUs has more than one element not equal to zero:

3> set the variable INVALID_CONFIGURATION to TRUE.

2> if that RB is using UM or TM and the multiplexing option realises it using two logical channels:

3> set the variable INVALID_CONFIGURATION to TRUE.

2> for each logical channel in that multiplexing option:

3> if the value of the IE "RLC size list" is set to "Explicit list":

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is included in the same message, and the value (index) of any IE "RLC size index" in the IE "Explicit list" does not correspond to an "RLC size" in the IE transport format set of that transport channel given in the message; or

4> if the transport channel this logical channel is mapped on in this multiplexing option is different from RACH, and 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 "Explicit list" does not correspond to an "RLC size" in the stored transport format set of that transport channel; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is included in the same message, and the value of any IE "Logical channel list" in the transport format set is not set to "Configured"; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is not included in the same message, and the value of any IE "Logical channel list" in the stored transport format set of that transport channel is not set to "Configured":

5> set the variable INVALID_CONFIGURATION to TRUE.

3> if the value of the IE "RLC size list" is set to "All":

4> if the transport channel this logical channel is mapped on is RACH; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is included in the same message, and the value of any IE "Logical channel list" in the transport format set is not set to "Configured"; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is not included in the same message, and the value of any IE "Logical channel list" in the stored transport format set of that transport channel is not set to "Configured":

5> set the variable INVALID_CONFIGURATION to TRUE.

3> if the value of the IE "RLC size list" is set to "Configured":

4> if the transport channel this logical channel is mapped on is RACH; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is included in the same message, and for none of the RLC sizes defined for that transport channel in the "Transport format set", the "Logical Channel List" is set to "All" or given as an "Explicit List" which contains this logical channel; or

4> if a "Transport format set" for the transport channel this logical channel is mapped on in this multiplexing option is not included in the same message, and for none of the RLC sizes defined in the transport format set stored for that transport channel, the "Logical Channel List" is set to "All" or given as an "Explicit List" which contains this logical channel:

5> set the variable INVALID_CONFIGURATION to TRUE.

1> if, as a result of the message this IE is included in, several radio bearers can be mapped onto the same transport channel, and the IE "Logical Channel Identity" was not included in the RB mapping info of any of those radio bearers for a multiplexing option on that transport channel or the same "Logical Channel Identity" was used more than once in the RB mapping info of those radio bearers for the multiplexing options on that transport channel:

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if the "RB mapping info" is considered as valid according to the rules above:

2> delete all previously stored multiplexing options for that radio bearer;

2> store each new multiplexing option for that radio bearer;

2> perform the actions as specified in subclause 8.5.21;

2> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25.

1> if the IE "Uplink transport channel type" is set to the value "RACH":

2> in FDD:

3> refer the IE "RLC size index" to the RACH Transport Format Set of the first PRACH received in the IE "PRACH system information list" received in System Information Block 5 or System Information Block 6.

2> in TDD:

3> use the first Transport Format of the PRACH of the IE "PRACH system information list" at the position equal to the value in the IE "RLC size index".

In case IE "RLC info" includes IE "Downlink RLC mode" ("DL RLC logical channel info" is mandatory present) but IE "Number of downlink RLC logical channels" is absent in the corresponding IE "RB mapping info", 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
USCH	DSCH

If ciphering is applied, UTRAN should not map Transparent Mode RBs of different CN domains on the same transport channel and it should not map transparent mode SRBs and RBs onto the same transport channel. In such cases the UE behaviour is not specified.

In FDD, the UTRAN should not map signalling radio bearers on the HS-DSCH. In such case the UE behavour is unspecified in this version of the specification.

**** Next modified section ****

8.6.5.1 Transport Format Set

If the IE "Transport format set" is included, the UE shall:

1> if the transport format set is a RACH TFS received in System Information Block type 5 or 6, and CHOICE "Logical Channel List" has a value different from "Configured":

2> ignore that System Information Block.

1> if the transport format set for a downlink transport channel is received in a System Information Block, and CHOICE "Logical Channel List" has a value different from 'ALL':

2> ignore that System Information Block.

1> if the transport format set for a downlink transport channel is received in a message on a DCCH, and CHOICE "Logical Channel List" has a value different from 'ALL':

2> keep the transport format set if this exists for that transport channel;

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if the value 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); or

1> if the "Logical Channel List" for any of the RLC sizes defined for that transport channel is set to "Configured" while it is set to "All" or given as an "Explicit List" for any other RLC size; or

1> if the "Logical Channel List" for any of the RLC sizes defined for that transport channel is set to "All" and for any logical channel mapped to this transport channel, the value of the "RLC size list" (either provided in the IE "RB mapping info" if included in the same message, or stored) is not set to "Configured"; or

1> if the "Logical Channel List" for any of the RLC sizes defined for that transport channel is given as an "Explicit List" that contains a logical channel for which the value of the "RLC size list" (either provided in the IE "RB mapping info" if included in the same message, or stored) is not set to "Configured"; or

1> if the "Logical Channel List" for all the RLC sizes defined for that transport channel are given as "Explicit List" and if one of the logical channels mapped onto this transport channel is not included in any of those lists; or

1> if the "Logical Channel List" for the RLC sizes defined for that transport channel is set to "Configured" and for any logical channel mapped onto that transport channel, the value of the "RLC size list" (either provided in the IE "RB mapping info" if included in the same message, or stored) is also set to "Configured"; or

1> if the IE "Transport Format Set" was not received within the IE "PRACH system information list" and if the "Logical Channel List" for the RLC sizes defined for that transport channel is set to "Configured" and for any logical channel mapped onto that transport channel, the "RLC size list" (either provided in the IE "RB mapping info" if included in the same message, or stored) is given as an "Explicit List" that includes an "RLC size index" that does not correspond to any RLC size in this "Transport Format Set"; or

1> if the IE "Transport Format Set" was not received within the IE "PRACH system information list", and if that RB is using AM and the set of RLC sizes applicable to the logical channel transferring data PDUs has more than one element not equal to zero:

2> keep the transport format set if this exists for that transport channel;

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if the total number of configured transport formats for the transport channel exceeds maxTF:

2> keep the transport format set if this exists for that transport channel;

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if the IE "Transport format set" is considered as valid according to the rules above:

2> remove a previously stored transport format set if this exists for that transport channel;

2> store the transport format set for that transport channel;

2> consider the first instance of the parameter *Number of TBs and TTI List* within the *Dynamic transport format information* to correspond to transport format 0 for this transport channel, the second to transport format 1 and so on;

2> if the IE "Transport format Set" has the choice "Transport channel type" set to "Dedicated transport channel":

3> calculate the transport block size for all transport formats in the TFS using the following

TB size = RLC size + MAC header size if "RLC size" <> 0,
TB size = 0 if "RLC size" = 0,

where:

- MAC header size is calculated according to [15] if MAC multiplexing is used. Otherwise it is 0 bits;

- 'RLC size' reflects the RLC PDU size.

2> if the IE "Transport format Set" has the choice "Transport channel type" set to "Common transport channel":

~~3> in FDD:~~

34> ~~for transport channels other than DSCH~~ calculate the transport block size for all transport formats in the TFS using the following:

TB size = RLC size.

~~4> for DSCH transport channels calculate the transport block size for all transport formats in the TFS using the following:~~

~~TB size = RLC size + MAC header size if "RLC size" <> 0,~~
~~TB size = 0 if "RLC size" = 0,~~

where:

~~- MAC header size is calculated according to [15];~~

- 'RLC size' reflects the RLC PDU size.

~~3> for TDD calculate the transport block size for all transport formats in the TFS using the following:~~

~~TB size = RLC size.~~

2> if the IE "Number of Transport blocks" <> 0 and IE "RLC size" = 0, no RLC PDU data exists but only parity bits exist for that transport format;

2> if the IE "Number of Transport blocks" = 0, neither RLC PDU neither data nor parity bits exist for that transport format;

2> perform the actions as specified in subclause 8.5.21.

For configuration restrictions on Blind Transport Format Detection, see [27].

**** Next modified section ****

8.6.5.12 TFCS Reconfiguration/Addition Information

If the IE "TFCS Reconfiguration/Addition Information" is included the UE shall:

1> store the TFCs to be reconfigured/added indicated in the IE "CTFC information" as specified below;

1> if the IE "Power offset information" is included:

2> perform actions as specified in [29].

In order to identify the TFCs included in this IE the UE shall calculate the CTFC as specified in subclause 14.10~~ and~~

~~1> if the IE "TFCS Reconfiguration/Addition Information" was included in the IE "TFCI Field 1 Information":~~

~~2> ignore for the CTFC calculation any DSCH transport channel that may be assigned.~~

~~1> if the IE "TFCS Reconfiguration/Addition Information" was included in the IE "TFCI Field 2 Information":~~

~~2> 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:

1> remove a previously stored transport format combination set if this exists;

1> consider the first instance of the IE "CTFC information" as Transport Format Combination 0 in FDD (TFCI=0) and 1 in TDD (TFCI=1), the second instance as Transport Format Combination 1 in FDD (TFCI=1) and 2 in TDD (TFCI=2) and so on. In TDD the TFCI value = 0 is reserved for physical layer use.

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 ascending TFCI order in the TFCS.

8.6.5.13 TFCS Removal Information

If the IE "TFCS Removal Information" is included the UE shall:

1> remove the TFC indicated by the IE "TFCI" from the current TFCS, and regard this position (TFCI) in the TFCS as vacant.

8.6.5.14 ~~TFCI Field 2 Information~~Void

~~If the IE "TFCI Field 2 Information" is included the UE shall:~~

~~1> if the IE choice "Signalling method" is set to 'TFCI range':~~

~~2> for the first group in the IE "TFCI(field 2) range":~~

~~3> 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".~~

~~2> for the following groups in the IE "TFCI(field 2) range":~~

~~3> 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".~~

~~1> if the IE choice "Signalling method" is set to 'Explicit':~~

~~2> perform actions for the IE "TFCS explicit configuration" as specified in subclause 8.6.5.15.~~

8.6.5.15 TFCS Explicit Configuration

If the IE " TFCS Explicit Configuration" is included the UE shall:

1> if the IE choice "TFCS representation" is set to 'complete reconfiguration':

2> perform the actions for the IE "TFCS Reconfiguration/Addition Information" as specified in subclause 8.6.5.12.

1> if the IE choice "TFCS representation" is set to 'addition':

2> perform the actions for the IE "TFCS Reconfiguration/Addition Information" as specified in subclause 8.6.5.12.

1> if the IE choice "TFCS representation" is set to 'removal':

2> perform the actions for the IE "TFCS Removal Information" as specified in subclause 8.6.5.13.

1> if the IE choice "TFCS representation" is set to 'replace':

2> perform first the actions for the IE "TFCS Removal Information" as specified in subclause 8.6.5.13; and then

2> perform the actions for the IE "TFCS Reconfiguration/Addition Information" as specified in subclause 8.6.5.12.

**** Next modified section ****

8.6.6.9 Void~~PDSCH with SHO DCH Info (FDD only)~~

~~If the IE "PDSCH with SHO DCH Info" is included, the UE shall:~~

~~1> if the variable DSCH_RNTI is empty:~~

~~2> set the variable INVALID_CONFIGURATION to TRUE.~~

~~1> configure itself to receive the PDSCH from the specified radio link within the active set identified by the IE "DSCH radio link identifier";~~

~~1> if the TFCI has a 'hard' split:~~

~~2> if the IE "TFCI(field2) combining set" is included:~~

~~3> configure the Layer 1 to combine soft only 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".~~

~~2> if the IE "TFCI(field2) combining set" is not included:~~

~~3> configure the L1 to combine soft the DPCCH TFCI(field 2) of all radio links within the active set.~~

8.6.6.10 Void~~PDSCH code mapping (FDD only)~~

~~If the IE "PDSCH code mapping" is included, the UE shall:~~

~~1> if the variable DSCH_RNTI is empty:~~

~~2> set the variable INVALID_CONFIGURATION to TRUE.~~

~~1> use the scrambling code defined by the IE "DL Scrambling Code" to receive the PDSCH;~~

~~1> if the IE choice "signalling method" is set to 'code range':~~

~~2> map the TFCI(field2) values to PDSCH codes in the following way:~~

~~2> for the first group of the IE "PDSCH code mapping":~~

~~3> if the value of the IE "multi-code info" equals 1:~~

~~4> 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";~~

~~4> 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;~~

~~4> 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".~~

~~3> if the value of the IE "multi-code info" is greater than 1:~~

~~4> if the value of the difference between the IE "Code number (for PDSCH code) start" and the IE "Code number (for PDSCH code) stop" + 1 is not a multiple of the value of the IE "multi-code info":~~

~~5> set the variable INVALID_CONFIGURATION to TRUE.~~

~~4> 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";~~

~~4> 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";~~

~~4> 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".~~

~~2> for each of the next groups included in the IE "PDSCH code mapping":~~

~~3> 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.~~

~~2> 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):~~

~~3> consider this as defining the mapping between the channelisation code and a single TFCI (i.e., TFCI(field 2) shall not be incremented twice).~~

~~1> if the IE choice "signalling method" is set to 'TFCI range':~~

~~2> map the TFCI(field2) values to PDSCH codes in the following way:~~

~~2> for the first group of the IE "DSCH mapping":~~

~~3> 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)".~~

~~2> for each of the next groups included in the IE "DSCH mapping":~~

~~3> 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)".~~

~~2> if the value of the IE "multi-code info" is greater than 1:~~

~~3> 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".~~

~~1> if the IE choice "signalling method" is set to 'Explicit'~~

~~2> map the TFCI(field2) values to PDSCH codes in the following way:~~

~~2> for the first instance on the IE "PDSCH code info":~~

~~3> 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.~~

~~2> for the second instance of the IE "PDSCH code info":~~

~~3> 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.~~

~~2> continue in a similar way for each next instance of the IE "PDSCH code info";~~

~~2> if the value of the IE "multi-code info" is greater than 1, then~~

~~3> 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".~~

~~1> if the IE choice "signalling method" is set to 'Replace':~~

~~2> map the TFCI(field2) values to PDSCH codes in the following way:~~

~~2> for each instance of the IE "Replaced PDSCH code":~~

~~3> 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)".~~

~~2> if the value of the IE "multi-code info" is greater than 1:~~

~~3> 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".~~

**** Next modified section ****

10.2.8 CELL UPDATE CONFIRM

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

RLC-SAP: UM

Logical channel: CCCH or DCCH

Direction: UTRAN→UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
U-RNTI	CV-*CCCH*		U-RNTI 10.3.3.47		
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation or a cell reselection from GERAN *Iu mode*	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing either an SRNS relocation or a cell reselection from GERAN *Iu mode*, and a change in ciphering algorithm.	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
RLC re-establish indicator (RB2, RB3 and RB4)	MP		RLC re-establish indicator 10.3.3.35	Should not be set to TRUE if IE "Downlink counter synchronisation info" is included in message.	
RLC re-establish indicator (RB5 and upwards)	MP		RLC re-establish indicator 10.3.3.35	Should not be set to TRUE if IE "Downlink counter synchronisation info" is included in message.	
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		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			10.3.4.19		
RB information to reconfigure list	OP	1 to <maxRB>			
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.18		
RB information to be affected list	OP	1 to <maxRB>			
>RB information to be affected	MP		RB information to be affected 10.3.4.17		
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5		
Added or Reconfigured TrCH 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*	MP				
>FDD					
>>CPCH set ID	OP		CPCH set ID 10.3.5.3		
>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH>			
>>>DRAC static information	MP		DRAC static information		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			10.3.5.7		
>TDD				(no data)	
Downlink transport channels					
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88.		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
Downlink radio resources					
~~CHOICE *mode*~~	~~MP~~				
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS_PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link to be set-up	
>Downlink information for each radio link	MP		Downlink information for each		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			radio link 10.3.6.27		

Condition	Explanation
CCCH	This IE is mandatory present when CCCH is used and ciphering is not required and not needed otherwise.

**** Next modified section ****

10.2.16a HANDOVER TO UTRAN COMMAND

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

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

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

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
New U-RNTI	MP		U-RNTI Short 10.3.3.48	
Ciphering algorithm	OP		Ciphering algorithm 10.3.3.4	
CHOICE *specification mode*	MP			
>Complete specification				
RB information elements				
>>Signalling RB information to setup list	MP	1 to <maxSRBsetup>		For each signalling radio bearer established
>>>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24	
>>RAB information to setup list	OP	1 to <maxRABsetup>		For each RAB established
>>>RAB information for setup	MP		RAB information for setup 10.3.4.10	
Uplink transport channels				
>>UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.24	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH>		
>>>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
Downlink transport channels				

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>DL Transport channel information common for all transport channels	MP		DL Transport channel information common for all transport channels 10.3.5.6	
>>Added or Reconfigured TrCH information	MP	1 to <maxTrCH>		
>>>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
Uplink radio resources				
>>Uplink DPCH info	MP		Uplink DPCH info 10.3.6.88	
~~>>CHOICE *mode*~~	~~MP~~			
~~>>>FDD~~				
~~>>>>CPCH SET Info~~	~~OP~~		~~CPCH SET Info 10.3.6.13~~	
Downlink radio resources				
~~>>>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~	
~~>>>TDD~~				~~(no data)~~
>>Downlink information common for all radio links	MP		Downlink information common for all radio links 10.3.6.24	
>>Downlink information per radio link	MP	1 to <maxRL>		
>>>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27	
>Preconfiguration				
>>CHOICE *Preconfiguration mode*	MP			
>>>Predefined configuration	MP		Predefined configuration identity 10.3.4.5	
>>>Default configuration				
>>>>Default configuration mode	MP		Enumerated (FDD, TDD)	Indicates whether the FDD or TDD version of the default configuration shall be used
>>>>Default configuration identity	MP		Default configuration identity 10.3.4.0	
>>RAB info	OP		RAB info Post 10.3.4.9	One RAB is established
>>Uplink DPCH info	MP		Uplink DPCH info Post 10.3.6.89	
Downlink radio resources				
>>Downlink information common	MP		Downlink	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
for all radio links			information common for all radio links Post 10.3.6.25	
>>Downlink information per radio link	MP	1 to <maxRL>		Send downlink information for each radio link to be set-up. In TDD MaxRL is 1.
>>>Downlink information for each radio link	MP		Downlink information for each radio link Post 10.3.6.28	
>>CHOICE *mode*	MP			
>>>FDD				(no data)
>>>TDD				
>>>>Primary CCPCH Tx Power	MP		Primary CCPCH Tx Power 10.3.6.59	
Frequency info	MP		Frequency info 10.3.6.36	
Maximum allowed UL TX power	MP		Maximum allowed UL TX power 10.3.6.39	

**** Next modified section ****

10.2.22 PHYSICAL CHANNEL RECONFIGURATION

This message is used by UTRAN to assign, replace or release a set of physical channels used by a UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB information elements					
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing value of the maximum allowed UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
>CPCH set ID			CPCH set ID 10.3.5.3		
Downlink radio resources					
~~CHOICE *mode*~~	~~MP~~				
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS_PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

**** Next modified section ****

10.2.27 RADIO BEARER RECONFIGURATION

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

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

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

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation or a handover from GERAN *Iu mode*	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing either an SRNS relocation or a handover from GERAN *Iu mode* and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN information elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
CHOICE specification mode	MP				REL-5
>Complete specification					
RB information elements					
>>RAB information to reconfigure list	OP	1 to < maxRABsetup >			
>>>RAB information to reconfigure	MP		RAB information to reconfigure 10.3.4.11		
>>RB information to reconfigure list	MP	1to <maxRB>		Although this IE is not always required, need is MP to align with ASN.1	
	OP				REL-4
>>>RB information to reconfigure	MP		RB information		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			to reconfigure 10.3.4.18		
>>RB information to be affected list	OP	1 to <maxRB>			
>>>RB information to be affected	MP		RB information to be affected 10.3.4.17		
>>RB with PDCP context relocation info list	OP	1 to <maxRBallRABs>		This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
>>>PDCP context relocation info	MP		PDCP context relocation info 10.3.4.1a		REL-5
TrCH Information Elements					
Uplink transport channels					
>>UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		
>>Deleted TrCH information list	OP	1 to <maxTrCH>			
>>>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.5		
>>Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>>>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2		
>>CHOICE *mode*	OP				
>>>FDD					
>>>>CPCH set ID	OP		CPCH set ID 10.3.5.3		
>>>>Added or Reconfigured TrCH information for DRAC list	OP	1 to <maxTrCH>			
>>>>>DRAC static information	MP		DRAC static information 10.3.5.7		
>>>TDD				(no data)	
Downlink transport channels					
>>DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.6		
>>Deleted TrCH information list	OP	1 to <maxTrCH			

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
		>			
>>>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
>>Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>>>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
>Preconfiguration					REL-5
>>CHOICE *Preconfiguration mode*	MP			This value only applies in case the message is sent through GERAN *Iu mode*	
>>>Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5		
>>>Default configuration					
>>>>Default configuration mode	MP		Enumerated (FDD, TDD)	Indicates whether the FDD or TDD version of the default configuration shall be used	
>>>>Default configuration identity	MP		Default configuration identity 10.3.4.0		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
Downlink radio resources					
~~CHOICE *mode*~~	~~MP~~				
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			all radio links 10.3.6.24		
Downlink information per radio link list	MP	1 to <maxRL>		Although this IE is not always required, need is MP to align with ASN.1	
	OP				REL-4
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

**** Next modified section ****

10.2.30 RADIO BEARER RELEASE

This message is used by UTRAN to release a radio bearer. It can also include modifications to the configurations of transport channels and/or physical channels. It can simultaneously indicate release of a signalling connection when UE is connected to more than one CN domain.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation.	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm.	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
Signalling Connection release indication	OP		CN domain identity 10.3.1.1		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB Information Elements					
RAB information to reconfigure list	OP	1 to < maxRABsetup >			
>RAB information to reconfigure	MP		RAB information to reconfigure 10.3.4.11		
RB information to release list	MP	1 to <maxRB>			
>RB information to release	MP		RB information to release 10.3.4.19		
RB information to be affected list	OP	1 to <maxRB>			
>RB information to be affected	MP		RB information to be affected 10.3.4.17		
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>RB with PDCP context relocation info list	OP	1 to <maxRBallRABs>			REL-5
>>PDCP context relocation info	MP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		
Deleted TrCH information list	OP	1 to			

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
		<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	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
Downlink radio resources					

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
~~CHOICE *mode*~~	~~MP~~				
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link to be set-up	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

**** Next modified section ****

10.2.33 RADIO BEARER SETUP

This message is sent by UTRAN to the UE to establish new radio bearer(s). It can also include modifications to the configurations of transport channels and/or physical channels.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	The UTRAN should not include this IE unless it is performing an SRNS relocation	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB Information Elements					
Signalling RB information to setup list	OP	1 to <maxSRBsetup>		For each signalling radio bearer established	
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.24		
RAB information to setup list	OP	1 to <maxRABsetup>		For each RAB established	
>RAB information for setup	MP		RAB information for setup 10.3.4.10		
RB information to be affected list	OP	1 to <maxRB>			
>RB information to be affected	MP		RB information to be affected 10.3.4.17		
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
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 channels10.3.5.6		
Deleted TrCH information list	OP	1 to <maxTrCH>			
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.4		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL	Default value is the existing	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			TX power 10.3.6.39	maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
Downlink radio resources					
~~CHOICE *mode*~~	~~MP~~				
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

**** Next modified section ****

10.2.50 TRANSPORT CHANNEL RECONFIGURATION

This message is used by UTRAN to configure the transport channel of a UE. This also includes a possible reconfiguration of physical channels. The message can also be used to assign a TFC subset and reconfigure physical channel.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Message Type	MP		Message Type		
UE Information Elements					
RRC transaction identifier	MP		RRC transaction identifier 10.3.3.36		
Integrity check info	CH		Integrity check info 10.3.3.16		
Integrity protection mode info	OP		Integrity protection	The UTRAN should not include	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			mode info 10.3.3.19	this IE unless it is performing an SRNS relocation	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	The UTRAN should not include this IE unless it is performing an SRNS relocation and a change in ciphering algorithm	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"	
New U-RNTI	OP		U-RNTI 10.3.3.47		
New C-RNTI	OP		C-RNTI 10.3.3.8		
New DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Should not be set in FDD. If received The UE should ignore it	
New H-RNTI	OP		H-RNTI 10.3.3.14a		REL-5
RRC State Indicator	MP		RRC State Indicator 10.3.3.35a		
UTRAN DRX cycle length coefficient	OP		UTRAN DRX cycle length coefficient 10.3.3.49		
CN Information Elements					
CN Information info	OP		CN Information info 10.3.1.3		
UTRAN mobility information elements					
URA identity	OP		URA identity 10.3.2.6		
RB information elements					
Downlink counter synchronisation info	OP				
>RB with PDCP information list	OP	1 to <maxRBallRABs>			
>>RB with PDCP information	MP		RB with PDCP information 10.3.4.22	This IE is needed for each RB having PDCP in the case of lossless SRNS relocation	
	OP				REL-5
>>PDCP context relocation info	OP		PDCP context relocation info 10.3.4.1a	This IE is needed for each RB having PDCP and performing PDCP context relocation	REL-5
TrCH Information Elements					
Uplink transport channels					
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.24		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
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		
Added or Reconfigured TrCH information list	OP	1 to <maxTrCH>			
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1		
PhyCH information elements					
Frequency info	OP		Frequency info 10.3.6.36		
Uplink radio resources					
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.39	Default value is the existing maximum UL TX power	
CHOICE *channel requirement*	OP				
>Uplink DPCH info			Uplink DPCH info 10.3.6.88		
>CPCH SET Info			CPCH SET Info 10.3.6.13		
Downlink radio resources					
~~CHOICE *mode*~~	~~MP~~				
~~>FDD~~					
~~>>Downlink PDSCH information~~	~~OP~~		~~Downlink PDSCH information 10.3.6.30~~		
~~>TDD~~				~~(no data)~~	
Downlink HS-PDSCH Information	OP		Downlink HS-PDSCH Information 10.3.6.23a		REL-5
Downlink information common for all radio links	OP		Downlink information		

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
			common for all radio links 10.3.6.24		
Downlink information per radio link list	OP	1 to <maxRL>		Send downlink information for each radio link	
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.27		

***** Next modified section *****

10.3.3.9a DSCH-RNTI

~~In FDD, the DSCH-RNTI identifies a UE in CELL_DCH using a DSCH within a cell.~~ In TDD, the DSCH-RNTI identifies a UE in CELL_DCH or CELL_FACH using a DSCH or USCH within the cell.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DSCH-RNTI	MP		bit string(16)	

***** Next modified section *****

10.3.3.25 Physical channel capability

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
Downlink physical channel capability information elements					
FDD downlink physical channel capability	CH-*fdd_req_sup*				
>Max no DPCH~~/PDSCH~~ codes	MP		Integer (1..8)	Maximum number of DPCH~~/PDSCH~~ codes to be simultaneously received	
>Max no physical channel bits received	MP		Integer (1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 48000, 57600, 67200, 76800)	Maximum number of physical channel bits received in any 10 ms interval (DPCH~~, PDSCH~~, S-CCPCH)	
>Support for SF 512	MP		Boolean	TRUE means supported	
~~>Support of PDSCH~~	~~MP~~		~~Boolean~~	~~TRUE means supported~~	
>CHOICE *Support of HS-PDSCH*	CV-*not_iRAT_HoInfo*				REL-5
>>Supported					REL-5
>>>HS-DSCH physical layer category	MP		Integer (1..64)		REL-5

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
>>>Support of dedicated pilots for channel estimation of HS-DSCH	MP		Boolean	TRUE means supported	REL-5
>>>Simultaneous reception of SCCPCH, DPCH and HS-PDSCH	MP		Boolean	TRUE means supported. This IE shall only be set to TRUE in the case the IE “Simultaneous reception of SCCPCH and DPCH” is set to TRUE	REL-5
>>Unsupported				(no data)	REL-5
>Simultaneous reception of SCCPCH and DPCH	MP		Boolean	TRUE means supported	
~~>Simultaneous reception of SCCPCH, DPCH and PDSCH~~	~~CV-*if_sim_rec_pdsch_sup*~~		~~Boolean~~	~~TRUE means supported~~	
>Max no of S-CCPCH RL	CV-*if_sim_rec*		Integer(1)	Maximum number of simultaneous S-CCPCH radio links	
>Support of dedicated pilots for channel estimation	MD		Enumerated (true)	Presence of this element means supported and absence not supported. This IE shall be set to TRUE in this version of the protocol.	
3.84 Mcps TDD downlink physical channel capability	CH-*3.84_Mcps_tdd_req_sup*				Name changed in REL-4
>Maximum number of timeslots per frame	MP		Integer (1..14)		
>Maximum number of physical channels per frame	MP		Integer (5..224)		
>Minimum SF	MP		Integer (1, 16)		
>Support of PDSCH	MP		Boolean	TRUE means supported	
>CHOICE *Support of HS-PDSCH*	CV-*not_iRAT_HoInfo*				REL-5
>>Supported					REL-5
>>>HS-DSCH physical layer category	MP		Integer (1..64)		REL-5
>>Unsupported				(no data)	REL-5
>Maximum number of physical channels per timeslot	MP		Integer (5..16)		
1.28 Mcps TDD downlink physical channel capability	CH-*1.28_Mcps_tdd_req_sup*				REL-4
>Maximum number of timeslots per subframe	MP		Integer (1..6)		REL-4
>Maximum number of physical channels per subframe	MP		Integer (1..96)		REL-4
>Minimum SF	MP		Integer (1, 16)		REL-4

Information Element/Group name	Need	Multi	Type and Reference	Semantics description	Version
>Support of PDSCH	MP		Boolean	TRUE means supported	REL-4
>CHOICE *Support of HS-PDSCH*	CV-*not_iRAT_HoInfo*				REL-5
>>Supported					REL-5
>>>HS-DSCH physical layer category	MP		Integer (1..64)		REL-5
>>Unsupported				(no data)	REL-5
>Maximum number of physical channels per timeslot	MP		Integer (1..16)		REL-4
>Support of 8PSK	MP		Boolean	TRUE means supported	REL-4
Uplink physical channel capability information elements					
FDD uplink physical channel capability	CH-*fdd_req_sup*				
>Maximum number of DPDCH bits transmitted per 10 ms	MP		Integer (600, 1200, 2400, 4800. 9600, 19200. 28800, 38400, 48000, 57600)		
>Support of PCPCH	MP		Boolean	TRUE means supported	
3.84 Mcps TDD uplink physical channel capability	CH-*3.84_Mcps_tdd_req_sup*				Name changed in REL-4
>Maximum Number of timeslots per frame	MP		Integer (1..14)		
>Maximum number of physical channels per timeslot	MP		Integer (1, 2)		
>Minimum SF	MP		Integer (1, 2, 4, 8)		
>Support of PUSCH	MP		Boolean	TRUE means supported	
1.28 Mcps TDD uplink physical channel capability	CH-*1.28_Mcps_tdd_req_sup*				REL-4
>Maximum Number of timeslots per subframe	MP		Integer (1..6)		REL-4
>Maximum number of physical channels per timeslot	MP		Integer (1, 2)		REL-4
>Minimum SF	MP		Integer (1, 2, 4, 8, 16)		REL-4
>Support of PUSCH	MP		Boolean	TRUE means supported	REL-4
>Support of 8PSK	MP		Boolean	TRUE means supported	REL-4

Condition	Explanation
if_sim_rec_pdsch_sup	The IE is mandatory present if the IE "Simultaneous reception of SCCPCH and DPCH" = True and IE Support of PDSCH = True. Otherwise this field is not needed in the message.
if_sim_rec	The IE is mandatory present if the IE "capability Simultaneous reception of SCCPCH and DPCH" = True. Otherwise this field is not needed in the message.
3.84_Mcps_tdd_req_sup	The IE is mandatory present if the IE "TDD RF capability" is present with the IE "Chip rate capability" set to "3.84 Mcps" and a 3.84 Mcps TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
1.28_Mcps_tdd_req_sup	The IE is mandatory present if the IE "TDD RF capability" is present with the IE "Chip rate capability" set to "1.28 Mcps" and a 1.28 Mcps TDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
fdd_req_sup	The IE is mandatory present if the IE "Multi-mode capability" has the value "FDD" or "FDD/TDD" and a FDD capability update has been requested in a previous message. Otherwise this field is not needed in the message.
not_iRAT_HoInfo	The CHOICE *Support of HS-PDSCH* is not needed in the INTER RAT HANDOVER INFO message. Otherwise, it is mandatory present.

**** Next modified section ****

10.3.4.21 RB mapping info

A multiplexing option for each possible transport channel or MAC-d flow this RB can be multiplexed on.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Information for each multiplexing option	MP	1 to <maxRBMuxOptions>			
>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 this release and shall be set to TRUE.	
>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 [16]	
>>Uplink transport channel type	MP		Enumerated(DCH,RACH,CPCH,USCH)	CPCH is FDD only USCH is TDD only	
>>ULTransport channel identity	CV-*UL-*		Transport	This is the ID of a	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
	DCH/USCH		channel identity 10.3.5.18	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). [15]	
>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 [16] 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	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
				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,DCH+ DSCH	Note 2	
			, HS-DSCH, DCH + HS-DSCH)	Note 1	REL-5
>>>DL DCH Transport channel identity	CV-*DL-DCH*		Transport channel identity 10.3.5.18		
>>>DL DSCH Transport channel identity	CV-*DL-DSCH*		Transport channel identity 10.3.5.18		
>>>DL HS-DSCH MAC-d flow identity	*CV-DL-HS-DSCH*		MAC-d flow identity 10.3.5.7c		REL-5
>>>Logical channel identity	OP		Integer(1..15)	16 is reserved	
Note 1: The IE "Downlink transport channel type" values "HS-DSCH" and "DCH + HS-DSCH" are not used in the RRC CONNECTION SETUP message. [Style changed]					
Note 2: The IE "Downlink transport channel type" values " DSCH" and "DCH+DSCH " should not be used for FDD. If received the UE behaviour is unspecified.					

Condition	Explanation
UL-RLC info	If "CHOICE *Uplink RLC mode*" in the IE "RLC info" that applies for that RB (i.e. either the one stored or received in the same message for the RB for which the "RB mapping info" was received, or the one stored or received in the same message for the RB pointed at in the IE "Same as RB" in the IE "RB information to setup" stored or received in the same message) is present this IE is mandatory present. Otherwise the IE is not needed.
DL-RLC info	If "CHOICE *Downlink RLC mode*" in the IE "RLC info" that applies for that RB (i.e. either the one stored or received in the same message for the RB for which the "RB mapping info" was received, or the one stored or received in the same message for the RB pointed at in the IE "Same as RB" in the IE "RB information to setup" stored or received in the same message) is present this IE is mandatory present. Otherwise the IE is not needed.
UL-RLCLogicalChannels	If "Number of uplink RLC logical channels" in IE "RB mapping info" is 2, then this IE is mandatory 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 mandatory present. Otherwise the IE is not needed.
DL-DCH	If IE "Downlink transport channel type" is equal to "DCH", "DCH+DSCH" or "DCH + HS-DSCH" this IE is mandatory present. Otherwise the IE is not needed.
DL-DSCH	If IE "Downlink transport channel type" is equal to "DSCH" or "DCH+DSCH" this IE is mandatory present. Otherwise the IE is not needed.
DL-HS-DSCH	If IE "Downlink transport channel type" is equal to "HSDSCH" or "DCH + HS-DSCH" this IE is mandatory

	present. Otherwise the IE is not needed.

***** Next modified section *****

10.3.5.1 Added or Reconfigured DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Downlink transport channel type	MP		Enumerated(DCH,DSCH	Note 2	
			,HS-DSCH)	Note 1	REL-5
DL Transport channel identity	MP		Transport channel identity 10.3.5.18		
	CV-*not HS-DSCH*				REL-5
CHOICE *DL parameters*					
>Explicit					
>>TFS	MP		Transport Format Set 10.3.5.23		
>SameAsUL					
>>Uplink transport channel type	MP		Enumerated(DCH,USCH)	USCH is TDD only	
>>UL TrCH identity	MP		Transport channel identity 10.3.5.18	Same TFS applies as specified for indicated UL TrCH	
>HS-DSCH				Note 1	REL-5
>>HARQ Info	OP		HARQ info 10.3.5.7a		REL-5
>>Added or reconfigured MAC-d flow	OP		Added or reconfigured MAC-d flow 10.3.5.1a		REL-5
DCH quality target	OP		Quality target 10.3.5.10		
Note 1: The IE "Downlink transport channel type" value "HS-DSCH" is not used in the RRC CONNECTION SETUP message, nor is the CHOICE *DL parameters* = "HS-DSCH". [Style changed]					
Note 2: The IE "Downlink transport channel type" value " DSCH " should not be used for FDD. If received the UE behaviour is unspecified.					

Condition	Explanation
NotHS-DSCH	If the downlink transport channel type is DCH or DSCH then this IE is mandatory otherwise it is not needed.

***** Next modified section *****

10.3.5.4 Deleted DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Downlink transport channel type	MP		Enumerated(DCH,DSCH	Note 1	
			,HS-DSCH)		REL-5
DL Transport channel identity	MP		Transport channel identity 10.3.5.18		
	CV-*notHS-DSCH*				REL-5
DL HS-DSCH MAC-d flow identity	CV-*HS-DSCH*		MAC-d flow identity 10.3.5.7c		REL-5
Note 1: The IE "Downlink transport channel type" value " DSCH " should not be used for FDD. If received the UE behaviour is unspecified.					

Condition	Explanation
NotHS-DSCH	If the downlink transport channel type is DCH or DSCH then this IE is mandatory otherwise it is not needed.
HS-DSCH	If the downlink transport channel type is HSDSCH then this IE is mandatory otherwise it is not needed.

**** Next modified section ****

10.3.5.12 ~~TFCI Field 2 Information~~Void

~~This IE is used for signalling the mapping between TFCI (field 2) values and the corresponding TFC.~~

~~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~~	

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)~~Void

~~**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)~~	

**** Next modified section ****

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, TFCI (field1) and TFCI (field2), are used and they are block coded separately.~~

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 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.~~

**** Next modified section ****

10.3.6.27 Downlink information for each radio link

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Choice mode	MP				
>FDD					
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60		
>>Cell ID	OP		Cell ID 10.3.2.2		REL-4
~~>>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~~		
>>Serving HS-DSCH radio link indicator	CV-*not_rrcConnectionSetup*		Boolean	The value "TRUE" indicates that this radio link is the serving HS-DSCH radio link	REL-5
>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		
SCCPCH Information for FACH	OP		SCCPCH Information for FACH 10.3.6.70		

Condition	Explanation
not_rrcConnectionSetup	This IE is not needed in the RRC CONNECTION SETUP message. Otherwise it is mandatory present.

**** Next modified section ****

10.3.6.30 ~~Downlink PDSCH information~~Void

~~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.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Restricted TrCH information	OP	1 to <maxTrCH>		
>Downlink transport channel type	MP		Enumerated(DCH,~~DSCH~~)	
>Restricted DL TrCH identity	MP		Transport channel identity 10.3.5.18	
>Allowed TFIs	MP	1 to <maxTF>		
>>Allowed TFI	MP		Integer(0..31)	

***** Next modified section *****

10.3.6.43 ~~PDSCH code mapping~~Void

~~NOTE: Only for FDD.~~

~~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)~~	
~~>>>Code number (for PDSCH code) start~~	~~MP~~		~~Integer(0..Spreading factor-1)~~	

~~Information Element/Group name~~	~~Need~~	~~Multi~~	~~Type and reference~~	~~Semantics description~~
~~>>>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)~~	
~~>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)~~	
~~>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)~~	

~~**** Next modified section ****~~

10.3.6.47 ~~PDSCH with SHO DCH Info~~Void

~~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~~	~~This parameter indicates on which radio link the user will be allocated resource on the DSCH.~~
~~TFCI(field2) Combining set~~	~~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.~~
~~>Radio link identifier~~	~~MP~~		~~Primary CPICH info 10.3.6.60~~	

**** Next modified section ****

10.3.6.68 Radio link addition information

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Primary CPICH info	MP		Primary CPICH info 10.3.6.60		
Cell ID	OP		Cell ID 10.3.2.2		REL-4
Downlink DPCH info for each RL	MP		Downlink DPCH info for each RL 10.3.6.21		
~~TFCI combining indicator~~	~~MP~~		~~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.

**** Next modified section ****

10.3.6.81 ~~TFCI Combining Indicator~~Void

~~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 is relevant only 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, FALSE means that TFCI is not combined or that this IE is not applicable to the added radio link.~~

10.3.10 Multiplicity values and type constraint values

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

Constant	Explanation	Value	Version
CN information			
maxCNdomains	Maximum number of CN domains	4	
UTRAN mobility information			
maxRAT	Maximum number or Radio Access Technologies	maxOtherRAT + 1	
maxOtherRAT	Maximum number or other Radio Access Technologies	15	
maxURA	Maximum number of URAs in a cell	8	
maxInterSysMessages	Maximum number of Inter System Messages	4	
maxRABsetup	Maximum number of RABs to be established	16	
UE information			
maxtransactions	Maximum number of parallel RRC transactions in downlink	25	
maxPDCPalgoType	Maximum number of PDCP algorithm types	8	
maxDRACclasses	Maximum number of UE classes which would require different DRAC parameters	8	
maxFreqBandsFDD	Maximum number of frequency bands supported by the UE as defined in [21]	8	
maxFreqBandsTDD	Maximum number of frequency bands supported by the UE as defined in [22]	4	
maxFreqBandsGSM	Maximum number of frequency bands supported by the UE as defined in [45]	16	
maxPage1	Number of UEs paged in the Paging Type 1 message	8	
maxSystemCapability	Maximum number of system specific capabilities that can be requested in one message.	16	
MaxURNTIgroup	Maximum number of U-RNTI groups in one message	8	REL-5
RB information			
maxPredefConfig	Maximum number of predefined configurations	16	
maxRB	Maximum number of RBs	32	
maxSRBsetup	Maximum number of signalling RBs to be established	8	
maxRBperRAB	Maximum number of RBs per RAB	8	
maxRBallRABs	Maximum number of non signalling RBs	27	
maxRBMuxOptions	Maximum number of RB multiplexing options	8	
maxLoCHperRLC	Maximum number of logical channels per RLC entity	2	
MaxROHC-PacketSizes	Maximum number of packet sizes that are allowed to be produced by ROHC.	16	
MaxROHC-Profiles	Maximum number of profiles supported by ROHC on a given RB.	8	
maxRFC 3095-CID	Maximum number of available CID values per radio bearer	16384	REL-5
TrCH information			
MaxHProcesses	Maximum number of H-ARQ processes	8	REL-5

Constant	Explanation	Value	Version
MaxHSDSCH_TB_index	Maximum number of TB set size configurations for the HS-DSCH.	64 (FDD and 1.28 MCPS TDD); 512 (3.84 Mcps TDD)	REL-5
maxMACdPDUSizes	Maximum number of MAC-d PDU sizes per queue permitted for MAC-hs	8	REL-5
maxTrCH	Maximum number of transport channels used in one direction (UL or DL)	32	
maxTrCHpreconf	Maximum number of preconfigured Transport channels, per direction	16	
maxCCTrCH	Maximum number of CCTrCHs	8	
maxQueueID	Maximum number of Mac-hs queues	8	REL-5
MaxTF	Maximum number of different transport formats that can be included in the Transport format set for one transport channel	32	
maxTF-CPCH	Maximum number of TFs in a CPCH set	16	
maxTFC	Maximum number of Transport Format Combinations	1024	
maxTFCsub	Maximum number of Transport Format Combinations Subset	1024	
~~maxTFCI-1-Combs~~	~~Maximum number of TFCI (field 1) combinations~~	~~512~~	
~~maxTFCI-2-Combs~~	~~Maximum number of TFCI (field 2) combinations~~	~~512~~	
maxCPCHsets	Maximum number of CPCH sets per cell	16	
maxSIBperMsg	Maximum number of complete system information blocks per SYSTEM INFORMATION message	16	
maxSIB	Maximum number of references to other system information blocks.	32	
maxSIB-FACH	Maximum number of references to system information blocks on the FACH	8	
PhyCH information			
maxHS-SCCHs	Maximum number of HSSCCH codes that can be assigned to a UE	4	REL-5
maxPCPCH-APsubCH	Maximum number of available sub-channels for AP signature on PCPCH	12	
maxPCPCH-CDsubCH	Maximum number of available sub-channels for CD signature on PCPCH	12	
maxPCPCH-APsig	Maximum number of available signatures for AP on PCPCH	16	
maxPCPCH-CDsig	Maximum number of available signatures for CD on PCPCH	16	
maxAC	Maximum number of access classes	16	
maxASC	Maximum number of access service classes	8	
maxASCmap	Maximum number of access class to access service classes mappings	7	
maxASCpersist	Maximum number of access service classes for which persistence scaling factors are specified	6	
maxPRACH	Maximum number of PRACHs in a cell	16	
MaxPRACH_FPACH	Maximum number of PRACH / FPACH pairs in a cell (1.28 Mcps TDD)	8	REL-4
maxFACHPCH	Maximum number of FACHs and PCHs mapped onto one secondary CCPCHs	8	
maxRL	Maximum number of radio links	8	
maxSCCPCH	Maximum number of secondary CCPCHs per cell	16	
maxDPDCH-UL	Maximum number of DPDCHs per cell	6	
maxDPCH-DLchan	Maximum number of channelisation codes used for DL DPCH	8	
maxPUSCH	Maximum number of PUSCHs	(8)	
maxPDSCH	Maximum number of PDSCHs	8	
~~maxPDSCHcodes~~	~~Maximum number of codes for PDSCH~~	~~16~~	
~~maxPDSCH-TFCIgroups~~	~~Maximum number of TFCI groups for PDSCH~~	~~256~~	
~~maxPDSCHcodeGroups~~	~~Maximum number of code groups for PDSCH~~	~~256~~	
maxPCPCHs	Maximum number of PCPCH channels in a CPCH Set	64	
maxPCPCH-SF	Maximum number of available SFs on PCPCH	7	

Constant	Explanation	Value	Version
maxTS	Maximum number of timeslots used in one direction (UL or DL)	14 (3.84 Mcps TDD)	
		6 (1.28 Mcps TDD)	REL-4
hiPUSCHidentities	Maximum number of PUSCH Identities	64	
hiPDSCHidentities	Maximum number of PDSCH Identities	64	
Measurement information			
maxTGPS	Maximum number of transmission gap pattern sequences	6	
maxAdditionalMeas	Maximum number of additional measurements for a given measurement identity	4	
maxMeasEvent	Maximum number of events that can be listed in measurement reporting criteria	8	
maxMeasParEvent	Maximum number of measurement parameters (e.g. thresholds) per event	2	
maxMeasIntervals	Maximum number of intervals that define the mapping function between the measurements for the cell quality Q of a cell and the representing quality value	1	
maxCellMeas	Maximum number of cells to measure	32	
maxReportedGSMCells	Maximum number of GSM cells to be reported	8	
maxFreq	Maximum number of frequencies to measure	8	
maxSat	Maximum number of satellites to measure	16	
maxSatAlmanacStorage	Maximum number of satellites for which to store GPS Almanac information	32	
HiRM	Maximum number that could be set as rate matching attribute for a transport channel	256	
Frequency information			
MaxFDDFreqList	Maximum number of FDD carrier frequencies to be stored in USIM	4	
MaxTDDFreqList	Maximum number of TDD carrier frequencies to be stored in USIM	4	
MaxFDDFreqCellList	Maximum number of neighbouring FDD cells to be stored in USIM	32	
MaxTDDFreqCellList	Maximum number of neighbouring TDD cells to be stored in USIM	32	
MaxGSMCellList	Maximum number of GSM cells to be stored in USIM	32	
Other information			
MaxGERANSI	Maximum number of GERAN SI blocks that can be provided as part of NACC information	8	REL-5
maxNumGSMFreqRanges	Maximum number of GSM Frequency Ranges to store	32	
MaxNumFDDFreqs	Maximum number of FDD centre frequencies to store	8	
MaxNumTDDFreqs	Maximum number of TDD centre frequencies to store	8	
maxNumCDMA200Freqs	Maximum number of CDMA2000 centre frequencies to store	8	

**** Next modified section ****

11.1 General message structure

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

BEGIN

IMPORTS

    ActiveSetUpdate,
    ActiveSetUpdateComplete,
    ActiveSetUpdateFailure,
    AssistanceDataDelivery,
```

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

-- User Equipment IEs :
    IntegrityCheckInfo
FROM InformationElements;

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

DL-DCCH-Message ::= SEQUENCE {
```

```
    integrityCheckInfo      IntegrityCheckInfo      OPTIONAL,
    message                 DL-DCCH-MessageType
}

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

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

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

UL-DCCH-MessageType ::= CHOICE {
    activeSetUpdateComplete             ActiveSetUpdateComplete,
    activeSetUpdateFailure              ActiveSetUpdateFailure,
    cellChangeOrderFromUTRANFailure     CellChangeOrderFromUTRANFailure,
    counterCheckResponse                CounterCheckResponse,
    handoverToUTRANComplete             HandoverToUTRANComplete,
    initialDirectTransfer               InitialDirectTransfer,
    handoverFromUTRANFailure            HandoverFromUTRANFailure,
    measurementControlFailure           MeasurementControlFailure,
    measurementReport                   MeasurementReport,
    physicalChannelReconfigurationComplete
                                        PhysicalChannelReconfigurationComplete,
    physicalChannelReconfigurationFailure
                                        PhysicalChannelReconfigurationFailure,
    radioBearerReconfigurationComplete  RadioBearerReconfigurationComplete,
    radioBearerReconfigurationFailure   RadioBearerReconfigurationFailure,
    radioBearerReleaseComplete          RadioBearerReleaseComplete,
    radioBearerReleaseFailure           RadioBearerReleaseFailure,
    radioBearerSetupComplete            RadioBearerSetupComplete,
    radioBearerSetupFailure             RadioBearerSetupFailure,
    rrcConnectionReleaseComplete        RRCConnectionReleaseComplete,
    rrcConnectionSetupComplete          RRCConnectionSetupComplete,
    rrcStatus                           RRCStatus,
    securityModeComplete                SecurityModeComplete,
    securityModeFailure                 SecurityModeFailure,
    signallingConnectionReleaseIndication
                                        SignallingConnectionReleaseIndication,
    transportChannelReconfigurationComplete
```

```
                                    TransportChannelReconfigurationComplete,
    transportChannelReconfigurationFailure
                                    TransportChannelReconfigurationFailure,
    transportFormatCombinationControlFailure
                                    TransportFormatCombinationControlFailure,
    ueCapabilityInformation         UECapabilityInformation,
    uplinkDirectTransfer            UplinkDirectTransfer,
    utranMobilityInformationConfirm UTRANMobilityInformationConfirm,
    utranMobilityInformationFailure UTRANMobilityInformationFailure,
    spare2                          NULL,
    spare1                          NULL
}

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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


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

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

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

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

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

END
```

11.2 PDU definitions

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

PDU-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

IMPORTS

-- Core Network IEs :
    CN-DomainIdentity,
    CN-InformationInfo,
    CN-InformationInfoFull,
```

```
	NAS-Message,
	PagingRecordTypeID,
-- UTRAN Mobility IEs :
	CellIdentity,
	CellIdentity-PerRL-List,
	URA-Identity,
-- User Equipment IEs :
	AccessStratumReleaseIndicator,
	ActivationTime,
	C-RNTI,
	CapabilityUpdateRequirement,
	CapabilityUpdateRequirement-r4,
	CapabilityUpdateRequirement-r4-ext,
	CapabilityUpdateRequirement-r5,
	CellUpdateCause,
	CipheringAlgorithm,
	CipheringModeInfo,
	DSCH-RNTI,
	EstablishmentCause,
	FailureCauseWithProtErr,
	FailureCauseWithProtErrTrId,
	GroupReleaseInformation,
	H-RNTI,
	UESpecificBehaviourInformation1idle,
	UESpecificBehaviourInformation1interRAT,
	InitialUE-Identity,
	IntegrityProtActivationInfo,
	IntegrityProtectionModeInfo,
	N-308,
	PagingCause,
	PagingRecordList,
	PagingRecord2List-r5,
	ProtocolErrorIndicator,
	ProtocolErrorIndicatorWithMoreInfo,
	RadioFrequencyBandTDDList,
	Rb-timer-indicator,
	RedirectionInfo,
	RejectionCause,
	ReleaseCause,
	RF-CapabilityComp,
	RRC-StateIndicator,
	RRC-TransactionIdentifier,
	SecurityCapability,
	START-Value,
	STARTList,
	SystemSpecificCapUpdateReq-v590ext,
	U-RNTI,
	U-RNTI-Short,
	UE-RadioAccessCapability,
	UE-RadioAccessCapability-v370ext,
	UE-RadioAccessCapability-v380ext,
	UE-RadioAccessCapability-v3a0ext,
	UE-RadioAccessCapability-v3g0ext,
	UE-RadioAccessCapability-v4b0ext,
	UE-RadioAccessCapability-v590ext,
	UE-RadioAccessCapability-v5c0ext,
	UE-RadioAccessCapabilityComp,
	DL-PhysChCapabilityFDD-v380ext,
	UE-ConnTimersAndConstants,
	UE-ConnTimersAndConstants-v3a0ext,
	UE-ConnTimersAndConstants-r5,
	UE-SecurityInformation,
	URA-UpdateCause,
	UTRAN-DRX-CycleLengthCoefficient,
	WaitTime,
-- Radio Bearer IEs :
	DefaultConfigIdentity,
	DefaultConfigIdentity-r4,
	DefaultConfigIdentity-r5,
	DefaultConfigMode,
	DL-CounterSynchronisationInfo,
	DL-CounterSynchronisationInfo-r5,
	PredefinedConfigIdentity,
	PredefinedConfigStatusList,
	PredefinedConfigStatusListComp,
	PredefinedConfigSetWithDifferentValueTag,
	RAB-Info,
	RAB-Info-Post,
```

```
    RAB-InformationList,
    RAB-InformationReconfigList,
    RAB-InformationSetupList,
    RAB-InformationSetupList-r4,
    RAB-InformationSetupList-r5,
    RB-ActivationTimeInfoList,
    RB-COUNT-C-InformationList,
    RB-COUNT-C-MSB-InformationList,
    RB-IdentityList,
    RB-InformationAffectedList,
    RB-InformationAffectedList-r5,
    RB-InformationReconfigList,
    RB-InformationReconfigList-r4,
    RB-InformationReconfigList-r5,
    RB-InformationReleaseList,
    RB-PDCPContextRelocationList,
    SRB-InformationSetupList,
    SRB-InformationSetupList-r5,
    SRB-InformationSetupList2,
    UL-CounterSynchronisationInfo,
-- Transport Channel IEs:
    CPCH-SetID,
    DL-AddReconfTransChInfo2List,
    DL-AddReconfTransChInfoList,
    DL-AddReconfTransChInfoList-r4,
    DL-AddReconfTransChInfoList-r5,
    DL-CommonTransChInfo,
    DL-CommonTransChInfo-r4,
    DL-DeletedTransChInfoList,
    DL-DeletedTransChInfoList-r5,
    DRAC-StaticInformationList,
    TFC-Subset,
    TFCS-Identity,
    UL-AddReconfTransChInfoList,
    UL-CommonTransChInfo,
    UL-CommonTransChInfo-r4,
    UL-DeletedTransChInfoList,
-- Physical Channel IEs :
    Alpha,
    CCTrCH-PowerControlInfo,
    CCTrCH-PowerControlInfo-r4,
    CCTrCH-PowerControlInfo-r5,
    ConstantValue,
    ConstantValueTdd,
    CPCH-SetInfo,
    DL-CommonInformation,
    DL-CommonInformation-r4,
    DL-CommonInformation-r5,
    DL-CommonInformationPost,
    DL-HSPDSCH-Information,
    DL-InformationPerRL-List,
    DL-InformationPerRL-List-r4,
    DL-InformationPerRL-List-r5,
    DL-InformationPerRL-List-r5bis,
    DL-InformationPerRL-ListPostFDD,
    DL-InformationPerRL-PostTDD,
    DL-InformationPerRL-PostTDD-LCR-r4,
    DL-PDSCH-Information,
    DL-TPC-PowerOffsetPerRL-List,
    DPC-Mode,
    DPCH-CompressedModeStatusInfo,
    FrequencyInfo,
    FrequencyInfoFDD,
    FrequencyInfoTDD,
    HS-SICH-Power-Control-Info-TDD384,
    MaxAllowedUL-TX-Power,
    OpenLoopPowerControl-IPDL-TDD-r4,
    PDSCH-CapacityAllocationInfo,
    PDSCH-CapacityAllocationInfo-r4,
    PDSCH-Identity,
    PrimaryCPICH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-CapacityAllocationInfo,
    PUSCH-CapacityAllocationInfo-r4,
    PUSCH-Identity,
    PUSCH-SysInfoList-HCR-r5,
    PDSCH-SysInfoList-HCR-r5,
    RL-AdditionInformationList,
```

```
	RL-RemovalInformationList,
	SpecialBurstScheduling,
	SSDT-Information,
	TFC-ControlDuration,
	SSDT-UL,
	TimeslotList,
	TimeslotList-r4,
	TX-DiversityMode,
	UL-ChannelRequirement,
	UL-ChannelRequirement-r4,
	UL-ChannelRequirement-r5,
	UL-ChannelRequirementWithCPCH-SetID,
	UL-ChannelRequirementWithCPCH-SetID-r4,
	UL-ChannelRequirementWithCPCH-SetID-r5,
	UL-DPCH-Info,
	UL-DPCH-Info-r4,
	UL-DPCH-Info-r5,
	UL-DPCH-InfoPostFDD,
	UL-DPCH-InfoPostTDD,
	UL-DPCH-InfoPostTDD-LCR-r4,
	UL-SynchronisationParameters-r4,
	UL-TimingAdvance,
	UL-TimingAdvanceControl,
	UL-TimingAdvanceControl-r4,
-- Measurement IEs :
	AdditionalMeasurementID-List,
	DeltaRSCP,
	Frequency-Band,
	EventResults,
	Inter-FreqEventCriteriaList-v590ext,
	Intra-FreqEventCriteriaList-v590ext,
	IntraFreqReportingCriteria-1b-r5,
	IntraFreqEvent-1d-r5,
	InterFreqEventResults-LCR-r4-ext,
	InterRATCellInfoIndication,
	InterRAT-TargetCellDescription,
	MeasuredResults,
	MeasuredResults-v390ext,
	MeasuredResults-v590ext,
	MeasuredResultsList,
	MeasuredResultsList-LCR-r4-ext,
	MeasuredResultsOnRACH,
	MeasurementCommand,
	MeasurementCommand-r4,
	MeasurementIdentity,
	MeasurementReportingMode,
	PrimaryCCPCH-RSCP,
	SFN-Offset-Validity,
	TimeslotListWithISCP,
	TrafficVolumeMeasuredResultsList,
	UE-Positioning-GPS-AssistanceData,
	UE-Positioning-Measurement-v390ext,
	UE-Positioning-OTDOA-AssistanceData,
	UE-Positioning-OTDOA-AssistanceData-r4ext,
	UE-Positioning-OTDOA-AssistanceData-UEB,
-- Other IEs :
	BCCH-ModificationInfo,
	CDMA2000-MessageList,
	GERANIu-MessageList,
	GERAN-SystemInformation,
	GSM-MessageList,
	InterRAT-ChangeFailureCause,
	InterRAT-HO-FailureCause,
	InterRAT-UE-RadioAccessCapabilityList,
	InterRAT-UE-RadioAccessCapability-v590ext,
	InterRAT-UE-SecurityCapList,
	IntraDomainNasNodeSelector,
	ProtocolErrorMoreInformation,
	Rplmn-Information,
	Rplmn-Information-r4,
	SegCount,
	SegmentIndex,
	SFN-Prime,
	SIB-Data-fixed,
	SIB-Data-variable,
	SIB-Type
FROM InformationElements

	maxSIBperMsg,
```

```
    maxURNTI-Group
FROM Constant-definitions;

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

ActiveSetUpdate ::= CHOICE {
    r3                              SEQUENCE {
        activeSetUpdate-r3              ActiveSetUpdate-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            activeSetUpdate-r3-add-ext      BIT STRING      OPTIONAL,
            v4b0NonCriticalExtensions       SEQUENCE {
                activeSetUpdate-v4b0ext     ActiveSetUpdate-v4b0ext-IEs,
                v590NonCriticalExtensions       SEQUENCE {
                    activeSetUpdate-v590ext         ActiveSetUpdate-v590ext-IEs,
                    nonCriticalExtensions           SEQUENCE {} OPTIONAL
                }   OPTIONAL
            } OPTIONAL
        } OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

ActiveSetUpdate-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        -- dummy and dummy2 are not used in this version of the specification, they should
        -- not be sent and if received they should be ignored.
        dummy                       IntegrityProtectionModeInfo         OPTIONAL,
        dummy2                      CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        newU-RNTI                       U-RNTI                              OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        -- dummy3 is not used in this version of the specification, it should
        -- not be sent and if received it should be ignored.
        dummy3                      DL-CounterSynchronisationInfo       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
}

ActiveSetUpdate-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information. FDD only.
        ssdt-UL-r4                          SSDT-UL                             OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE RL-AdditionInformationList included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List             OPTIONAL
}

ActiveSetUpdate-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dpc-Mode                            DPC-Mode,
        dl-TPC-PowerOffsetPerRL-List        DL-TPC-PowerOffsetPerRL-List            OPTIONAL
}

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

ActiveSetUpdateComplete ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        -- dummy is not used in this version of the specification, it should
```

```
		-- not be sent and if received it should be ignored.
		dummy						IntegrityProtActivationInfo			OPTIONAL,
	-- Radio bearer IEs
		-- dummy2 and dummy3 are not used in this version of the specification, they should
		-- not be sent and if received they should be ignored.
		dummy2						RB-ActivationTimeInfoList			OPTIONAL,
		dummy3						UL-CounterSynchronisationInfo		OPTIONAL,
		laterNonCriticalExtensions		SEQUENCE {
			-- Container for additional R99 extensions
			activeSetUpdateComplete-r3-add-ext		BIT STRING		OPTIONAL,
			nonCriticalExtensions			SEQUENCE {} OPTIONAL
		}	OPTIONAL
}

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

ActiveSetUpdateFailure ::= SEQUENCE {
	-- User equipment IEs
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
		failureCause					FailureCauseWithProtErr,
		laterNonCriticalExtensions		SEQUENCE {
			-- Container for additional R99 extensions
			activeSetUpdateFailure-r3-add-ext		BIT STRING		OPTIONAL,
			nonCriticalExtensions			SEQUENCE {} OPTIONAL
	}	OPTIONAL
}

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

AssistanceDataDelivery ::= CHOICE {
	r3							SEQUENCE {
		assistanceDataDelivery-r3		AssistanceDataDelivery-r3-IEs,
		v3a0NonCriticalExtensions		SEQUENCE {
			assistanceDataDelivery-v3a0ext	AssistanceDataDelivery-v3a0ext,
			laterNonCriticalExtensions		SEQUENCE {
				-- Container for additional R99 extensions
				assistanceDataDelivery-r3-add-ext		BIT STRING		OPTIONAL,
				v4b0NonCriticalExtensions		SEQUENCE {
					assistanceDataDelivery-v4b0ext
										AssistanceDataDelivery-v4b0ext-IEs,
					nonCriticalExtensions			SEQUENCE {}				OPTIONAL
				}	OPTIONAL
			}	OPTIONAL
		}	OPTIONAL
	},
	later-than-r3					SEQUENCE {
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
		criticalExtensions				SEQUENCE {}
	}
}

AssistanceDataDelivery-r3-IEs ::= SEQUENCE {
	-- User equipment IEs
	rrc-TransactionIdentifier		RRC-TransactionIdentifier,
	-- Measurement Information Elements
	ue-positioning-GPS-AssistanceData			UE-Positioning-GPS-AssistanceData
	OPTIONAL,
	ue-positioning-OTDOA-AssistanceData-UEB		UE-Positioning-OTDOA-AssistanceData-UEB
	OPTIONAL
}

AssistanceDataDelivery-v3a0ext ::= SEQUENCE {
	sfn-Offset-Validity					SFN-Offset-Validity		OPTIONAL
}

AssistanceDataDelivery-v4b0ext-IEs ::= SEQUENCE {
	ue-Positioning-OTDOA-AssistanceData-r4ext	UE-Positioning-OTDOA-AssistanceData-r4ext	OPTIONAL
}

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

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

CellChangeOrderFromUTRAN ::= CHOICE {
    r3                              SEQUENCE {
        cellChangeOrderFromUTRAN-IEs        CellChangeOrderFromUTRAN-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            cellChangeOrderFromUTRAN-r3-add-ext     BIT STRING      OPTIONAL,
            v590NonCriticalExtensions           SEQUENCE {
                cellChangeOrderFromUTRAN-v590ext    CellChangeOrderFromUTRAN-v590ext-IEs,
                nonCriticalExtensions           SEQUENCE {} OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

CellChangeOrderFromUTRAN-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        -- dummy is not used in this version of the specification, it should
        -- not be sent and if received it should be ignored.
        dummy                           IntegrityProtectionModeInfo         OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        -- the IE rab-InformationList is not used in this version of the specification, it should
        -- not be sent and if received it should be ignored. The IE may be used in a later
        -- version of the protocol and hence it is not changed into a dummy
        rab-InformationList             RAB-InformationList                 OPTIONAL,
        interRAT-TargetCellDescription  InterRAT-TargetCellDescription
}

CellChangeOrderFromUTRAN-v590ext-IEs ::= SEQUENCE {
        geran-SystemInfoType                CHOICE  {
            sI                                  GERAN-SystemInformation,
            pSI                                 GERAN-SystemInformation
        }       OPTIONAL
}

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

CellChangeOrderFromUTRANFailure ::= CHOICE {
    r3                              SEQUENCE {
        cellChangeOrderFromUTRANFailure-r3
                                        CellChangeOrderFromUTRANFailure-r3-IEs,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            cellChangeOrderFromUTRANFailure-r3-add-ext      BIT STRING  OPTIONAL,
            nonCriticalExtensions           SEQUENCE {} OPTIONAL
        }   OPTIONAL
    },
    -- dummy is not used in this version of the specification and it
    -- should be ignored.
    dummy                           SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              SEQUENCE {}
    }
}

CellChangeOrderFromUTRANFailure-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        -- dummy is not used in this version of the specification, it should
        -- not be sent and if received it should be ignored.
        dummy                           IntegrityProtectionModeInfo         OPTIONAL,
        interRAT-ChangeFailureCause     InterRAT-ChangeFailureCause
}

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

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

CellUpdate ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        startList       STARTList,
        am-RLC-ErrorIndicationRb2-3or4      BOOLEAN,
        am-RLC-ErrorIndicationRb5orAbove    BOOLEAN,
        cellUpdateCause                 CellUpdateCause,
        -- TABULAR: RRC transaction identifier is nested in FailureCauseWithProtErrTrId
        failureCause                    FailureCauseWithProtErrTrId         OPTIONAL,
        rb-timer-indicator              Rb-timer-indicator,
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            cellUpdate-r3-add-ext           BIT STRING  OPTIONAL,
            v590NonCriticalExtensions   SEQUENCE {
                cellUpdate-v590ext  CellUpdate-v590ext,
                nonCriticalExtensions           SEQUENCE {} OPTIONAL
            }       OPTIONAL
        }   OPTIONAL
}

CellUpdate-v590ext ::= SEQUENCE {
    establishmentCause              EstablishmentCause  OPTIONAL
}
-- ***************************************************
--
-- CELL UPDATE CONFIRM
--
-- ***************************************************

CellUpdateConfirm ::= CHOICE {
    r3                              SEQUENCE {
        cellUpdateConfirm-r3            CellUpdateConfirm-r3-IEs,
        v3a0NonCriticalExtensions           SEQUENCE {
            cellUpdateConfirm-v3a0ext           CellUpdateConfirm-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                cellUpdateConfirm-r3-add-ext            BIT STRING  OPTIONAL,
                v4b0NonCriticalExtensions           SEQUENCE {
                    cellUpdateConfirm-v4b0ext           CellUpdateConfirm-v4b0ext-IEs,
                    v590NonCriticalExtenstions          SEQUENCE {
                        cellUpdateConfirm-v590ext           CellUpdateConfirm-v590ext-IEs,
                        nonCriticalExtensions               SEQUENCE {} OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                cellUpdateConfirm-r4            CellUpdateConfirm-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    cellUpdateConfirm-r4-add-ext        BIT STRING      OPTIONAL,
                    v590NonCriticalExtenstions          SEQUENCE {
                        cellUpdateConfirm-v590ext           CellUpdateConfirm-v590ext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    cellUpdateConfirm-r5            CellUpdateConfirm-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    cellUpdateConfirm-r5-add-ext        BIT STRING      OPTIONAL,
                    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-Re-establishIndicatorRb2-3or4       BOOLEAN,
        rlc-Re-establishIndicatorRb5orAbove     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,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       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 {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

CellUpdateConfirm-v3a0ext ::= SEQUENCE {
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
    new-DSCH-RNTI               DSCH-RNTI                               OPTIONAL

}

CellUpdateConfirm-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                          SSDT-UL                             OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List             OPTIONAL
}

CellUpdateConfirm-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

CellUpdateConfirm-r4-IEs ::= SEQUENCE {
```

```
	-- User equipment IEs
		integrityProtectionModeInfo		IntegrityProtectionModeInfo			OPTIONAL,
		cipheringModeInfo				CipheringModeInfo					OPTIONAL,
		activationTime					ActivationTime						OPTIONAL,
		new-U-RNTI						U-RNTI								OPTIONAL,
		new-C-RNTI						C-RNTI								OPTIONAL,
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
		new-DSCH-RNTI					DSCH-RNTI							OPTIONAL,
		rrc-StateIndicator				RRC-StateIndicator,
		utran-DRX-CycleLengthCoeff		UTRAN-DRX-CycleLengthCoefficient	OPTIONAL,
		rlc-Re-establishIndicatorRb2-3or4		BOOLEAN,
		rlc-Re-establishIndicatorRb5orAbove 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-r4		OPTIONAL,
		rb-InformationAffectedList		RB-InformationAffectedList			OPTIONAL,
		dl-CounterSynchronisationInfo	DL-CounterSynchronisationInfo		OPTIONAL,
	-- Transport channel IEs
		ul-CommonTransChInfo			UL-CommonTransChInfo-r4				OPTIONAL,
		ul-deletedTransChInfoList		UL-DeletedTransChInfoList			OPTIONAL,
		ul-AddReconfTransChInfoList		UL-AddReconfTransChInfoList			OPTIONAL,
		modeSpecificTransChInfo			CHOICE {
			fdd								SEQUENCE {
				cpch-SetID						CPCH-SetID						OPTIONAL,
				addReconfTransChDRAC-Info		DRAC-StaticInformationList		OPTIONAL
			},
			tdd								NULL
		},
		dl-CommonTransChInfo			DL-CommonTransChInfo-r4				OPTIONAL,
		dl-DeletedTransChInfoList		DL-DeletedTransChInfoList			OPTIONAL,
		dl-AddReconfTransChInfoList		DL-AddReconfTransChInfoList-r4		OPTIONAL,
	-- Physical channel IEs
		frequencyInfo					FrequencyInfo						OPTIONAL,
		maxAllowedUL-TX-Power			MaxAllowedUL-TX-Power				OPTIONAL,
		ul-ChannelRequirement			UL-ChannelRequirement-r4			OPTIONAL,
		modeSpecificPhysChInfo			CHOICE {
			fdd								SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
				~~dl-PDSCH-Information~~dummy			DL-PDSCH-Information		OPTIONAL

			},
			tdd								NULL
		},
		dl-CommonInformation			DL-CommonInformation-r4				OPTIONAL,
		dl-InformationPerRL-List		DL-InformationPerRL-List-r4			OPTIONAL
}

CellUpdateConfirm-r5-IEs ::= SEQUENCE {
	-- User equipment IEs
		integrityProtectionModeInfo		IntegrityProtectionModeInfo			OPTIONAL,
		cipheringModeInfo				CipheringModeInfo					OPTIONAL,
		activationTime					ActivationTime						OPTIONAL,
		new-U-RNTI						U-RNTI								OPTIONAL,
		new-C-RNTI						C-RNTI								OPTIONAL,
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
		new-DSCH-RNTI					DSCH-RNTI							OPTIONAL,
		new-H-RNTI						H-RNTI								OPTIONAL,
		rrc-StateIndicator				RRC-StateIndicator,
		utran-DRX-CycleLengthCoeff		UTRAN-DRX-CycleLengthCoefficient	OPTIONAL,
		rlc-Re-establishIndicatorRb2-3or4		BOOLEAN,
		rlc-Re-establishIndicatorRb5orAbove 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-r5		OPTIONAL,
		rb-InformationAffectedList		RB-InformationAffectedList-r5		OPTIONAL,
		dl-CounterSynchronisationInfo	DL-CounterSynchronisationInfo-r5	OPTIONAL,
	-- Transport channel IEs
```

```
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                ~~dl-PDSCH-Information~~dummy               DL-PDSCH-Information        OPTIONAL

            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}
```

**** Next modified section ****

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


HandoverToUTRANCommand ::= CHOICE {
    r3                              SEQUENCE {
        handoverToUTRANCommand-r3       HandoverToUTRANCommand-r3-IEs,
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              CHOICE {
        r4                              SEQUENCE {
            handoverToUTRANCommand-r4       HandoverToUTRANCommand-r4-IEs,
            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
        },
        criticalExtensions              CHOICE {
            r5                              SEQUENCE {
                handoverToUTRANCommand-r5       HandoverToUTRANCommand-r5-IEs,
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            },
            criticalExtensions              SEQUENCE {}
        }
    }
}

HandoverToUTRANCommand-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        -- dummy is not used in this version of specification, it should
        -- not be sent and if received it should be ignored.
        dummy                           ActivationTime                      OPTIONAL,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
    -- 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 {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                        dl-PDSCH-Informationdummy           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.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
                        defaultConfigIdentity           DefaultConfigIdentity
                    }
                },
                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-CommonInformationPost            DL-CommonInformationPost,
                        dl-InformationPerRL                 DL-InformationPerRL-PostTDD,
                        frequencyInfo                       FrequencyInfoTDD,
                        primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power
                    }

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

HandoverToUTRANCommand-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                srb-InformationSetupList        SRB-InformationSetupList,
                rab-InformationSetupList        RAB-InformationSetupList-r4         OPTIONAL,
                ul-CommonTransChInfo            UL-CommonTransChInfo-r4,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
                dl-CommonTransChInfo            DL-CommonTransChInfo-r4,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4,
                ul-DPCH-Info                    UL-DPCH-Info-r4,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                        dl-PDSCH-Informationdummy           DL-PDSCH-Information OPTIONAL,

                        cpch-SetInfo                        CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
                },
                dl-CommonInformation            DL-CommonInformation-r4,
                dl-InformationPerRL-List        DL-InformationPerRL-List-r4,
                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.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
                        defaultConfigIdentity           DefaultConfigIdentity-r4
                    }
                },
                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                             CHOICE {
                        tdd384                          SEQUENCE {
                            ul-DPCH-Info                    UL-DPCH-InfoPostTDD,
                            dl-InformationPerRL             DL-InformationPerRL-PostTDD,
                            frequencyInfo                   FrequencyInfoTDD,
                            primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power
                        },
                        tdd128                          SEQUENCE {
                            ul-DPCH-Info                    UL-DPCH-InfoPostTDD-LCR-r4,
                            dl-InformationPerRL             DL-InformationPerRL-PostTDD-LCR-r4,
                            frequencyInfo                   FrequencyInfoTDD,
                            primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power
                        }
                    }
                }
            }
        },
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power
}

HandoverToUTRANCommand-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                srb-InformationSetupList        SRB-InformationSetupList-r5,
                rab-InformationSetupList        RAB-InformationSetupList-r5         OPTIONAL,
                ul-CommonTransChInfo            UL-CommonTransChInfo-r4,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
                dl-CommonTransChInfo            DL-CommonTransChInfo-r4,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5,
                ul-DPCH-Info                    UL-DPCH-Info-r5,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                        dl-PDSCH-Informationdummy           DL-PDSCH-Information OPTIONAL,

                        cpch-SetInfo                    CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
                },
                dl-CommonInformation            DL-CommonInformation-r4,
                dl-InformationPerRL-List        DL-InformationPerRL-List-r5,
                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.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
                        defaultConfigIdentity           DefaultConfigIdentity-r5
                    }
```

```
				},
				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									CHOICE {
						tdd384								SEQUENCE {
							ul-DPCH-Info						UL-DPCH-InfoPostTDD,
							dl-InformationPerRL					DL-InformationPerRL-PostTDD,
							frequencyInfo						FrequencyInfoTDD,
							primaryCCPCH-TX-Power				PrimaryCCPCH-TX-Power
						},
						tdd128								SEQUENCE {
							ul-DPCH-Info						UL-DPCH-InfoPostTDD-LCR-r4,
							dl-InformationPerRL					DL-InformationPerRL-PostTDD-LCR-r4,
							frequencyInfo						FrequencyInfoTDD,
							primaryCCPCH-TX-Power				PrimaryCCPCH-TX-Power
						}
					}
				}
			}
		},
	-- Physical channel IEs
		maxAllowedUL-TX-Power			MaxAllowedUL-TX-Power
}
```

**** Next modified section ****

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

PhysicalChannelReconfiguration ::= CHOICE {
	r3								SEQUENCE {
		physicalChannelReconfiguration-r3
										PhysicalChannelReconfiguration-r3-IEs,
		v3a0NonCriticalExtensions			SEQUENCE {
			physicalChannelReconfiguration-v3a0ext		PhysicalChannelReconfiguration-v3a0ext,
			laterNonCriticalExtensions		SEQUENCE {
				-- Container for additional R99 extensions
				physicalChannelReconfiguration-r3-add-ext			BIT STRING		OPTIONAL,
				v4b0NonCriticalExtenstions			SEQUENCE {
					physicalChannelReconfiguration-v4b0ext
											PhysicalChannelReconfiguration-v4b0ext-IEs,
					v590NonCriticalExtenstions			SEQUENCE {
						physicalChannelReconfiguration-v590ext
												PhysicalChannelReconfiguration-v590ext-IEs,
						nonCriticalExtensions					SEQUENCE {} OPTIONAL
					}	OPTIONAL
				}	OPTIONAL
			}	OPTIONAL
		}	OPTIONAL
	},
	later-than-r3					SEQUENCE {
		rrc-TransactionIdentifier		RRC-TransactionIdentifier,
			criticalExtensions				CHOICE {
			r4								SEQUENCE {
				physicalChannelReconfiguration-r4
											PhysicalChannelReconfiguration-r4-IEs,
				v4d0NonCriticalExtensions			SEQUENCE {
					-- Container for adding non critical extensions after freezing REL-5
					physicalChannelReconfiguration-r4-add-ext		BIT STRING		OPTIONAL,
					v590NonCriticalExtenstions			SEQUENCE {
						physicalChannelReconfiguration-v590ext
											PhysicalChannelReconfiguration-v590ext-IEs,
						nonCriticalExtensions			SEQUENCE {}		OPTIONAL
					}	OPTIONAL
				}	OPTIONAL
			},
			criticalExtensions				CHOICE {
				r5									SEQUENCE {
					physicalChannelReconfiguration-r5
```

```
                                                    PhysicalChannelReconfiguration-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    physicalChannelReconfiguration-r5-add-ext       BIT STRING      OPTIONAL,
                    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
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID     OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                ~~dl-PDSCH-Information~~dummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL
}

PhysicalChannelReconfiguration-v3a0ext ::= SEQUENCE {
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
    new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL
}

PhysicalChannelReconfiguration-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                          SSDT-UL                         OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List         OPTIONAL
}

PhysicalChannelReconfiguration-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

PhysicalChannelReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
```

```
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID-r4 contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID-r4  OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

PhysicalChannelReconfiguration-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID-r5 contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement           UL-ChannelRequirementWithCPCH-SetID-r5  OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}

**** Next modified section ****

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

RadioBearerReconfiguration ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerReconfiguration-r3   RadioBearerReconfiguration-r3-IEs,
        -- Prefix "v3ao" is used (in one instance) to keep alignment with R99
        v3aoNonCriticalExtensions       SEQUENCE {
```

```
            radioBearerReconfiguration-v3a0ext  RadioBearerReconfiguration-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                radioBearerReconfiguration-r3-add-ext       BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions           SEQUENCE {
                    radioBearerReconfiguration-v4b0ext
                                                    RadioBearerReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtensions           SEQUENCE {
                        radioBearerReconfiguration-v590ext
                                                        RadioBearerReconfiguration-v590ext-IEs,
                        nonCriticalExtensions               SEQUENCE {} OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                radioBearerReconfiguration-r4   RadioBearerReconfiguration-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    radioBearerReconfiguration-r4-add-ext       BIT STRING      OPTIONAL,
                    v590NonCriticalExtensions           SEQUENCE {
                        radioBearerReconfiguration-v590ext
                                                    RadioBearerReconfiguration-v590ext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                                  SEQUENCE {
                    radioBearerReconfiguration-r5       RadioBearerReconfiguration-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    radioBearerReconfiguration-r5-add-ext       BIT STRING      OPTIONAL,
                    nonCriticalExtensions               SEQUENCE {}     OPTIONAL
                },
                criticalExtensions              SEQUENCE {}
            }
        }
    }
}

RadioBearerReconfiguration-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        -- NOTE: IE rb-InformationReconfigList should be optional in later versions
        -- of this message
        rb-InformationReconfigList      RB-InformationReconfigList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfo2List        OPTIONAL,
```

```
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        -- NOTE: IE dl-InformationPerRL-List should be optional in later versions
        -- of this message
        dl-InformationPerRL-List        DL-InformationPerRL-List
}

RadioBearerReconfiguration-v3a0ext ::= SEQUENCE {
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
    new-DSCH-RNTI                   DSCH-RNTI                               OPTIONAL
}

RadioBearerReconfiguration-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                          SSDT-UL                             OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List                  CellIdentity-PerRL-List             OPTIONAL
}

RadioBearerReconfiguration-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

RadioBearerReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList-r4       OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
```

```
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                ~~dl-PDSCH-Information~~dummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

RadioBearerReconfiguration-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
            -- Radio bearer IEs
                rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
                rb-InformationReconfigList      RB-InformationReconfigList-r5       OPTIONAL,
                rb-InformationAffectedList      RB-InformationAffectedList-r5       OPTIONAL,
                rb-PDCPContextRelocationList    RB-PDCPContextRelocationList        OPTIONAL,
            -- Transport channel IEs
                ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
                ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
                modeSpecificTransChInfo         CHOICE {
                    fdd                             SEQUENCE {
                        cpch-SetID                      CPCH-SetID                  OPTIONAL,
                        addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
                    },
                    tdd                             NULL
                }                                                                   OPTIONAL,
                dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
                dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL
            },
            preconfiguration                SEQUENCE {
            -- All IEs that include an FDD/TDD choice are split in two IEs for this message,
            -- one for the FDD only elements and one for the TDD only elements, so that one
            -- FDD/TDD choice in this level is sufficient.
                preConfigMode                   CHOICE {
                    predefinedConfigIdentity        PredefinedConfigIdentity,
                    defaultConfig                   SEQUENCE {
                        defaultConfigMode               DefaultConfigMode,
                        defaultConfigIdentity           DefaultConfigIdentity-r5
                    }
                }
            }
        },
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                ~~dl-PDSCH-Information~~dummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                             NULL
```

```
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation           DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List       DL-InformationPerRL-List-r5         OPTIONAL
}
```

**** Next modified section ****

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

RadioBearerRelease ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerRelease-r3           RadioBearerRelease-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            radioBearerRelease-v3a0ext      RadioBearerRelease-v3a0ext,
        laterNonCriticalExtensions      SEQUENCE {
            -- Container for additional R99 extensions
            radioBearerRelease-r3-add-ext       BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    radioBearerRelease-v4b0ext      RadioBearerRelease-v4b0ext-IEs,
                    v590NonCriticalExtensions       SEQUENCE {
                        radioBearerRelease-v590ext      RadioBearerRelease-v590ext-IEs,
                        nonCriticalExtensions           SEQUENCE {} OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                radioBearerRelease-r4           RadioBearerRelease-r4-IEs,
                v4d0NonCriticalExtensions       SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    radioBearerRelease-r4-add-ext       BIT STRING      OPTIONAL,
                    v590NonCriticalExtensions       SEQUENCE {
                        radioBearerRelease-v590ext      RadioBearerRelease-v590ext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    radioBearerRelease-r5           RadioBearerRelease-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    radioBearerRelease-r5-add-ext       BIT STRING      OPTIONAL,
                    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,
```

```
		dl-CounterSynchronisationInfo	DL-CounterSynchronisationInfo		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 {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
				~~dl-PDSCH-Information~~dummy			DL-PDSCH-Information		OPTIONAL

			},
			tdd							NULL
		},
		dl-CommonInformation			DL-CommonInformation				OPTIONAL,
		dl-InformationPerRL-List		DL-InformationPerRL-List			OPTIONAL
}

RadioBearerRelease-v3a0ext ::= SEQUENCE {
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
	new-DSCH-RNTI					DSCH-RNTI							OPTIONAL
}

RadioBearerRelease-v4b0ext-IEs ::= SEQUENCE {
	-- Physical channel IEs
		-- IE ssdt-UL extends SSDT-Information, which is included in
		-- DL-CommonInformation. FDD only.
		ssdt-UL-r4						SSDT-UL								OPTIONAL,
		-- The order of the RLs in IE cell-id-PerRL-List is the same as
		--  in IE DL-InformationPerRL-List included in this message
		cell-id-PerRL-List				CellIdentity-PerRL-List				OPTIONAL
}

RadioBearerRelease-v590ext-IEs ::= SEQUENCE {
	-- Physical channel IEs
		dl-TPC-PowerOffsetPerRL-List	DL-TPC-PowerOffsetPerRL-List		OPTIONAL
}

RadioBearerRelease-r4-IEs ::= SEQUENCE {
	-- User equipment IEs
		integrityProtectionModeInfo		IntegrityProtectionModeInfo			OPTIONAL,
		cipheringModeInfo				CipheringModeInfo					OPTIONAL,
		activationTime					ActivationTime						OPTIONAL,
		new-U-RNTI						U-RNTI								OPTIONAL,
		new-C-RNTI						C-RNTI								OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
		new-DSCH-RNTI					DSCH-RNTI							OPTIONAL,
		rrc-StateIndicator				RRC-StateIndicator,
		utran-DRX-CycleLengthCoeff		UTRAN-DRX-CycleLengthCoefficient	OPTIONAL,
	-- Core network IEs
		cn-InformationInfo				CN-InformationInfo					OPTIONAL,
		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,
		dl-CounterSynchronisationInfo	DL-CounterSynchronisationInfo		OPTIONAL,
	-- Transport channel IEs
		ul-CommonTransChInfo			UL-CommonTransChInfo-r4				OPTIONAL,
		ul-deletedTransChInfoList		UL-DeletedTransChInfoList			OPTIONAL,
```

```
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                ~~dl-PDSCH-Information~~dummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                         NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

RadioBearerRelease-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
        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-r5       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                ~~dl-PDSCH-Information~~dummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                         NULL
        },
```

```
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}
```

**** Next modified section ****

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

RadioBearerSetup ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerSetup-r3             RadioBearerSetup-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            radioBearerSetup-v3a0ext        RadioBearerSetup-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                radioBearerSetup-r3-add-ext     BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    radioBearerSetup-v4b0ext        RadioBearerSetup-v4b0ext-IEs,
                    v590NonCriticalExtensions       SEQUENCE {
                        radioBearerSetup-v590ext        RadioBearerSetup-v590ext-IEs,
                        nonCriticalExtensions           SEQUENCE {} OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                radioBearerSetup-r4             RadioBearerSetup-r4-IEs,
                v4d0NonCriticalExtensions       SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    radioBearerSetup-r4-add-ext     BIT STRING      OPTIONAL,
                    v590NonCriticalExtensions       SEQUENCE {
                        radioBearerSetup-v590ext        RadioBearerSetup-v590ext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    radioBearerSetup-r5             RadioBearerSetup-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    radioBearerSetup-r5-add-ext     BIT STRING      OPTIONAL,
                    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,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       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 {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
				~~dl-PDSCH-Information~~dummy		DL-PDSCH-Information		OPTIONAL

			},
			tdd								NULL
		},
		dl-CommonInformation			DL-CommonInformation				OPTIONAL,
		dl-InformationPerRL-List		DL-InformationPerRL-List			OPTIONAL
}

RadioBearerSetup-v3a0ext ::= SEQUENCE {
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
	new-DSCH-RNTI					DSCH-RNTI								OPTIONAL
}

RadioBearerSetup-v4b0ext-IEs ::= SEQUENCE {
	-- Physical channel IEs
		-- ssdt-UL extends SSDT-Information, which is included in
		-- DL-CommonInformation. FDD only.
		ssdt-UL-r4						SSDT-UL								OPTIONAL,
		-- The order of the RLs in IE cell-id-PerRL-List is the same as
		-- in IE DL-InformationPerRL-List included in this message
		cell-id-PerRL-List				CellIdentity-PerRL-List				OPTIONAL
}

RadioBearerSetup-v590ext-IEs ::= SEQUENCE {
	-- Physical channel IEs
		dl-TPC-PowerOffsetPerRL-List	DL-TPC-PowerOffsetPerRL-List		OPTIONAL
}

RadioBearerSetup-r4-IEs ::= SEQUENCE {
	-- User equipment IEs
		integrityProtectionModeInfo		IntegrityProtectionModeInfo			OPTIONAL,
		cipheringModeInfo				CipheringModeInfo					OPTIONAL,
		activationTime					ActivationTime						OPTIONAL,
		new-U-RNTI						U-RNTI								OPTIONAL,
		new-C-RNTI						C-RNTI								OPTIONAL,
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
		new-DSCH-RNTI					DSCH-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-r4			OPTIONAL,
		rb-InformationAffectedList		RB-InformationAffectedList			OPTIONAL,
		dl-CounterSynchronisationInfo	DL-CounterSynchronisationInfo		OPTIONAL,
	-- Transport channel IEs
		ul-CommonTransChInfo			UL-CommonTransChInfo-r4				OPTIONAL,
		ul-deletedTransChInfoList		UL-DeletedTransChInfoList			OPTIONAL,
		ul-AddReconfTransChInfoList		UL-AddReconfTransChInfoList			OPTIONAL,
		modeSpecificTransChInfo			CHOICE {
```

```
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

RadioBearerSetup-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-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-r5         OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList-r5         OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList-r5       OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                dl-PDSCH-Informationdummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
```

```
}
```

**** Next modified section ****

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

TransportChannelReconfiguration ::= CHOICE {
    r3                              SEQUENCE {
        transportChannelReconfiguration-r3
                                        TransportChannelReconfiguration-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            transportChannelReconfiguration-v3a0ext
                                            TransportChannelReconfiguration-v3a0ext,
            laterNonCriticalExtensions          SEQUENCE {
                -- Container for additional R99 extensions
                transportChannelReconfiguration-r3-add-ext      BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    transportChannelReconfiguration-v4b0ext
                                                    TransportChannelReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtensions       SEQUENCE {
                        transportChannelReconfiguration-v590ext
                                                        TransportChannelReconfiguration-v590ext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                transportChannelReconfiguration-r4
                                                TransportChannelReconfiguration-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    transportChannelReconfiguration-r4-add-ext      BIT STRING      OPTIONAL,
                    v590NonCriticalExtensions       SEQUENCE {
                        transportChannelReconfiguration-v590ext
                                                    TransportChannelReconfiguration-v590ext-IEs,
                        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    transportChannelReconfiguration-r5
                                                    TransportChannelReconfiguration-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    transportChannelReconfiguration-r5-add-ext      BIT STRING      OPTIONAL,
                    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
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       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 {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
				dl-PDSCH-Informationdummy				DL-PDSCH-Information		OPTIONAL

			},
			tdd								NULL
		},
		dl-CommonInformation				DL-CommonInformation				OPTIONAL,
		dl-InformationPerRL-List			DL-InformationPerRL-List			OPTIONAL
}

TransportChannelReconfiguration-v3a0ext ::= SEQUENCE {
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
	new-DSCH-RNTI					DSCH-RNTI								OPTIONAL
}

TransportChannelReconfiguration-v4b0ext-IEs ::= SEQUENCE {
	-- Physical channel IEs
		-- ssdt-UL extends SSDT-Information, which is included in
		-- DL-CommonInformation. FDD only.
		ssdt-UL-r4								SSDT-UL							OPTIONAL,
		-- The order of the RLs in IE cell-id-PerRL-List is the same as
		-- in IE DL-InformationPerRL-List included in this message
		cell-id-PerRL-List						CellIdentity-PerRL-List			OPTIONAL
}

TransportChannelReconfiguration-v590ext-IEs ::= SEQUENCE {
	-- Physical channel IEs
		dl-TPC-PowerOffsetPerRL-List		DL-TPC-PowerOffsetPerRL-List		OPTIONAL
}

TransportChannelReconfiguration-r4-IEs ::= SEQUENCE {
	-- User equipment IEs
		integrityProtectionModeInfo			IntegrityProtectionModeInfo			OPTIONAL,
		cipheringModeInfo					CipheringModeInfo					OPTIONAL,
		activationTime						ActivationTime						OPTIONAL,
		new-U-RNTI							U-RNTI								OPTIONAL,
		new-C-RNTI							C-RNTI								OPTIONAL,
-- The IE "new-DSCH-RNTI" should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
		new-DSCH-RNTI						DSCH-RNTI							OPTIONAL,
		rrc-StateIndicator					RRC-StateIndicator,
		utran-DRX-CycleLengthCoeff			UTRAN-DRX-CycleLengthCoefficient	OPTIONAL,
	-- Core network IEs
		cn-InformationInfo					CN-InformationInfo					OPTIONAL,
	-- UTRAN mobility IEs
		ura-Identity						URA-Identity						OPTIONAL,
	-- Radio bearer IEs
		dl-CounterSynchronisationInfo		DL-CounterSynchronisationInfo		OPTIONAL,
	-- Transport channel IEs
		ul-CommonTransChInfo				UL-CommonTransChInfo-r4				OPTIONAL,
		ul-AddReconfTransChInfoList			UL-AddReconfTransChInfoList			OPTIONAL,
		modeSpecificTransChInfo				CHOICE {
			fdd									SEQUENCE {
				cpch-SetID							CPCH-SetID						OPTIONAL,
				addReconfTransChDRAC-Info			DRAC-StaticInformationList		OPTIONAL
			},
			tdd									NULL
		}																		OPTIONAL,
```

```
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r4            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                ~~dl-PDSCH-Information~~dummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                         NULL
        },
        dl-CommonInformation            DL-CommonInformation-r4             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r4         OPTIONAL
}

TransportChannelReconfiguration-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
-- The IE “new-DSCH-RNTI” should not be included in FDD mode, and if received the UE behaviour
-- is unspecified
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
                ~~dl-PDSCH-Information~~dummy           DL-PDSCH-Information        OPTIONAL

            },
            tdd                         NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5             OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5         OPTIONAL
}
```

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,
    maxDPDCH-UL,
    maxDRACclasses,
    maxFACHPCH,
    maxFreq,
    maxFreqBandsFDD,
    maxFreqBandsTDD,
    maxFreqBandsGSM,
    maxGERAN-SI,
    maxHProcesses,
    maxHSDSCHTBIndex,
    maxHSDSCHTBIndex-tdd384,
    maxHSSCCHs,
    maxInterSysMessages,
    maxLoCHperRLC,
    maxMAC-d-PDUsizes,
    maxMeasEvent,
    maxMeasIntervals,
    maxMeasParEvent,
    maxNumCDMA2000Freqs,
    maxNumFDDFreqs,
    maxNumGSMFreqRanges,
    maxNumTDDFreqs,
    maxOtherRAT,
    maxOtherRAT-16,
    maxPage1,
    maxPCPCH-APsig,
    maxPCPCH-APsubCh,
    maxPCPCH-CDsig,
    maxPCPCH-CDsubCh,
    maxPCPCH-SF,
    maxPCPCHs,
    maxPDCPAlgoType,
    maxPDSCH,
    maxPDSCH-TFCIgroups,
    maxPRACH,
    maxPRACH-FPACH,
    maxPredefConfig,
    maxPUSCH,
    maxQueueIDs,
    maxRABsetup,
    maxRAT,
    maxRB,
    maxRBallRABs,
    maxRBMuxOptions,
    maxRBperRAB,
    maxReportedGSMCells,
    maxSRBsetup,
    maxRL,
    maxRL-1,
    maxROHC-PacketSizes-r4,
    maxROHC-Profile-r4,
    maxSCCPCH,
    maxSat,
    maxSIB,
    maxSIB-FACH,
    maxSystemCapability,
    maxTF,
    maxTF-CPCH,
    maxTFC,
```

```
    maxTFCsub,
    maxTFCI-2-Combs,
    maxTGPS,
    maxTrCH,
    maxTrCHpreconf,
    maxTS,
    maxTS-1,
    maxTS-2,
    maxTS-LCR,
    maxTS-LCR-1,
    maxURA,
    maxURNTI-Group
FROM Constant-definitions;

Ansi-41-IDNNS ::=                       BIT STRING (SIZE (14))

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

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

CN-DomainInformationFull ::=        SEQUENCE {
    cn-DomainIdentity                   CN-DomainIdentity,
    cn-DomainSpecificNAS-Info           NAS-SystemInformationGSM-MAP,
    cn-DRX-CycleLengthCoeff             CN-DRX-CycleLengthCoefficient
}

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

CN-DomainInformationListFull ::=    SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        CN-DomainInformationFull

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
}

CN-InformationInfoFull ::=          SEQUENCE {
    plmn-Identity                       PLMN-Identity                       OPTIONAL,
    cn-CommonGSM-MAP-NAS-SysInfo        NAS-SystemInformationGSM-MAP        OPTIONAL,
    cn-DomainInformationListFull        CN-DomainInformationListFull        OPTIONAL
}

Digit ::=                           INTEGER (0..9)

Gsm-map-IDNNS ::=                       SEQUENCE {
    routingbasis                            CHOICE {
        localPTMSI                              SEQUENCE {
            routingparameter                        RoutingParameter
        },
        tMSIofsamePLMN                          SEQUENCE {
            routingparameter                        RoutingParameter
        },
        tMSIofdifferentPLMN                     SEQUENCE {
            routingparameter                        RoutingParameter
        },
        iMSIresponsetopaging                    SEQUENCE {
            routingparameter                        RoutingParameter
        },
        iMSIcauseUEinitiatedEvent               SEQUENCE {
```

```
            routingparameter                                RoutingParameter
        },
        iMEI                                            SEQUENCE {
            routingparameter                                RoutingParameter
        },
        spare2                                          SEQUENCE {
            routingparameter                                RoutingParameter
        },
        spare1                                          SEQUENCE {
            routingparameter                                RoutingParameter
        }
    },
    -- dummy is not used in this version of the specification and
    -- it should be ignored by the receiver.
    dummy                                       BOOLEAN
}

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

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

IMSI-GSM-MAP ::=                    SEQUENCE (SIZE (6..21)) OF
                                        Digit

IntraDomainNasNodeSelector ::=                  SEQUENCE {
    version                                         CHOICE {
        release99                                       SEQUENCE {
            cn-Type                                         CHOICE {
                gsm-Map-IDNNS                                   Gsm-map-IDNNS,
                ansi-41-IDNNS                                   Ansi-41-IDNNS
            }
        },
        later                                           SEQUENCE {
            futurecoding                                    BIT STRING (SIZE (15))
        }
    }
}

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
    },
    spare                           NULL
}

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))

RoutingParameter ::=                        BIT STRING (SIZE (10))

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,
    cellReservationExtension            ReservedIndicator,
    -- NOTE: IE accessClassBarredList should not be included if the IE CellAccessRestriction
    -- is included in the IE SysInfoType4
    accessClassBarredList               AccessClassBarredList               OPTIONAL
}

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

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

CellIdentity-PerRL-List ::=         SEQUENCE (SIZE (1..maxRL)) OF CellIdentity

CellSelectReselectInfoSIB-3-4 ::=   SEQUENCE {
    mappingInfo                         MappingInfo                         OPTIONAL,
    cellSelectQualityMeasure            CHOICE {
        cpich-Ec-N0                         SEQUENCE {
            -- Default value for q-HYST-2-S is q-HYST-1-S
            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
}

Mapping-LCR-r4 ::=					SEQUENCE {
	mappingFunctionParameterList		MappingFunctionParameterList
}

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

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

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

-- In MappingInfo list, mapping for FDD and 3.84Mcps TDD is defined.
-- For 1.28Mcps TDD, Mapping-LCR-r4 is used instead.
MappingInfo ::=						SEQUENCE (SIZE (1..maxRAT)) OF
										Mapping

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

Q-Hyst-S-Fine ::= INTEGER (0..40)

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

-- Actual value S-SearchRXLEV = (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)

-- Actual value T-Reselection-S-Fine = IE value * 0.2
T-Reselection-S-Fine ::=            INTEGER (0..31)

-- Actual value ScalingFactor = IE value * 0.25
TreselectionScalingFactor ::=       INTEGER (4..19)

-- For UpperLimit, 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)
--
-- ***************************************************

AccessStratumReleaseIndicator ::=   ENUMERATED {
                                        rel-4, rel-5, spare14, spare13,
                                        spare12, spare11, spare10, spare9, spare8,
                                        spare7, spare6, spare5, spare4, spare3,
                                        spare2, spare1 }

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

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

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

CapabilityUpdateRequirement ::=     SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement  BOOLEAN,
    -- ue-RadioCapabilityTDDUpdateRequirement is for 3.84Mcps TDD update requirement
    ue-RadioCapabilityTDDUpdateRequirement  BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList      OPTIONAL
}

CapabilityUpdateRequirement-r4-ext ::= SEQUENCE {
    ue-RadioCapabilityUpdateRequirement-TDD128  BOOLEAN
}

CapabilityUpdateRequirement-r4 ::=  SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement-FDD  BOOLEAN,
```

```
    ue-RadioCapabilityTDDUpdateRequirement-TDD384   BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD128   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,
    dummy                           NULL
}

CipheringModeInfo ::=               SEQUENCE {
    -- TABULAR: The ciphering algorithm is included in the CipheringModeCommand.
    cipheringModeCommand                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,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

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

CompressedModeMeasCapability-LCR-r4 ::= SEQUENCE {
    tdd128-Measurements                     BOOLEAN                         OPTIONAL
}

CompressedModeMeasCapabFDDList ::=  SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                        CompressedModeMeasCapabFDD

CompressedModeMeasCapabFDD ::=      SEQUENCE {
    radioFrequencyBandFDD               RadioFrequencyBandFDD   OPTIONAL,
    dl-MeasurementsFDD                  BOOLEAN,
    ul-MeasurementsFDD                  BOOLEAN
}

CompressedModeMeasCapabTDDList ::=  SEQUENCE (SIZE (1..maxFreqBandsTDD)) OF
                                        CompressedModeMeasCapabTDD

CompressedModeMeasCapabTDD ::=      SEQUENCE {
    radioFrequencyBandTDD               RadioFrequencyBandTDD,
    dl-MeasurementsTDD                  BOOLEAN,
    ul-MeasurementsTDD                  BOOLEAN
}
```

```
CompressedModeMeasCapabGSMList ::=  SEQUENCE (SIZE (1..maxFreqBandsGSM)) OF
                                        CompressedModeMeasCapabGSM

CompressedModeMeasCapabGSM ::=      SEQUENCE {
    radioFrequencyBandGSM               RadioFrequencyBandGSM,
    dl-MeasurementsGSM                  BOOLEAN,
    ul-MeasurementsGSM                  BOOLEAN
}

CompressedModeMeasCapabMC ::=       SEQUENCE {
    dl-MeasurementsMC                   BOOLEAN,
    ul-MeasurementsMC                   BOOLEAN
}

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

DL-CapabilityWithSimultaneousHS-DSCHConfig ::=  ENUMERATED{kbps32, kbps64, kbps128, kbps384}

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

DL-PhysChCapabilityFDD ::=          SEQUENCE {
-- The IE "maxNoDPCH-PDSCH-Codes" only gives information on the maximum number of DPCH Codes.
    maxNoDPCH-PDSCH-Codes               INTEGER (1..8),
    maxNoPhysChBitsReceived             MaxNoPhysChBitsReceived,
    supportForSF-512                    BOOLEAN,
-- The RNC should ignore this IE on reception.
    ~~supportOfPDSCH~~dummy                     BOOLEAN,
    simultaneousSCCPCH-DPCH-Reception   SimultaneousSCCPCH-DPCH-Reception
}

DL-PhysChCapabilityFDD-v380ext ::=          SEQUENCE {
    supportOfDedicatedPilotsForChEstimation     SupportOfDedicatedPilotsForChEstimation     OPTIONAL
}

SupportOfDedicatedPilotsForChEstimation ::=         ENUMERATED { true }

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

DL-PhysChCapabilityTDD-LCR-r4 ::=   SEQUENCE {
    maxTS-PerSubFrame                   MaxTS-PerSubFrame-r4,
    maxPhysChPerFrame                   MaxPhysChPerSubFrame-r4,
    minimumSF                           MinimumSF-DL,
    supportOfPDSCH                      BOOLEAN,
    maxPhysChPerTS                      MaxPhysChPerTS,
    supportOf8PSK                       BOOLEAN
}

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

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

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

```
DSCH-RNTI ::=                       BIT STRING (SIZE (16))

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,
                                        originatingHighPrioritySignalling,
                                        originatingLowPrioritySignalling,
                                        callRe-establishment,
                                        terminatingHighPrioritySignalling,
                                        terminatingLowPrioritySignalling,
                                        terminatingCauseUnknown,
                                        spare12,
                                        spare11,
                                        spare10,
                                        spare9,
                                        spare8,
                                        spare7,
                                        spare6,
                                        spare5,
                                        spare4,
                                        spare3,
                                        spare2,
                                        spare1 }

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

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

GroupIdentityWithReleaseInformation ::=     SEQUENCE {
        rrc-ConnectionReleaseInformation        RRC-ConnectionReleaseInformation,
        groupReleaseInformation                 GroupReleaseInformation
    }

GroupReleaseInformation ::=         SEQUENCE {
    uRNTI-Group                         U-RNTI-Group
}

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

```
H-RNTI ::=                          BIT STRING (SIZE (16))

HSDSCH-physical-layer-category ::=      INTEGER (1..64)

UESpecificBehaviourInformation1idle ::= BIT STRING (SIZE (4))

UESpecificBehaviourInformation1interRAT ::= BIT STRING (SIZE (8))


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 (1..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 {
    -- TABULAR: DL integrity protection activation info and Integrity
    -- protection intialisation number have been nested inside
    -- IntegrityProtectionModeCommand.
    integrityProtectionModeCommand      IntegrityProtectionModeCommand,
    integrityProtectionAlgorithm        IntegrityProtectionAlgorithm        OPTIONAL
}

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

-- dummy is not used in this version of the specification, it should
-- not be sent and if received it should be ignored.
MaxHcContextSpace ::=                   ENUMERATED  {
                                            dummy, by1024, by2048, by4096,
                                            by8192 }

MaxHcContextSpace-r5-ext ::=            ENUMERATED  {
                                            by16384, by32768, by65536, by131072 }


MaxROHC-ContextSessions-r4 ::=      ENUMERATED  {
                                            s2, s4, s8, s12, s16, s24, s32, s48,
                                            s64, s128, s256, s512, s1024, s16384 }

MaximumAM-EntityNumberRLC-Cap ::=   ENUMERATED {
                                        dummy, am4, am5, am6,
```

```
                                        am8, am16, am30 }

-- Actual value MaximumBitRate = 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 {
                                        dummy, 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-DL ::=               ENUMERATED {
                                        tfc16, tfc32, tfc48, tfc64, tfc96,
                                        tfc128, tfc256, tfc512, tfc1024 }

MaxNumberOfTFC-UL ::=               ENUMERATED {
                                        dummy1, dummy2, tfc16, tfc32, tfc48, tfc64,
                                        tfc96, tfc128, tfc256, tfc512, tfc1024 }

-- the values 1 …4 for MaxPhysChPerFrame are not used in this version of the protocol
MaxPhysChPerFrame ::=               INTEGER (1..224)

MaxPhysChPerSubFrame-r4 ::=         INTEGER (1..96)

MaxPhysChPerTimeslot ::=            ENUMERATED {
                                        ts1, ts2 }

-- the values 1 …4 for MaxPhysChPerTS are not used in this version of the protocol
MaxPhysChPerTS ::=                  INTEGER (1..16)

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

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

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

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

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

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

MaxTS-PerSubFrame-r4 ::=            INTEGER (1..6)

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

MeasurementCapabilityExt ::=        SEQUENCE{
    compressedModeMeasCapabFDDList      CompressedModeMeasCapabFDDList,
```

```
    compressedModeMeasCapabTDDList      CompressedModeMeasCapabTDDList  OPTIONAL,
    compressedModeMeasCapabGSMList      CompressedModeMeasCapabGSMList  OPTIONAL,
    compressedModeMeasCapabMC           CompressedModeMeasCapabMC       OPTIONAL
}

MeasurementCapability-r4-ext ::=    SEQUENCE {
    downlinkCompressedMode-LCR          CompressedModeMeasCapability-LCR-r4,
    uplinkCompressedMode-LCR            CompressedModeMeasCapability-LCR-r4
}

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

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

MinimumSF-UL ::=                    ENUMERATED {
                                        sf1, sf2, sf4, sf8, dummy }

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

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

MultiModeRAT-Capability-v590ext ::= SEQUENCE {
    supportOfUTRAN-ToGERAN-NACC         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-312ext ::=                        ENUMERATED {
                                        s2, s4, s10, s20 }

N-312-r5 ::=                            ENUMERATED {
                                        s1, s2, s4, s10, s20,
                                        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-315ext ::=                        ENUMERATED {
                                        s2, s4, s10, s20 }

N-315-r5 ::=                            ENUMERATED {
                                        s1, s2, s4, s10, s20,
                                        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,
                                        terminatingHighPrioritySignalling,
                                        terminatingLowPrioritySignalling,
                                        terminatingCauseUnknown,
                                        spare
 }

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
    }
}

PagingRecord2-r5 ::=                CHOICE {
    utran-SingleUE-Identity             SEQUENCE {
        u-RNTI                              U-RNTI,
        cn-OriginatedPage-connectedMode-UE  SEQUENCE {
            pagingCause                         PagingCause,
            cn-DomainIdentity                   CN-DomainIdentity,
            pagingRecordTypeID                  PagingRecordTypeID
        }                                                                   OPTIONAL,
        rrc-ConnectionReleaseInformation        RRC-ConnectionReleaseInformation
    },
    utran-GroupIdentity                     SEQUENCE ( SIZE (1 .. maxURNTI-Group) ) OF
                                                GroupIdentityWithReleaseInformation
}

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

PagingRecord2List-r5 ::=            SEQUENCE (SIZE (1..maxPage1)) OF
                                        PagingRecord2-r5

PDCP-Capability ::=                 SEQUENCE {
    losslessSRNS-RelocationSupport      BOOLEAN,
    -- If present, the "maxHcContextSpace" in the IE "PDCP-Capability-r5-ext" overrides the
    -- "supported" value in this IE. The value in this IE may be used by a pre-REL-5 UTRAN.
    supportForRfc2507                   CHOICE {
        notSupported                        NULL,
        supported                           MaxHcContextSpace
    }
}

PDCP-Capability-r4-ext ::=          SEQUENCE {
    supportForRfc3095               CHOICE {
        notSupported                        NULL,
```

```
        supported                           SEQUENCE {
            maxROHC-ContextSessions             MaxROHC-ContextSessions-r4  DEFAULT s16,
            reverseCompressionDepth             INTEGER (0..65535)          DEFAULT 0
        }
    }
}

PDCP-Capability-r5-ext ::=          SEQUENCE {
    supportForRfc3095ContextRelocation      BOOLEAN,
    maxHcContextSpace                       MaxHcContextSpace-r5-ext    OPTIONAL
}

PDCP-Capability-r5-ext2 ::=         SEQUENCE {
    losslessDLRLC-PDUSizeChange         ENUMERATED { true }                 OPTIONAL
}

PhysicalChannelCapability ::=       SEQUENCE {
        fddPhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityFDD,
            uplinkPhysChCapability              UL-PhysChCapabilityFDD
        }                                           OPTIONAL,
        -- tddPhysChCapability describes the 3.84Mcps TDD physical channel capability
        tddPhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD
        }                                           OPTIONAL
}

-- PhysicalChannelCapability-LCR-r4 describes the 1.28Mcps TDD physical channel capability
PhysicalChannelCapability-LCR-r4 ::=        SEQUENCE {
        tdd128-PhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD-LCR-r4,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD-LCR-r4
        }                                           OPTIONAL
}

-- PhysicalChannelCapability-hspdsch-r5 describes the HS-PDSCH physical channel capability
PhysicalChannelCapability-hspdsch-r5 ::=        SEQUENCE {
    fdd-hspdsch                                     CHOICE {
        supported                                       SEQUENCE {
            hsdsch-physical-layer-category                  HSDSCH-physical-layer-category,
            supportOfDedicatedPilotsForChannelEstimationOfHSDSCH    BOOLEAN,
            -- simultaneousSCCPCH-DPCH-HSDSCH-Reception shall be true only if the
            -- IE SimultaneousSCCPCH-DPCH-Reception indicates support of simultaneous
            -- reception of S-CCPCH and DPCH
            simultaneousSCCPCH-DPCH-HSDSCH-Reception        BOOLEAN
        },
        unsupported                                     NULL
    },
    tdd384-hspdsch                                  CHOICE {
        supported                                       HSDSCH-physical-layer-category,
        unsupported                                     NULL
    },
    tdd128-hspdsch                                  CHOICE {
        supported                                       HSDSCH-physical-layer-category,
        unsupported                                     NULL
    }
}

PNBSCH-Allocation-r4 ::=                SEQUENCE {
        numberOfRepetitionsPerSFNPeriod ENUMERATED {
                                            c2, c3, c4, c5, c6, c7, c8, c9, c10,
                                            c12, c14, c16, c18, c20, c24, c28, c32,
                                            c36, c40, c48, c56, c64, c72, c80  }
}

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

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
                                                IdentificationOfReceivedMessage,
            ie-ValueNotComprehended             IdentificationOfReceivedMessage,
            conditionalInformationElementError  IdentificationOfReceivedMessage,
            messageExtensionNotComprehended     IdentificationOfReceivedMessage,
            spare1                              NULL,
            spare2                              NULL
        },
        spare                               NULL
    }
}

RadioFrequencyBandFDD ::=           ENUMERATED {
    -- fdd2100, fdd1900, fdd1800 correspond to Band I, Band II and Band III respectively
                                        fdd2100,
                                        fdd1900,
                                        fdd1800, spare5, spare4, spare3, spare2, spare1 }

RadioFrequencyBandFDDSpare ::=      ENUMERATED {spare8, spare7, spare6, spare5,
                                                spare4, spare3, spare2, spare1}

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

RadioFrequencyBandTDD ::=           ENUMERATED {a, b, c, spare}

RadioFrequencyBandGSM ::=           ENUMERATED {
                                        gsm450,
                                        gsm480,
                                        gsm850,
                                        gsm900P,
                                        gsm900E,
                                        gsm1800,
                                        gsm1900,
                                        spare9, spare8, spare7, spare6, spare5,
                                        spare4, spare3, spare2, spare1}

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,
                                        spare }
```

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

RF-Capability-r4-ext ::=                SEQUENCE {
        tddRF-Capability                            SEQUENCE {
            ue-PowerClass               UE-PowerClass,
            radioFrequencyBandTDDList   RadioFrequencyBandTDDList,
            chipRateCapability          ChipRateCapability
        }                                   OPTIONAL
}

RLC-Capability ::=                  SEQUENCE {
    -- If present, the "totalRLC-AM-BufferSize" in the IE "RLC-Capability-r5-ext" overrides the
    -- corresponding value in this IE. The value in this IE may be used by a pre-REL-5 UTRAN.
    totalRLC-AM-BufferSize              TotalRLC-AM-BufferSize,
    maximumRLC-WindowSize               MaximumRLC-WindowSize,
    maximumAM-EntityNumber              MaximumAM-EntityNumberRLC-Cap
}

RLC-Capability-r5-ext ::=                   SEQUENCE {
    totalRLC-AM-BufferSize              TotalRLC-AM-BufferSize-r5-ext       OPTIONAL
}

RRC-ConnectionReleaseInformation ::=    CHOICE {
    noRelease                               NULL,
    release                                 SEQUENCE {
        releaseCause                            ReleaseCause
    }
}

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 {
                                        -- For each bit value “0” means false/ not supported
                                            spare15(0),
                                            spare14(1),
                                            spare13(2),
                                            spare12(3),
                                            spare11(4),
                                            spare10(5),
                                            spare9(6),
                                            spare8(7),
                                            spare7(8),
                                            spare6(9),
                                            spare5(10),
                                            spare4(11),
                                            spare3(12),
                                            spare2(13),
                                            uea1(14),
                                            uea0(15)
                                            }   (SIZE (16)),
    integrityProtectionAlgorithmCap     BIT STRING {
                                        -- For each bit value “0” means false/ not supported
                                            spare15(0),
                                            spare14(1),
```

```
                                            spare13(2),
                                            spare12(3),
                                            spare11(4),
                                            spare10(5),
                                            spare9(6),
                                            spare8(7),
                                            spare7(8),
                                            spare6(9),
                                            spare5(10),
                                            spare4(11),
                                            spare3(12),
                                            spare2(13),
                                            uia1(14),
                                            spare0(15)
                                            }   (SIZE (16))
}

SimultaneousSCCPCH-DPCH-Reception ::= CHOICE {
    notSupported                        NULL,
    supported                           SEQUENCE {
        maxNoSCCPCH-RL                      MaxNoSCCPCH-RL,
        -- simultaneousSCCPCH-DPCH-DPDCH-Reception is applicable only if
        -- the IE Support of PDSCH = TRUE
        -- Note: the reference to DPDCH in the element name below is incorrect (see tabular). The
        -- name is not changed, to keep it aligned with R99.
        simultaneousSCCPCH-DPCH-DPDCH-Reception     BOOLEAN
    }
}

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
}

CapabilityUpdateRequirement-r5 ::=  SEQUENCE {
    ue-RadioCapabilityFDDUpdateRequirement-FDD  BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD384   BOOLEAN,
    ue-RadioCapabilityTDDUpdateRequirement-TDD128   BOOLEAN,
    systemSpecificCapUpdateReqList      SystemSpecificCapUpdateReqList-r5       OPTIONAL
}

SystemSpecificCapUpdateReq ::=      ENUMERATED {
                                        gsm }

SystemSpecificCapUpdateReq-v590ext ::=      ENUMERATED {
                                        geranIu }

SystemSpecificCapUpdateReq-r5 ::=       ENUMERATED {
                                        gsm, geranIu }

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

SystemSpecificCapUpdateReqList-r5 ::= SEQUENCE (SIZE (1..maxSystemCapability)) OF
                                        SystemSpecificCapUpdateReq-r5


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, spare }

T-302 ::=                           ENUMERATED {
```

```
                                    ms100, ms200, ms400, ms600, ms800,
                                    ms1000, ms1200, ms1400, ms1600,
                                    ms1800, ms2000, ms3000, ms4000,
                                    ms6000, ms8000, spare }

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

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

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

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 }

-- The value 0 for T-312 is not used in this version of the specification
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, spare }

-- All the values are changed to "infinity" in Rel-5
T-317 ::=                       ENUMERATED {
                                    infinity0,  infinity1,  infinity2, infinity3, infinity4,
                                    infinity5, infinity6, infinity7}

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

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

TMSI-DS-41 ::=                  OCTET STRING (SIZE (2..17))

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

TotalRLC-AM-BufferSize-r5-ext ::=   ENUMERATED {
                                    kb200, kb300, kb400, kb750 }

-- Actual value TransmissionProbability = 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-Group ::=                CHOICE {
-- TABULAR: not following the tabular strictly, but this will most likely save bits
    all                             NULL,
    u-RNTI-BitMaskIndex-b1          BIT STRING (SIZE (31)),
    u-RNTI-BitMaskIndex-b2          BIT STRING (SIZE (30)),
    u-RNTI-BitMaskIndex-b3          BIT STRING (SIZE (29)),
    u-RNTI-BitMaskIndex-b4          BIT STRING (SIZE (28)),
    u-RNTI-BitMaskIndex-b5          BIT STRING (SIZE (27)),
    u-RNTI-BitMaskIndex-b6          BIT STRING (SIZE (26)),
    u-RNTI-BitMaskIndex-b7          BIT STRING (SIZE (25)),
    u-RNTI-BitMaskIndex-b8          BIT STRING (SIZE (24)),
    u-RNTI-BitMaskIndex-b9          BIT STRING (SIZE (23)),
    u-RNTI-BitMaskIndex-b10         BIT STRING (SIZE (22)),
    u-RNTI-BitMaskIndex-b11         BIT STRING (SIZE (21)),
    u-RNTI-BitMaskIndex-b12         BIT STRING (SIZE (20)),
    u-RNTI-BitMaskIndex-b13         BIT STRING (SIZE (19)),
    u-RNTI-BitMaskIndex-b14         BIT STRING (SIZE (18)),
    u-RNTI-BitMaskIndex-b15         BIT STRING (SIZE (17)),
    u-RNTI-BitMaskIndex-b16         BIT STRING (SIZE (16)),
    u-RNTI-BitMaskIndex-b17         BIT STRING (SIZE (15)),
    u-RNTI-BitMaskIndex-b18         BIT STRING (SIZE (14)),
    u-RNTI-BitMaskIndex-b19         BIT STRING (SIZE (13)),
    u-RNTI-BitMaskIndex-b20         BIT STRING (SIZE (12)),
    u-RNTI-BitMaskIndex-b21         BIT STRING (SIZE (11)),
    u-RNTI-BitMaskIndex-b22         BIT STRING (SIZE (10)),
    u-RNTI-BitMaskIndex-b23         BIT STRING (SIZE (9)),
    u-RNTI-BitMaskIndex-b24         BIT STRING (SIZE (8)),
    u-RNTI-BitMaskIndex-b25         BIT STRING (SIZE (7)),
    u-RNTI-BitMaskIndex-b26         BIT STRING (SIZE (6)),
    u-RNTI-BitMaskIndex-b27         BIT STRING (SIZE (5)),
    u-RNTI-BitMaskIndex-b28         BIT STRING (SIZE (4)),
    u-RNTI-BitMaskIndex-b29         BIT STRING (SIZE (3)),
    u-RNTI-BitMaskIndex-b30         BIT STRING (SIZE (2)),
    u-RNTI-BitMaskIndex-b31         BIT STRING (SIZE (1))
}

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 and n-301 should not be used by the UE in this version of the specification
    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                               DEFAULT ms2000,
    n-304                           N-304                               DEFAULT 2,
    t-305                           T-305                               DEFAULT m30,
    t-307                           T-307                               DEFAULT s30,
    t-308                           T-308                               DEFAULT ms160,
    t-309                           T-309                               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 shall be ignored if n-312 in UE-ConnTimersAndConstants-v3a0ext is present, and the
    -- value of that element shall be used instead.
    n-312                           N-312                               DEFAULT s1,
    t-313                           T-313                               DEFAULT 3,
    n-313                           N-313                               DEFAULT s20,
    t-314                           T-314                               DEFAULT s12,
    t-315                           T-315                               DEFAULT s180,
```

```
    -- n-315 shall be ignored if n-315 in UE-ConnTimersAndConstants-v3a0ext is present, and the
    -- value of that element shall be used instead.
    n-315                               N-315                               DEFAULT s1,
    t-316                               T-316                               DEFAULT s30,
    t-317                               T-317                               DEFAULT infinity4
}

UE-ConnTimersAndConstants-v3a0ext ::=       SEQUENCE {
    n-312                               N-312ext                                OPTIONAL,
    n-315                               N-315ext                                OPTIONAL
}

UE-ConnTimersAndConstants-r5 ::=        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 version of the specification
    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                               DEFAULT ms2000,
    n-304                               N-304                               DEFAULT 2,
    t-305                               T-305                               DEFAULT m30,
    t-307                               T-307                               DEFAULT s30,
    t-308                               T-308                               DEFAULT ms160,
    t-309                               T-309                               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-r5                            DEFAULT s1,
    t-313                               T-313                               DEFAULT 3,
    n-313                               N-313                               DEFAULT s20,
    t-314                               T-314                               DEFAULT s12,
    t-315                               T-315                               DEFAULT s180,
    n-315                               N-315-r5                            DEFAULT s1,
    t-316                               T-316                               DEFAULT s30,
    t-317                               T-317                               DEFAULT infinity4
}

UE-IdleTimersAndConstants ::=       SEQUENCE {
    t-300                               T-300,
    n-300                               N-300,
    t-312                               T-312,
    -- n-312 shall be ignored if n-312 in UE-IdleTimersAndConstants-v3a0ext is present, and the
    -- value of that element shall be used instead.
    n-312                               N-312
}

UE-IdleTimersAndConstants-v3a0ext ::=       SEQUENCE {
    n-312                               N-312ext                                OPTIONAL
}

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

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

UE-PowerClassExt ::=                ENUMERATED {class1, class2, class3, class4,
                                         spare4, spare3, spare2, spare1 }

UE-RadioAccessCapability ::=        SEQUENCE {
    -- UE-RadioAccessCapability is compatible with R99, although accessStratumReleaseIndicator
    -- is removed from this IE, since its encoding did not does in bits. The
    -- accessStratumReleaseIndicator is provided in the relevant REL-4 extension IEs.
    pdcp-Capability                     PDCP-Capability,
    rlc-Capability                      RLC-Capability,
    transportChannelCapability          TransportChannelCapability,
    rf-Capability                       RF-Capability,
    physicalChannelCapability           PhysicalChannelCapability,
    ue-MultiModeRAT-Capability          UE-MultiModeRAT-Capability,
    securityCapability                  SecurityCapability,
    ue-positioning-Capability           UE-Positioning-Capability,
    measurementCapability               MeasurementCapability       OPTIONAL
}

UE-RadioAccessCapabilityInfo ::=        SEQUENCE {
```

```
    ue-RadioAccessCapability            UE-RadioAccessCapability,
    ue-RadioAccessCapability-v370ext    UE-RadioAccessCapability-v370ext
}

UE-RadioAccessCapability-v370ext ::=    SEQUENCE {
    ue-RadioAccessCapabBandFDDList      UE-RadioAccessCapabBandFDDList
}

UE-RadioAccessCapability-v380ext ::=    SEQUENCE {
    ue-PositioningCapabilityExt-v380        UE-PositioningCapabilityExt-v380
}

UE-RadioAccessCapability-v3a0ext ::=    SEQUENCE {
    ue-PositioningCapabilityExt-v3a0        UE-PositioningCapabilityExt-v3a0
}

UE-RadioAccessCapability-v3g0ext ::=    SEQUENCE {
    ue-PositioningCapabilityExt-v3g0        UE-PositioningCapabilityExt-v3g0
}

UE-PositioningCapabilityExt-v380 ::=    SEQUENCE {
    rx-tx-TimeDifferenceType2Capable        BOOLEAN
}

UE-PositioningCapabilityExt-v3a0 ::=    SEQUENCE {
    validity-CellPCH-UraPCH                 ENUMERATED { true }
}

UE-PositioningCapabilityExt-v3g0 ::=    SEQUENCE {
    sfn-sfnType2Capability              ENUMERATED { true }
}

UE-RadioAccessCapabBandFDDList ::=  SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
                                        UE-RadioAccessCapabBandFDD

UE-RadioAccessCapabBandFDD ::=  SEQUENCE{
    radioFrequencyBandFDD               RadioFrequencyBandFDD,
    fddRF-Capability                    SEQUENCE {
        ue-PowerClass                       UE-PowerClassExt,
        txRxFrequencySeparation             TxRxFrequencySeparation
    }                                                           OPTIONAL,
    measurementCapability               MeasurementCapabilityExt
}

UE-RadioAccessCapability-v4b0ext ::=    SEQUENCE {
    pdcp-Capability-r4-ext              PDCP-Capability-r4-ext,
    tdd-CapabilityExt                   SEQUENCE {
        rf-Capability                       RF-Capability-r4-ext,
        physicalChannelCapability-LCR       PhysicalChannelCapability-LCR-r4,
        measurementCapability-r4-ext        MeasurementCapability-r4-ext
    }                                           OPTIONAL,
    -- IE " AccessStratumReleaseIndicator" is not needed in RRC CONNECTION SETUP COMPLETE
    accessStratumReleaseIndicator               AccessStratumReleaseIndicator   OPTIONAL
}

UE-RadioAccessCapabilityComp ::= SEQUENCE {
    totalAM-RLCMemoryExceeds10kB            BOOLEAN,
    rf-CapabilityComp                       RF-CapabilityComp
}

RF-CapabilityComp ::= SEQUENCE {
    fdd                     CHOICE {
        notSupported                    NULL,
        supported                       RF-CapabBandListFDDComp
    },
    tdd384-RF-Capability    CHOICE {
        notSupported                    NULL,
        supported                       RadioFrequencyBandTDDList
    },
    tdd128-RF-Capability    CHOICE {
        notSupported                    NULL,
        supported                       RadioFrequencyBandTDDList
    }
}

-- NOTE: This IE is the frequency separation in MHz
RF-CapabBandFDDComp ::= ENUMERATED { notSupported, mhz190,
                                    mhz174-8-205-2, mhz134-8-245-2 }
```

```
RF-CapabBandListFDDComp ::= SEQUENCE (SIZE (1..maxFreqBandsFDD)) OF
    -- the first entry corresponds with the first value of IE RadioFrequencyBandFDD,
    -- fdd2100, and so on
    RF-CapabBandFDDComp

UE-RadioAccessCapability-v590ext ::=    SEQUENCE {
    dl-CapabilityWithSimultaneousHS-DSCHConfig  DL-CapabilityWithSimultaneousHS-DSCHConfig
    OPTIONAL,
    pdcp-Capability-r5-ext              PDCP-Capability-r5-ext,
    rlc-Capability-r5-ext               RLC-Capability-r5-ext,
    physicalChannelCapability           PhysicalChannelCapability-hspdsch-r5,
    multiModeRAT-Capability-v590ext     MultiModeRAT-Capability-v590ext
}

UE-RadioAccessCapability-v5c0ext ::= SEQUENCE {
    pdcp-Capability-r5-ext2             PDCP-Capability-r5-ext2
}

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

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

UL-PhysChCapabilityTDD-LCR-r4 ::=   SEQUENCE {
    maxTS-PerSubFrame                   MaxTS-PerSubFrame-r4,
    maxPhysChPerTimeslot                MaxPhysChPerTimeslot,
    minimumSF                           MinimumSF-UL,
    supportOfPUSCH                      BOOLEAN,
    supportOf8PSK                       BOOLEAN
}

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

UE-Positioning-Capability ::=       SEQUENCE {
    standaloneLocMethodsSupported           BOOLEAN,
    ue-BasedOTDOA-Supported                 BOOLEAN,
    networkAssistedGPS-Supported            NetworkAssistedGPS-Supported,
    supportForUE-GPS-TimingOfCellFrames     BOOLEAN,
    supportForIPDL                          BOOLEAN
}

UE-SecurityInformation ::=          SEQUENCE {
    start-CS                            START-Value
}

URA-UpdateCause ::=                 ENUMERATED {
                                        changeOfURA,
                                        periodicURAUpdate,
                                        dummy,
                                        spare1 }

UTRAN-DRX-CycleLengthCoefficient ::= INTEGER (3..9)

WaitTime ::=                        INTEGER (0..15)

-- ***************************************************
```

```
--
--     RADIO BEARER INFORMATION ELEMENTS (10.3.4)
--
-- ***************************************************

AlgorithmSpecificInfo ::=           CHOICE {
    rfc2507-Info                        RFC2507-Info
}

AlgorithmSpecificInfo-r4 ::=        CHOICE {
    rfc2507-Info                        RFC2507-Info,
    rfc3095-Info                        RFC3095-Info-r4
}

CID-InclusionInfo-r4 ::=            ENUMERATED {
                                        pdcp-Header,
                                        rfc3095-PacketFormat }

-- Upper limit of COUNT-C is 2^32 - 1
COUNT-C ::=                         INTEGER (0..4294967295)

-- Upper limit of COUNT-C-MSB is 2^25 - 1
COUNT-C-MSB ::=                     INTEGER (0..33554431)

DefaultConfigIdentity ::=           INTEGER (0..10)

DefaultConfigIdentity-r4 ::=        INTEGER (0..12)

DefaultConfigIdentity-r5 ::=        INTEGER (0..13)

DefaultConfigMode ::=               ENUMERATED {
                                        fdd,
                                        tdd }

DL-AM-RLC-Mode ::=                  SEQUENCE {
    inSequenceDelivery                  BOOLEAN,
    receivingWindowSize                 ReceivingWindowSize,
    dl-RLC-StatusInfo                   DL-RLC-StatusInfo
}

DL-AM-RLC-Mode-r5 ::=                   SEQUENCE {
    dl-RLC-PDU-size                     OctetModeRLC-SizeInfoType1,
    inSequenceDelivery                  BOOLEAN,
    receivingWindowSize                 ReceivingWindowSize,
    dl-RLC-StatusInfo                   DL-RLC-StatusInfo
}
DL-CounterSynchronisationInfo ::=       SEQUENCE {
    rB-WithPDCP-InfoList                    RB-WithPDCP-InfoList    OPTIONAL
}

DL-CounterSynchronisationInfo-r5 ::=    SEQUENCE {
    rb-WithPDCP-InfoList                    RB-WithPDCP-InfoList            OPTIONAL,
    rb-PDCPContextRelocationList            RB-PDCPContextRelocationList    OPTIONAL
}

DL-LogicalChannelMapping ::=        SEQUENCE {
    -- TABULAR: DL-TransportChannelType contains TransportChannelIdentity as well.
    dl-TransportChannelType             DL-TransportChannelType,
    logicalChannelIdentity              LogicalChannelIdentity              OPTIONAL
}

DL-LogicalChannelMapping-r5 ::=     SEQUENCE {
    -- TABULAR: DL-TransportChannelType contains TransportChannelIdentity as well.
    dl-TransportChannelType             DL-TransportChannelType-r5,
    logicalChannelIdentity              LogicalChannelIdentity              OPTIONAL
}

DL-LogicalChannelMappingList ::=    SEQUENCE (SIZE (1..maxLoCHperRLC)) OF
                                        DL-LogicalChannelMapping

DL-LogicalChannelMappingList-r5 ::= SEQUENCE (SIZE (1..maxLoCHperRLC)) OF
                                        DL-LogicalChannelMapping-r5

DL-RFC3095-r4 ::=                   SEQUENCE {
    cid-InclusionInfo                   CID-InclusionInfo-r4,
    max-CID                             INTEGER (1..16383)                  DEFAULT 15,
    reverseDecompressionDepth           INTEGER (0..65535)                  DEFAULT 0
}
```

```
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-Mode-r5 ::=                      CHOICE {
    dl-AM-RLC-Mode-r5                   DL-AM-RLC-Mode-r5,
    dl-UM-RLC-Mode-r5                   DL-UM-RLC-Mode-r5,
    dl-TM-RLC-Mode                      DL-TM-RLC-Mode
}

DL-RLC-StatusInfo ::=               SEQUENCE {
    timerStatusProhibit                 TimerStatusProhibit                 OPTIONAL,
    -- dummy is not used in this version of the specification, it should not be sent
    -- and if received they should be ignored.
    dummy                           TimerEPC                            OPTIONAL,
    missingPDU-Indicator                    BOOLEAN,
    timerStatusPeriodic                 TimerStatusPeriodic                 OPTIONAL
}

DL-TM-RLC-Mode ::=                  SEQUENCE {
    segmentationIndication                  BOOLEAN
}

DL-TransportChannelType ::=         CHOICE {
    dch                                 TransportChannelIdentity,
    fach                                NULL,
    dsch                                TransportChannelIdentity,
-- The choice "dsch" should not be used in FDD mode, and if received the UE behaviour is unspecified
    dch-and-dsch                        TransportChannelIdentityDCHandDSCH
-- The choice "dch-and-dsch" should not be used in FDD mode, and if received the UE
-- behaviour is unspecified
}

DL-TransportChannelType-r5 ::=          CHOICE {
    dch                                 TransportChannelIdentity,
    fach                                NULL,
-- The choice "dsch" should not be used in FDD mode, and if received the UE behaviour is unspecified
    dsch                                TransportChannelIdentity,
-- The choice "dch-and-dsch" should not be used in FDD mode, and if received the UE
-- behaviour is unspecified
    dch-and-dsch                        TransportChannelIdentityDCHandDSCH,
    hsdsch                              MAC-d-FlowIdentity,
    dch-and-hsdsch                      MAC-d-FlowIdentityDCHandHSDSCH
}

DL-UM-RLC-LI-size ::=                   ENUMERATED {
                                        size7, size15 }

DL-UM-RLC-Mode-r5 ::=                   SEQUENCE {
    dl-UM-RLC-LI-size                   DL-UM-RLC-LI-size
}

ExpectReordering ::=                ENUMERATED {
                                        reorderingNotExpected,
                                        reorderingExpected }

ExplicitDiscard ::=                 SEQUENCE {
    timerMRW                            TimerMRW,
    timerDiscard                        TimerDiscard,
    maxMRW                              MaxMRW
}

HeaderCompressionInfo ::=           SEQUENCE {
    algorithmSpecificInfo               AlgorithmSpecificInfo
}

HeaderCompressionInfoList ::=       SEQUENCE (SIZE (1..maxPDCPAlgoType)) OF
                                        HeaderCompressionInfo

HeaderCompressionInfo-r4 ::=        SEQUENCE {
    algorithmSpecificInfo               AlgorithmSpecificInfo-r4
}

HeaderCompressionInfoList-r4 ::=    SEQUENCE (SIZE (1..maxPDCPAlgoType)) OF
                                        HeaderCompressionInfo-r4
```

```
LogicalChannelIdentity ::=          INTEGER (1..15)

LosslessSRNS-RelocSupport ::=       CHOICE {
    supported                           MaxPDCP-SN-WindowSize,
    notSupported                        NULL
}

MAC-d-HFN-initial-value ::=         BIT STRING (SIZE (24))

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,
    -- TABULAR: pdcp-PDU-Header is MD in the tabular format and it can be encoded
    -- in one bit, so the OPTIONAL is removed for compactness.
    pdcp-PDU-Header                     PDCP-PDU-Header,
    headerCompressionInfoList           HeaderCompressionInfoList           OPTIONAL
}

PDCP-Info-r4 ::=                    SEQUENCE {
    losslessSRNS-RelocSupport           LosslessSRNS-RelocSupport           OPTIONAL,
    -- TABULAR: pdcp-PDU-Header is MD in the tabular format and it can be encoded
    -- in one bit, so the OPTIONAL is removed for compactness.
    pdcp-PDU-Header                     PDCP-PDU-Header,
    headerCompressionInfoList           HeaderCompressionInfoList-r4        OPTIONAL
}

PDCP-InfoReconfig ::=               SEQUENCE {
    pdcp-Info                           PDCP-Info,
    -- dummy is not used in this version of the specification and
    -- it should be ignored.
    dummy                               INTEGER (0..65535)
}

PDCP-InfoReconfig-r4 ::=            SEQUENCE {
    pdcp-Info                           PDCP-Info-r4
}

PDCP-PDU-Header ::=                 ENUMERATED {
                                        present, absent }

PDCP-SN-Info ::=                    INTEGER (0..65535)

Poll-PDU ::=                        ENUMERATED {
                                        pdu1, pdu2, pdu4, pdu8, pdu16,
                                        pdu32, pdu64, pdu128 }

Poll-SDU ::=                        ENUMERATED {
                                        sdu1, sdu4, sdu16, sdu64 }

PollingInfo ::=                     SEQUENCE {
```

```
    timerPollProhibit                   TimerPollProhibit                   OPTIONAL,
    timerPoll                           TimerPoll                           OPTIONAL,
    poll-PDU                            Poll-PDU                            OPTIONAL,
    poll-SDU                            Poll-SDU                            OPTIONAL,
    lastTransmissionPDU-Poll            BOOLEAN,
    lastRetransmissionPDU-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 {
    re-EstablishmentTimer               Re-EstablishmentTimer,
    srb-InformationList                 SRB-InformationSetupList,
    rb-InformationList                  RB-InformationSetupList
}

PreDefRadioConfiguration ::=        SEQUENCE {
    -- Radio bearer IEs
        predefinedRB-Configuration          PredefinedRB-Configuration,
    -- Transport channel IEs
        preDefTransChConfiguration          PreDefTransChConfiguration,
    -- Physical channel IEs
        preDefPhyChConfiguration            PreDefPhyChConfiguration
}

PredefinedConfigStatusList ::=              SEQUENCE (SIZE (maxPredefConfig)) OF
                                            PredefinedConfigStatusInfo

PredefinedConfigStatusInfo ::=      CHOICE {
    storedWithValueTagSameAsPrevius     NULL,
    other                               CHOICE {
        notStored                           NULL,
        storedWithDifferentValueTag         PredefinedConfigValueTag
    }
}

PredefinedConfigStatusListComp ::= SEQUENCE {
    setsWithDifferentValueTag           PredefinedConfigSetsWithDifferentValueTag,
    otherEntries                        PredefinedConfigStatusListVarSz             OPTIONAL
}

PredefinedConfigSetsWithDifferentValueTag ::= SEQUENCE (SIZE (1..2)) OF
                                                PredefinedConfigSetWithDifferentValueTag

PredefinedConfigSetWithDifferentValueTag ::= SEQUENCE {
    startPosition                               INTEGER (0..10)     DEFAULT 0,
    -- numberOfEntries                          INTEGER (6..16),
    -- numberOfEntries is covered by the size of the list in IE PredefinedConfigValueTagList
    valueTagList                                PredefinedConfigValueTagList
}


PredefinedConfigValueTagList ::=        SEQUENCE (SIZE (1..maxPredefConfig)) OF
                                            PredefinedConfigValueTag

PredefinedConfigStatusListVarSz ::=     SEQUENCE (SIZE (1..maxPredefConfig)) OF
                                            PredefinedConfigStatusInfo

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-InformationSetup-r4 ::=         SEQUENCE {
    rab-Info                            RAB-Info,
    rb-InformationSetupList             RB-InformationSetupList-r4
}

RAB-InformationSetup-r5 ::=         SEQUENCE {
    rab-Info                            RAB-Info,
    rb-InformationSetupList             RB-InformationSetupList-r5
}

RAB-InformationSetupList ::=        SEQUENCE (SIZE (1..maxRABsetup)) OF
                                        RAB-InformationSetup

RAB-InformationSetupList-r4 ::=     SEQUENCE (SIZE (1..maxRABsetup)) OF
                                        RAB-InformationSetup-r4

RAB-InformationSetupList-r5 ::=     SEQUENCE (SIZE (1..maxRABsetup)) OF
                                        RAB-InformationSetup-r5

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-InformationAffected-r5 ::=       SEQUENCE {
    rb-Identity                         RB-Identity,
    rb-MappingInfo                      RB-MappingInfo-r5
}

RB-InformationAffectedList ::=      SEQUENCE (SIZE (1..maxRB)) OF
```

```
                                        RB-InformationAffected

RB-InformationAffectedList-r5 ::=   SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationAffected-r5

RB-InformationReconfig ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-InfoReconfig                   OPTIONAL,
    pdcp-SN-Info                        PDCP-SN-Info                        OPTIONAL,
    rlc-Info                            RLC-Info                            OPTIONAL,
    rb-MappingInfo                      RB-MappingInfo                      OPTIONAL,
    rb-StopContinue                     RB-StopContinue                     OPTIONAL
}

RB-InformationReconfig-r4 ::=       SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-InfoReconfig-r4                OPTIONAL,
    pdcp-SN-Info                        PDCP-SN-Info                        OPTIONAL,
    rlc-Info                            RLC-Info                            OPTIONAL,
    rb-MappingInfo                      RB-MappingInfo                      OPTIONAL,
    rb-StopContinue                     RB-StopContinue                     OPTIONAL
}

RB-InformationReconfig-r5 ::=       SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-InfoReconfig-r4                OPTIONAL,
    pdcp-SN-Info                        PDCP-SN-Info                        OPTIONAL,
    rlc-Info                            RLC-Info-r5                         OPTIONAL,
    rb-MappingInfo                      RB-MappingInfo-r5                   OPTIONAL,
    rb-StopContinue                     RB-StopContinue                     OPTIONAL
}

RB-InformationReconfigList ::=      SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationReconfig

RB-InformationReconfigList-r4 ::=   SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationReconfig-r4

RB-InformationReconfigList-r5 ::=   SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-InformationReconfig-r5

RB-InformationReleaseList ::=       SEQUENCE (SIZE (1..maxRB)) OF
                                        RB-Identity

RB-InformationSetup ::=             SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-Info                           OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice,
    rb-MappingInfo                      RB-MappingInfo
}

RB-InformationSetup-r4 ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-Info-r4                        OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice,
    rb-MappingInfo                      RB-MappingInfo
}

RB-InformationSetup-r5 ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-Info-r4                        OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice-r5,
    rb-MappingInfo                      RB-MappingInfo-r5
}

RB-InformationSetupList ::=         SEQUENCE (SIZE (1..maxRBperRAB)) OF
                                        RB-InformationSetup

RB-InformationSetupList-r4 ::=      SEQUENCE (SIZE (1..maxRBperRAB)) OF
                                        RB-InformationSetup-r4

RB-InformationSetupList-r5 ::=      SEQUENCE (SIZE (1..maxRBperRAB)) OF
                                        RB-InformationSetup-r5

RB-MappingInfo ::=                  SEQUENCE (SIZE (1..maxRBMuxOptions)) OF
                                        RB-MappingOption

RB-MappingInfo-r5 ::=                   SEQUENCE (SIZE (1..maxRBMuxOptions)) OF
```

```
                                        RB-MappingOption-r5

RB-MappingOption ::=                SEQUENCE {
    ul-LogicalChannelMappings           UL-LogicalChannelMappings           OPTIONAL,
    dl-LogicalChannelMappingList        DL-LogicalChannelMappingList        OPTIONAL
}

RB-MappingOption-r5 ::=                 SEQUENCE {
    ul-LogicalChannelMappings           UL-LogicalChannelMappings           OPTIONAL,
    dl-LogicalChannelMappingList        DL-LogicalChannelMappingList-r5     OPTIONAL
}

RB-PDCPContextRelocation ::=            SEQUENCE {
    rb-Identity                             RB-Identity,
    dl-RFC3095-Context-Relocation           BOOLEAN,
    ul-RFC3095-Context-Relocation           BOOLEAN
}

RB-PDCPContextRelocationList ::=            SEQUENCE (SIZE (1..maxRBallRABs)) OF
                                            RB-PDCPContextRelocation

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,
    -- TABULAR: expectReordering has only two possible values, so using Optional or Default
    -- would be wasteful
    expectReordering                    ExpectReordering
}

RFC3095-Info-r4 ::=             SEQUENCE {
    rohcProfileList                     ROHC-ProfileList-r4,
    ul-RFC3095                          UL-RFC3095-r4                       OPTIONAL,
    dl-RFC3095                          DL-RFC3095-r4                       OPTIONAL
}

RLC-Info ::=                        SEQUENCE {
    ul-RLC-Mode                         UL-RLC-Mode                         OPTIONAL,
    dl-RLC-Mode                         DL-RLC-Mode                         OPTIONAL
}

RLC-Info-r5 ::=                     SEQUENCE {
    ul-RLC-Mode                         UL-RLC-Mode                         OPTIONAL,
    dl-RLC-Mode-r5                      DL-RLC-Mode-r5                      OPTIONAL,
    rlc-OneSidedReEst                   BOOLEAN
}

RLC-InfoChoice ::=                  CHOICE {
    rlc-Info                            RLC-Info,
    same-as-RB                          RB-Identity
}

RLC-InfoChoice-r5 ::=                   CHOICE {
    rlc-Info-r5                         RLC-Info-r5,
    same-as-RB                          RB-Identity
}

RLC-SequenceNumber ::=              INTEGER (0..4095)

RLC-SizeInfo ::=                    SEQUENCE {
```

```
    rlc-SizeIndex                       INTEGER (1..maxTF)
}

RLC-SizeExplicitList ::=            SEQUENCE (SIZE  (1..maxTF)) OF
                                        RLC-SizeInfo

ROHC-Profile-r4 ::=                 INTEGER (1..3)

ROHC-ProfileList-r4 ::=             SEQUENCE (SIZE  (1..maxROHC-Profile-r4))    OF
                                        ROHC-Profile-r4

ROHC-PacketSize-r4 ::=              INTEGER (2..1500)

ROHC-PacketSizeList-r4 ::=          SEQUENCE (SIZE  (1..maxROHC-PacketSizes-r4))    OF
                                        ROHC-PacketSize-r4

SRB-InformationSetup ::=            SEQUENCE {
    -- The default value for rb-Identity is the smallest value not used yet.
    rb-Identity                         RB-Identity                         OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice,
    rb-MappingInfo                      RB-MappingInfo
}

SRB-InformationSetup-r5 ::=         SEQUENCE {
    -- The default value for rb-Identity is the smallest value not used yet.
    rb-Identity                         RB-Identity                         OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice-r5,
    rb-MappingInfo                      RB-MappingInfo-r5
}

SRB-InformationSetupList ::=        SEQUENCE (SIZE (1..maxSRBsetup)) OF
                                        SRB-InformationSetup

SRB-InformationSetupList-r5 ::=     SEQUENCE (SIZE (1..maxSRBsetup)) OF
                                        SRB-InformationSetup-r5

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                     OPTIONAL
}

UL-CounterSynchronisationInfo ::=       SEQUENCE {
    rB-WithPDCP-InfoList                    RB-WithPDCP-InfoList    OPTIONAL,
    startList                               STARTList
}

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 shall be set to TRUE in this version
    -- of the specification
    rlc-LogicalChannelMappingIndicator  BOOLEAN,
    ul-LogicalChannelMapping            SEQUENCE (SIZE (maxLoCHperRLC)) OF
```

```
                                        UL-LogicalChannelMapping
}

UL-LogicalChannelMappings ::=       CHOICE {
    oneLogicalChannel                   UL-LogicalChannelMapping,
    twoLogicalChannels                  UL-LogicalChannelMappingList
}

UL-RFC3095-r4 ::=                   SEQUENCE {
    cid-InclusionInfo                   CID-InclusionInfo-r4,
    max-CID                             INTEGER (1..16383)                  DEFAULT 15,
    rohcPacketSizeList                  ROHC-PacketSizeList-r4
}

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                                TransportChannelIdentity
}

-- ***************************************************
--
--     TRANSPORT CHANNEL INFORMATION ELEMENTS (10.3.5)
--
-- ***************************************************

AddOrReconfMAC-dFlow ::=            SEQUENCE {
    mac-hs-AddReconfQueue-List                  MAC-hs-AddReconfQueue-List  OPTIONAL,
    mac-hs-DelQueue-List                        MAC-hs-DelQueue-List    OPTIONAL
}

AllowedTFC-List ::=                 SEQUENCE (SIZE (1..maxTFC)) OF
                                        TFC-Value

AllowedTFI-List ::=                 SEQUENCE (SIZE (1..maxTF)) OF
                                        INTEGER (0..31)

BitModeRLC-SizeInfo ::=             CHOICE {
    sizeType1                           INTEGER (0..127),
    -- Actual value sizeType2 = (part1 * 8) + 128 + part2
    sizeType2                           SEQUENCE {
        part1                               INTEGER (0..15),
        part2                               INTEGER (1..7)                  OPTIONAL
    },
    -- Actual value sizeType3 = (part1 * 16) + 256 + part2
    sizeType3                           SEQUENCE {
        part1                               INTEGER (0..47),
        part2                               INTEGER (1..15)                 OPTIONAL
    },
    -- Actual value sizeType4 = (part1 * 64) + 1024 + part2
    sizeType4                           SEQUENCE {
        part1                               INTEGER (0..62),
        part2                               INTEGER (1..63)                 OPTIONAL
    }
}

-- Actual value BLER-QualityValue = IE value * 0.1
BLER-QualityValue ::=               INTEGER (-63..0)

ChannelCodingType ::=               CHOICE {
```

```
    -- noCoding is only used for TDD in this version of the specification,
    -- otherwise it should be ignored
    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
}

CommonTransChTFS-LCR ::=                SEQUENCE {
    tti                                 CHOICE {
        tti5                                CommonDynamicTF-InfoList,
        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
}

-- The maximum allowed size of DL-AddReconfTransChInfo2List sequence is 16
DL-AddReconfTransChInfo2List ::=    SEQUENCE (SIZE (1..maxTrCHpreconf)) OF
                                        DL-AddReconfTransChInformation2

-- The maximum allowed size of DL-AddReconfTransChInfoList sequence is 16
DL-AddReconfTransChInfoList ::=     SEQUENCE (SIZE (1..maxTrCHpreconf)) OF
                                        DL-AddReconfTransChInformation

-- The maximum allowed size of DL-AddReconfTransChInfoList-r4 sequence is 16
DL-AddReconfTransChInfoList-r4 ::=  SEQUENCE (SIZE (1..maxTrCHpreconf)) OF
                                        DL-AddReconfTransChInformation-r4

-- The maximum allowed size of DL-AddReconfTransChInfoList-r5 sequence is 16
DL-AddReconfTransChInfoList-r5 ::=  SEQUENCE (SIZE (1..maxTrCHpreconf)) OF
                                        DL-AddReconfTransChInformation-r5

-- 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-TransportChannelType             DL-TrCH-Type,
    dl-transportChannelIdentity         TransportChannelIdentity,
    tfs-SignallingMode                  CHOICE {
        explicit-config                     TransportFormatSet,
        sameAsULTrCH                        UL-TransportChannelIdentity
    },
    dch-QualityTarget                   QualityTarget                       OPTIONAL,
    -- dummy is not used in this version of the specification, it should
    -- not be sent and if received it should be ignored.
    dummy                               TM-SignallingInfo                   OPTIONAL
}

DL-AddReconfTransChInformation-r4 ::=   SEQUENCE {
    dl-TransportChannelType             DL-TrCH-Type,
    dl-transportChannelIdentity         TransportChannelIdentity,
    tfs-SignallingMode                  CHOICE {
        explicit-config                     TransportFormatSet,
        sameAsULTrCH                        UL-TransportChannelIdentity
    },
    dch-QualityTarget                   QualityTarget                       OPTIONAL
}

DL-AddReconfTransChInformation-r5 ::=   SEQUENCE {
    dl-TransportChannelType             DL-TrCH-TypeId1-r5,
    tfs-SignallingMode                  CHOICE {
        explicit-config                     TransportFormatSet,
        sameAsULTrCH                        UL-TransportChannelIdentity,
        hsdsch                              HSDSCH-Info
    },
```

```
    dch-QualityTarget                   QualityTarget                       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 {
    dl-TransportChannelType             DL-TrCH-Type,
    transportChannelIdentity            TransportChannelIdentity,
    tfs-SignallingMode                  CHOICE {
        explicit-config                     TransportFormatSet,
        sameAsULTrCH                        UL-TransportChannelIdentity
    },
    qualityTarget                       QualityTarget                       OPTIONAL
}

DL-CommonTransChInfo ::=            SEQUENCE {
    sccpch-TFCS                         TFCS                                OPTIONAL,
    -- modeSpecificInfo should be optional. A new version of this IE should be defined
    -- to be used in later versions of messages using this IE
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dl-Parameters                       CHOICE {
                dl-DCH-TFCS                         TFCS,
                sameAsUL                            NULL
            }                                                               OPTIONAL
        },
        tdd                                 SEQUENCE {
            individualDL-CCTrCH-InfoList        IndividualDL-CCTrCH-InfoList
                                                                            OPTIONAL
        }
    }
}

DL-CommonTransChInfo-r4 ::=         SEQUENCE {
    sccpch-TFCS                         TFCS                                OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dl-Parameters                       CHOICE {
                dl-DCH-TFCS                         SEQUENCE {
                    tfcs                                TFCS                OPTIONAL
                },
                sameAsUL                            NULL
            }                                                               OPTIONAL
        },
        tdd                                 SEQUENCE {
            individualDL-CCTrCH-InfoList        IndividualDL-CCTrCH-InfoList
                                                                            OPTIONAL
        }
    }   OPTIONAL
}

DL-DeletedTransChInfoList ::=       SEQUENCE (SIZE (1..maxTrCH)) OF
                                        DL-TransportChannelIdentity

DL-DeletedTransChInfoList-r5 ::=    SEQUENCE (SIZE (1..maxTrCH)) OF
                                        DL-TransportChannelIdentity-r5

DL-TransportChannelIdentity ::=         SEQUENCE {
    dl-TransportChannelType             DL-TrCH-Type,
    dl-TransportChannelIdentity         TransportChannelIdentity
}

DL-TransportChannelIdentity-r5 ::=      SEQUENCE {
    dl-TransportChannelType             DL-TrCH-TypeId2-r5
}

DL-TrCH-Type ::= ENUMERATED {dch, dsch}
-- The choice "dsch" should not be used in FDD mode, and if received the UE behaviour is unspecified

DL-TrCH-TypeId1-r5 ::=              CHOICE {
    dch                                 TransportChannelIdentity,
    dsch                                TransportChannelIdentity,
-- The choice "dsch" should not be used in FDD mode, and if received the UE behaviour is unspecified
    hsdsch                              NULL
}

DL-TrCH-TypeId2-r5 ::=              CHOICE {
```

```
    dch                                 TransportChannelIdentity,
    dsch                                TransportChannelIdentity,
-- The choice "dsch" should not be used in FDD mode, and if received the UE behaviour is unspecified
    hsdsch                              MAC-d-FlowIdentity
}

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
}

HSDSCH-Info ::=                     SEQUENCE {
    harqInfo                            HARQ-Info                   OPTIONAL,
    addOrReconfMAC-dFlow                AddOrReconfMAC-dFlow        OPTIONAL
}

HARQ-Info ::=                       SEQUENCE {
    numberOfProcesses                   INTEGER (1..8),
    memoryPartitioning                  CHOICE {
        implicit                            NULL,
        explicit                            SEQUENCE (SIZE (1..maxHProcesses)) OF
                                                HARQMemorySize

    }
}

HARQMemorySize ::=                  ENUMERATED {
                                        hms800, hms1600, hms2400, hms3200, hms4000,
                                        hms4800, hms5600, hms6400, hms7200, hms8000,
                                        hms8800, hms9600, hms10400, hms11200, hms12000,
                                        hms12800, hms13600, hms14400, hms15200, hms16000,
                                        hms17600, hms19200, hms20800, hms22400, hms24000,
                                        hms25600, hms27200, hms28800, hms30400, hms32000,
                                        hms36000, hms40000, hms44000, hms48000, hms52000,
                                        hms56000, hms60000, hms64000, hms68000, hms72000,
                                        hms76000, hms80000, hms88000, hms96000, hms104000,
                                        hms112000, hms120000, hms128000, hms136000, hms144000,
                                        hms152000, hms160000, hms176000, hms192000, hms208000,
                                        hms224000, hms240000, hms256000, hms272000, hms288000,
                                        hms304000 }

IndividualDL-CCTrCH-Info ::=        SEQUENCE {
    dl-TFCS-Identity                    TFCS-Identity,
    tfcs-SignallingMode                 CHOICE {
        explicit-config                     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 ,
    tfc-Subset                          TFC-Subset
```

```
}

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
}

MAC-d-FlowIdentityDCHandHSDSCH ::=  SEQUENCE {
    dch-transport-ch-id             TransportChannelIdentity,
    hsdsch-mac-d-flow-id            MAC-d-FlowIdentity
}

MAC-d-FlowIdentity ::=              INTEGER (0..7)

MAC-d-PDU-SizeInfo-List ::=         SEQUENCE (SIZE(1.. maxMAC-d-PDUsizes)) OF
                                        MAC-d-PDUsizeInfo

--MAC-d-Pdu sizes need to be defined
MAC-d-PDUsizeInfo ::=               SEQUENCE{
    mac-d-PDU-Size                      INTEGER (1..5000),
    mac-d-PDU-Index                     INTEGER(0..7)
}

MAC-hs-AddReconfQueue-List ::=              SEQUENCE (SIZE(1..maxQueueIDs)) OF
                                        MAC-hs-AddReconfQueue

MAC-hs-AddReconfQueue ::=           SEQUENCE {
    mac-hsQueueId                       INTEGER(0..7),
    mac-dFlowId                         MAC-d-FlowIdentity,
    reorderingReleaseTimer              T1-ReleaseTimer,
    mac-hsWindowSize                    MAC-hs-WindowSize,
    mac-d-PDU-SizeInfo-List             MAC-d-PDU-SizeInfo-List             OPTIONAL
}

MAC-hs-DelQueue-List ::=                SEQUENCE (SIZE(1..maxQueueIDs)) OF
                                        MAC-hs-DelQueue

MAC-hs-DelQueue ::=                 SEQUENCE {
    mac-hsQueueId                       INTEGER(0..7)
}

MAC-hs-WindowSize ::=               ENUMERATED {
                                        mws4, mws6, mws8, mws12, mws16, mws24, mws32 }

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 {
    -- Actual size = (8 * sizeType1) + 16
    sizeType1                           INTEGER (0..31),
    sizeType2                           SEQUENCE {
        -- Actual size = (32 * part1) + 272 + (part2 * 8)
        part1                               INTEGER (0..23),
```

```
        part2                               INTEGER (1..3)                  OPTIONAL
    },
    sizeType3                           SEQUENCE {
        -- Actual size = (64 * part1) + 1040 + (part2 * 8)
        part1                               INTEGER (0..61),
        part2                               INTEGER (1..7)                  OPTIONAL
    }
}

OctetModeRLC-SizeInfoType2 ::=      CHOICE {
    -- Actual size = (sizeType1 * 8) + 48
    sizeType1                           INTEGER (0..31),
    -- Actual size = (sizeType2 * 16) + 312
    sizeType2                           INTEGER (0..63),
    -- Actual size = (sizeType3 *64) + 1384
    sizeType3                           INTEGER (0..56)
}

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 {
    ul-TransportChannelType             UL-TrCH-Type,
    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 }
```

```
T1-ReleaseTimer ::=                 ENUMERATED {
                                        rt10, rt20, rt30, rt40, rt50,
                                        rt60, rt70, rt80, rt90, rt100,
                                        rt120, rt140, rt160, rt200, rt300,
                                        rt400 }

TFC-Subset ::=                      CHOICE {
    minimumAllowedTFC-Number            TFC-Value,
    allowedTFC-List                     AllowedTFC-List,
    non-allowedTFC-List                 Non-allowedTFC-List,
    restrictedTrChInfoList              RestrictedTrChInfoList,
    fullTFCS                            NULL
}

TFC-Subset-ID-With3b ::=            INTEGER (0..7)

TFC-Subset-ID-With5b ::=            INTEGER (0..31)

TFC-Subset-ID-With10b ::=           INTEGER (0..1023)

TFC-SubsetList ::=                  SEQUENCE (SIZE (1.. maxTFCsub)) OF SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            tfcs-ID                             TFCS-Identity                   OPTIONAL
        }
    },
    tfc-Subset                          TFC-Subset
}

TFC-Value ::=                       INTEGER (0..1023)

TFCI-Field2-Information ::=         CHOICE {
    tfci-Range                          TFCI-RangeList,
    explicit-config                     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,
-- dummy is not used in this version of specification, it should
-- not be sent and if received it should be ignored.
    ~~splitTFCI-Signalling~~dummy               SplitTFCI-Signalling

}

TFCS-Identity ::=                   SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain              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),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc4Bit                            SEQUENCE (SIZE (1..maxTFC)) OF SEQUENCE {
```

```
            ctfc4                               INTEGER (0..15),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc6Bit                            SEQUENCE (SIZE (1..maxTFC)) OF SEQUENCE {
            ctfc6                               INTEGER (0..63),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc8Bit                            SEQUENCE (SIZE (1..maxTFC)) OF SEQUENCE {
            ctfc8                               INTEGER (0..255),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc12Bit                           SEQUENCE (SIZE(1..maxTFC)) OF SEQUENCE {
            ctfc12                              INTEGER (0..4095),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc16Bit                           SEQUENCE (SIZE (1..maxTFC)) OF SEQUENCE {
            ctfc16                              INTEGER(0..65535),
            powerOffsetInformation              PowerOffsetInformation          OPTIONAL
        },
        ctfc24Bit                           SEQUENCE (SIZE (1..maxTFC)) OF SEQUENCE {
            ctfc24                              INTEGER(0..16777215),
            powerOffsetInformation              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 {
            -- in ul-controlledTrChList, TrCH-Type is always DCH
            ul-controlledTrChList               UL-ControlledTrChList
        }
    }
}

TransmissionTimeInterval ::=        ENUMERATED {
                                        tti10, tti20, tti40, tti80 }

TransmissionTimeValidity ::=        INTEGER (1..256)

TransportChannelIdentity ::=        INTEGER (1..32)

TransportChannelIdentityDCHandDSCH ::=  SEQUENCE {
    dch-transport-ch-id             TransportChannelIdentity,
    dsch-transport-ch-id            TransportChannelIdentity
}


TransportFormatSet ::=              CHOICE {
    dedicatedTransChTFS                 DedicatedTransChTFS,
    commonTransChTFS                    CommonTransChTFS
}

TransportFormatSet-LCR ::=              CHOICE {
    dedicatedTransChTFS                 DedicatedTransChTFS,
    commonTransChTFS-LCR                CommonTransChTFS-LCR
}

-- The maximum allowed size of UL-AddReconfTransChInfoList sequence is 16
UL-AddReconfTransChInfoList ::=     SEQUENCE (SIZE (1..maxTrCHpreconf)) OF
                                        UL-AddReconfTransChInformation

UL-AddReconfTransChInformation ::= SEQUENCE {
    ul-TransportChannelType             UL-TrCH-Type,
    transportChannelIdentity            TransportChannelIdentity,
    transportFormatSet                  TransportFormatSet
}
```

```
UL-CommonTransChInfo ::=            SEQUENCE {
    -- TABULAR: tfc-subset is applicable to FDD only, TDD specifies tfc-subset in individual
    -- CCTrCH Info.
    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
        }
    }                                                                       OPTIONAL
}

UL-CommonTransChInfo-r4 ::=         SEQUENCE {
    -- TABULAR: tfc-subset is applicable to FDD only, TDD specifies tfc-subset in individual
    -- CCTrCH Info.
    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
        }
    }                                                                       OPTIONAL,
    tfc-SubsetList                      TFC-SubsetList                      OPTIONAL
}

-- In UL-ControlledTrChList, TrCH-Type is always DCH
UL-ControlledTrChList ::=           SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransportChannelIdentity

UL-DeletedTransChInfoList ::=       SEQUENCE (SIZE (1..maxTrCH)) OF
                                        UL-TransportChannelIdentity

UL-TransportChannelIdentity ::=     SEQUENCE {
    ul-TransportChannelType             UL-TrCH-Type,
    ul-TransportChannelIdentity         TransportChannelIdentity
}

UL-TrCH-Type ::= ENUMERATED {dch, usch}

USCH-TransportChannelsInfo ::=      SEQUENCE (SIZE (1..maxTrCH)) OF
                                        SEQUENCE {
    usch-TransportChannelIdentity           TransportChannelIdentity,
    usch-TFS                                TransportFormatSet
}

-- ***************************************************
--
--      PHYSICAL CHANNEL INFORMATION ELEMENTS (10.3.6)
--
-- ***************************************************

ACK-NACK-repetitionFactor ::=       INTEGER(1..4)

AC-To-ASC-Mapping ::=               INTEGER (0..7)

AC-To-ASC-MappingTable ::=          SEQUENCE (SIZE (maxASCmap)) OF
                                        AC-To-ASC-Mapping

AccessServiceClass-FDD ::=          SEQUENCE {
    availableSignatureStartIndex        INTEGER (0..15),
    availableSignatureEndIndex          INTEGER (0..15),

    assignedSubChannelNumber            BIT STRING {
                                            b3(0),
                                            b2(1),
                                            b1(2),
                                            b0(3)
                                            }   (SIZE(4))
}
```

```
AccessServiceClass-TDD ::=          SEQUENCE {
    channelisationCodeIndices           BIT STRING  {
                                            chCodeIndex7(0),
                                            chCodeIndex6(1),
                                            chCodeIndex5(2),
                                            chCodeIndex4(3),
                                            chCodeIndex3(4),
                                            chCodeIndex2(5),
                                            chCodeIndex1(6),
                                            chCodeIndex0(7)
                                            } (SIZE(8))             OPTIONAL,
    subchannelSize                      CHOICE {
        size1                               NULL,
        size2                               SEQUENCE {
            -- subch0 means bitstring '01' in the tabular, subch1 means bitsring '10'
            subchannels                         ENUMERATED  { subch0, subch1 }  OPTIONAL
        },
        size4                               SEQUENCE {
            subchannels                         BIT STRING  {
                                                    subCh3(0),
                                                    subCh2(1),
                                                    subCh1(2),
                                                    subCh0(3)
                                                    } (SIZE(4))     OPTIONAL
        },
        size8                               SEQUENCE {
            subchannels                         BIT STRING  {
                                                    subCh7(0),
                                                    subCh6(1),
                                                    subCh5(2),
                                                    subCh4(3),
                                                    subCh3(4),
                                                    subCh2(5),
                                                    subCh1(6),
                                                    subCh0(7)
                                                    } (SIZE(8))     OPTIONAL
        }
    }
}

AccessServiceClass-TDD-LCR-r4 ::=   SEQUENCE {
    availableSYNC-UlCodesIndics         BIT STRING {
                                            sulCodeIndex7(0),
                                            sulCodeIndex6(1),
                                            sulCodeIndex5(2),
                                            sulCodeIndex4(3),
                                            sulCodeIndex3(4),
                                            sulCodeIndex2(5),
                                            sulCodeIndex1(6),
                                            sulCodeIndex0(7)
                                            } (SIZE(8))               OPTIONAL,
    subchannelSize                      CHOICE {
        size1                               NULL,
        size2                               SEQUENCE {
            -- subch0 means bitstring '01' in the tabular, subch1 means bitsring '10'.
            subchannels                         ENUMERATED  { subch0, subch1 }  OPTIONAL
        },
        size4                               SEQUENCE {
            subchannels                         BIT STRING  {
                                                    subCh3(0),
                                                    subCh2(1),
                                                    subCh1(2),
                                                    subCh0(3)
                                                    } (SIZE(4))         OPTIONAL
        },
        size8                               SEQUENCE {
            subchannels                         BIT STRING  {
                                                    subCh7(0),
                                                    subCh6(1),
                                                    subCh5(2),
                                                    subCh4(3),
                                                    subCh3(4),
                                                    subCh2(5),
                                                    subCh1(6),
                                                    subCh0(7)
                                                    } (SIZE(8))         OPTIONAL
        }
```

```
	}

}

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 (0..255),
	allocationDuration					INTEGER (1..256)
}

-- Actual value Alpha = IE value * 0.125
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)

ASCSetting-FDD ::=						SEQUENCE {
	-- TABULAR: accessServiceClass-FDD 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-FDD					AccessServiceClass-FDD	OPTIONAL
}

ASCSetting-TDD ::=						SEQUENCE {
	-- TABULAR: accessServiceClass-TDD is MD in tabular description
	-- Default value is previous ASC
	-- If this is the first ASC, the default value is all available channelisation codes and
	-- all available sub-channels with subchannelSize=size1.
	accessServiceClass-TDD					AccessServiceClass-TDD	OPTIONAL
}

ASCSetting-TDD-LCR-r4 ::=						SEQUENCE {
	-- TABULAR: accessServiceClass-TDD-LCR is MD in tabular description
	-- Default value is previous ASC
	-- If this is the first ASC, the default value is all available SYNC_UL codes and
	-- all available sub-channels with subchannelSize=size1.
	accessServiceClass-TDD-LCR					AccessServiceClass-TDD-LCR-r4	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 {
                                    signature15(0),
                                    signature14(1),
                                    signature13(2),
                                    signature12(3),
                                    signature11(4),
                                    signature10(5),
                                    signature9(6),
                                    signature8(7),
                                    signature7(8),
                                    signature6(9),
                                    signature5(10),
                                    signature4(11),
                                    signature3(12),
                                    signature2(13),
                                    signature1(14),
                                    signature0(15)
                                    }    (SIZE(16))

AvailableSubChannelNumbers ::=      BIT STRING {
                                        subCh11(0),
                                        subCh10(1),
                                        subCh9(2),
                                        subCh8(3),
                                        subCh7(4),
                                        subCh6(5),
                                        subCh5(6),
                                        subCh4(7),
                                        subCh3(8),
                                        subCh2(9),
                                        subCh1(10),
                                        subCh0(11)
                                        }    (SIZE(12))

BurstType ::=                       ENUMERATED {
                                        type1, type2 }

-- Actual value Bler-Target = IE value * 0.05
Bler-Target ::=                     INTEGER (-63..0)

CCTrCH-PowerControlInfo ::=         SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo
}

CCTrCH-PowerControlInfo-r4 ::=      SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo-r4
}

CCTrCH-PowerControlInfo-r5 ::=      SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo-r5
}

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

CellAndChannelIdentity ::=          SEQUENCE {
    -- burstType may be set to either value and should be ignored by the receiver for 1.28 Mcps TDD.
    burstType                           BurstType,
    midambleShift                       MidambleShiftLong,
    timeslot                            TimeslotNumber,
    cellParametersID                    CellParametersID
    }

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
}

CodeWordSet ::=                    ENUMERATED {
                                       longCWS,
                                       mediumCWS,
                                       shortCWS,
                                       ssdtOff }

CommonTimeslotInfo ::=             SEQUENCE {
    -- TABULAR: secondInterleavingMode 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: secondInterleavingMode 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)

ConstantValueTdd ::=               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,
    -- TABULAR: VCAM info has been nested inside ChannelAssignmentActive,
    -- which in turn is mandatory since it's only a binary choice.
    channelAssignmentActive            ChannelAssignmentActive,
    cpch-StatusIndicationMode          CPCH-StatusIndicationMode,
```

```
    pcpch-ChannelInfoList               PCPCH-ChannelInfoList
}

CPCH-SetInfoList ::=                SEQUENCE (SIZE (1..maxCPCHsets)) OF
                                        CPCH-SetInfo

CPCH-StatusIndicationMode ::=       ENUMERATED {
                                        pa-mode,
                                        pamsf-mode }

CQI-RepetitionFactor ::=            INTEGER(1..4)

CSICH-PowerOffset ::=               INTEGER (-10..5)

-- DefaultDPCH-OffsetValueFDD and DefaultDPCH-OffsetValueTDD corresponds to
-- IE "Default DPCH Offset Value" depending on the mode.
-- Actual value DefaultDPCH-OffsetValueFDD = IE value * 512
DefaultDPCH-OffsetValueFDD ::=      INTEGER (0..599)

DefaultDPCH-OffsetValueTDD ::=      INTEGER (0..7)

DeltaPp-m ::=                       INTEGER (-10..10)

DeltaCQI ::=                        INTEGER (0..8)

DeltaNACK ::=                       INTEGER (0..8)

DeltaACK ::=                        INTEGER (0..8)

-- Actual value DeltaSIR = IE value * 0.1
DeltaSIR ::=                        INTEGER (0..30)

DL-CCTrCh ::=                       SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    dl-CCTrCH-TimeslotsCodes            DownlinkTimeslotsCodes              OPTIONAL,
    ul-CCTrChTPCList                    UL-CCTrChTPCList                    OPTIONAL
}

DL-CCTrCh-r4 ::=                    SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    tddOption                           CHOICE {
        tdd384                              SEQUENCE {
            dl-CCTrCH-TimeslotsCodes            DownlinkTimeslotsCodes  OPTIONAL
        },
        tdd128                              SEQUENCE {
            dl-CCTrCH-TimeslotsCodes            DownlinkTimeslotsCodes-LCR-r4   OPTIONAL
        }
    },
    ul-CCTrChTPCList                    UL-CCTrChTPCList        OPTIONAL
}

DL-CCTrChList ::=                   SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        DL-CCTrCh

DL-CCTrChList-r4 ::=                SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        DL-CCTrCh-r4

DL-CCTrChListToRemove ::=           SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        TFCS-IdentityPlain

DL-CCTrChTPCList ::=                SEQUENCE (SIZE (0..maxCCTrCH)) OF
                                            TFCS-Identity

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-CommonInformation-r4 ::=         SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommon-r4       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueFDD  OPTIONAL,
            dpch-CompressedModeInfo             DPCH-CompressedModeInfo     OPTIONAL,
            tx-DiversityMode                    TX-DiversityMode            OPTIONAL,
            ssdt-Information                    SSDT-Information-r4         OPTIONAL
        },
        tdd                                 SEQUENCE {
            tddOption                           CHOICE {
                tdd384                              NULL,
                tdd128                              SEQUENCE {
                    tstd-Indicator                      BOOLEAN
                }
            },
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueTDD  OPTIONAL
        }
    }
}

DL-CommonInformation-r5 ::=         SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommon-r4           OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueFDD  OPTIONAL,
            dpch-CompressedModeInfo             DPCH-CompressedModeInfo     OPTIONAL,
            tx-DiversityMode                    TX-DiversityMode            OPTIONAL,
            ssdt-Information                    SSDT-Information-r4         OPTIONAL
        },
        tdd                                 SEQUENCE {
            tddOption                           CHOICE {
                tdd384                              NULL,
                tdd128                              SEQUENCE {
                    tstd-Indicator                      BOOLEAN
                }
            },
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValueTDD  OPTIONAL
        }
    },
    mac-hsResetIndicator                ENUMERATED { true }         OPTIONAL
}

DL-CommonInformationPost ::=        SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommonPost
}

DL-CommonInformationPredef ::=      SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommonPredef    OPTIONAL
}

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,
```

```
            powerOffsetPilot-pdpdch             PowerOffsetPilot-pdpdch,
            dl-rate-matching-restriction        Dl-rate-matching-restriction        OPTIONAL,
            -- TABULAR: The number of pilot bits is nested inside the spreading factor.
            spreadingFactorAndPilot             SF512-AndPilot,
            positionFixedOrFlexible             PositionFixedOrFlexible,
            tfci-Existence                      BOOLEAN
        },
        tdd                                 SEQUENCE {
            dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo            OPTIONAL
        }
    }
}

DL-DPCH-InfoCommon-r4 ::=               SEQUENCE {
    cfnHandling                         CHOICE {
        maintain                            NULL,
        initialise                          SEQUENCE {
            cfntargetsfnframeoffset             Cfntargetsfnframeoffset             OPTIONAL
        }
    },
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo            OPTIONAL,
            powerOffsetPilot-pdpdch             PowerOffsetPilot-pdpdch,
            dl-rate-matching-restriction        Dl-rate-matching-restriction        OPTIONAL,
            -- TABULAR: The number of pilot bits is nested inside the spreading factor.
            spreadingFactorAndPilot             SF512-AndPilot,
            positionFixedOrFlexible             PositionFixedOrFlexible,
            tfci-Existence                      BOOLEAN
        },
        tdd                                 SEQUENCE {
            dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo            OPTIONAL
        }
    },
-- The IE mac-d-HFN-initial-value should be absent in the RRCConnectionSetup-r4-IEs or
-- RRCConnectionSetup-r5-IEs or HandoverToUTRANCommand-r4-IEs or HandoverToUTRANCommand-r5-IEs and
-- if the IE is included, the general error handling for conditional IEs applies.
    mac-d-HFN-initial-value             MAC-d-HFN-initial-value             OPTIONAL

}


DL-DPCH-InfoCommonPost ::=          SEQUENCE {
    dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo                OPTIONAL
}

DL-DPCH-InfoCommonPredef ::=        SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            -- TABULAR: The number of pilot bits is nested inside the spreading factor.
            spreadingFactorAndPilot             SF512-AndPilot,
            positionFixedOrFlexible             PositionFixedOrFlexible,
            tfci-Existence                      BOOLEAN
        },
        tdd                                 SEQUENCE {
            commonTimeslotInfo                  CommonTimeslotInfo
        }
    }
}

DL-DPCH-InfoPerRL ::=               CHOICE {
    fdd                                 SEQUENCE {
        pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst,
        dpch-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                                 SEQUENCE {
        dl-CCTrChListToEstablish            DL-CCTrChList                   OPTIONAL,
        dl-CCTrChListToRemove               DL-CCTrChListToRemove           OPTIONAL
    }
}

DL-DPCH-InfoPerRL-r4 ::=            CHOICE {
    fdd                                 SEQUENCE {
```

```
        pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst,
        dpch-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                                 SEQUENCE {
        dl-CCTrChListToEstablish            DL-CCTrChList-r4                OPTIONAL,
        dl-CCTrChListToRemove               DL-CCTrChListToRemove           OPTIONAL
    }
}

DL-DPCH-InfoPerRL-r5 ::=            CHOICE {
    fdd                                 SEQUENCE {
        pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst,
        dpch-FrameOffset                    DPCH-FrameOffset,
        secondaryCPICH-Info                 SecondaryCPICH-Info             OPTIONAL,
        dl-ChannelisationCodeList           DL-ChannelisationCodeList,
        tpc-CombinationIndex                TPC-CombinationIndex,
        powerOffsetTPC-pdpdch               PowerOffsetTPC-pdpdch           OPTIONAL,
        ssdt-CellIdentity                   SSDT-CellIdentity               OPTIONAL,
        closedLoopTimingAdjMode             ClosedLoopTimingAdjMode         OPTIONAL
    },
    tdd                                 SEQUENCE {
        dl-CCTrChListToEstablish            DL-CCTrChList-r4                OPTIONAL,
        dl-CCTrChListToRemove               DL-CCTrChListToRemove           OPTIONAL
    }
}

DL-DPCH-InfoPerRL-PostFDD ::=                               SEQUENCE {
        pCPICH-UsageForChannelEst               PCPICH-UsageForChannelEst,
        dl-ChannelisationCode                   DL-ChannelisationCode,
        tpc-CombinationIndex                    TPC-CombinationIndex
}

DL-DPCH-InfoPerRL-PostTDD ::=               SEQUENCE {
    dl-DPCH-TimeslotsCodes                      DownlinkTimeslotsCodes
}

DL-DPCH-InfoPerRL-PostTDD-LCR-r4 ::=        SEQUENCE {
    dl-CCTrCH-TimeslotsCodes                    DownlinkTimeslotsCodes-LCR-r4
}

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-HSPDSCH-Information ::=          SEQUENCE {
    hs-scch-Info                    HS-SCCH-Info    OPTIONAL,
    measurement-feedback-Info       Measurement-Feedback-Info   OPTIONAL,
    modeSpecificInfo                CHOICE {
    tdd                             CHOICE{
            tdd384                          SEQUENCE {
                dl-HSPDSCH-TS-Configuration DL-HSPDSCH-TS-Configuration     OPTIONAL
            },
            tdd128                      SEQUENCE {
                hs-PDSCH-Midamble-Configuration-tdd128
                        HS-PDSCH-Midamble-Configuration-TDD128                      OPTIONAL
            }
        },
        fdd                         NULL
    }
}

-- The IE 'DL-HSPDSCH-TS-Configuration' applies to tdd-384 REL-5 onward
DL-HSPDSCH-TS-Configuration ::=     SEQUENCE (SIZE (1..maxTS-1)) OF
```

```
                                    SEQUENCE {
    timeslot                            TimeslotNumber,
    midambleShiftAndBurstType           MidambleShiftAndBurstType-DL
}


DL-InformationPerRL ::=             SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
        -- dummy1 and dummy 2 are not used in this version of specification, they should
        -- not be sent and if received they should be ignored.
            ~~pdsch-SHO-DCH-Info~~dummy1                    PDSCH-SHO-DCH-Info          OPTIONAL,
            ~~pdsch-CodeMapping~~dummy 2                    PDSCH-CodeMapping           OPTIONAL
        },
        tdd                                 PrimaryCCPCH-Info
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL                   OPTIONAL,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH                  OPTIONAL
}

DL-InformationPerRL-r4 ::=          SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
        -- dummy1 and dummy 2 are not used in this version of specification, they should
        -- not be sent and if received they should be ignored.
            ~~pdsch-SHO-DCH-Info~~dummy1                    PDSCH-SHO-DCH-Info          OPTIONAL,
            ~~pdsch-CodeMapping~~dummy 2                    PDSCH-CodeMapping           OPTIONAL
        },
        tdd                                 PrimaryCCPCH-Info-r4
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL-r4                OPTIONAL,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH-r4               OPTIONAL,
    cell-id                             CellIdentity                        OPTIONAL
}

DL-InformationPerRL-r5 ::=          SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
        -- dummy1 and dummy 2 are not used in this version of specification, they should
        -- not be sent and if received they should be ignored.
            ~~pdsch-SHO-DCH-Info~~dummy1                    PDSCH-SHO-DCH-Info          OPTIONAL,
            ~~pdsch-CodeMapping~~dummy 2                    PDSCH-CodeMapping           OPTIONAL,
            servingHSDSCH-RL-indicator          BOOLEAN
        },
        tdd                                 PrimaryCCPCH-Info-r4
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL-r5                OPTIONAL,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH-r4               OPTIONAL,
    cell-id                             CellIdentity                        OPTIONAL
}

DL-InformationPerRL-r5bis ::=       SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
        -- dummy1 and dummy 2 are not used in this version of specification, they should
        -- not be sent and if received they should be ignored.
            ~~pdsch-SHO-DCH-Info~~dummy1                    PDSCH-SHO-DCH-Info          OPTIONAL,
            ~~pdsch-CodeMapping~~dummy 2                    PDSCH-CodeMapping           OPTIONAL
        },
        tdd                                 PrimaryCCPCH-Info-r4
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL-r5                OPTIONAL,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH-r4               OPTIONAL,
    cell-id                             CellIdentity                        OPTIONAL
}

DL-InformationPerRL-List ::=        SEQUENCE (SIZE (1..maxRL)) OF
                                        DL-InformationPerRL

DL-InformationPerRL-List-r4 ::=     SEQUENCE (SIZE (1..maxRL)) OF
                                        DL-InformationPerRL-r4

DL-InformationPerRL-List-r5 ::=     SEQUENCE (SIZE (1..maxRL)) OF
                                        DL-InformationPerRL-r5
```

```
DL-InformationPerRL-List-r5bis ::=      SEQUENCE (SIZE (1..maxRL)) OF
                                            DL-InformationPerRL-r5bis

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-InformationPerRL-PostTDD-LCR-r4 ::=  SEQUENCE {
    primaryCCPCH-Info                       PrimaryCCPCH-InfoPostTDD-LCR-r4,
    dl-DPCH-InfoPerRL                       DL-DPCH-InfoPerRL-PostTDD-LCR-r4
}

DL-PDSCH-Information ::=            SEQUENCE {
-- dummy1 and dummy 2 are not used in this version of specification, it should
-- not be sent and if received it should be ignored.
    ~~pdsch-SHO-DCH-Info~~dummy1                    PDSCH-SHO-DCH-Info                  OPTIONAL,
    ~~pdsch-CodeMapping~~dummy2                 PDSCH-CodeMapping                   OPTIONAL

}

Dl-rate-matching-restriction ::=    SEQUENCE {
    restrictedTrCH-InfoList                 RestrictedTrCH-InfoList             OPTIONAL
}

DL-TPC-PowerOffsetPerRL ::=     SEQUENCE {
        powerOffsetTPC-pdpdch                   PowerOffsetTPC-pdpdch           OPTIONAL
}

-- NOTE: The radio links in the following list have a one-to-one mapping with the
-- radio links in the message.
DL-TPC-PowerOffsetPerRL-List ::=    SEQUENCE (SIZE (1..maxRL)) OF
                                        DL-TPC-PowerOffsetPerRL

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 {
                                                    chCode16-SF16(0),
                                                    chCode15-SF16(1),
                                                    chCode14-SF16(2),
                                                    chCode13-SF16(3),
                                                    chCode12-SF16(4),
                                                    chCode11-SF16(5),
                                                    chCode10-SF16(6),
                                                    chCode9-SF16(7),
                                                    chCode8-SF16(8),
                                                    chCode7-SF16(9),
                                                    chCode6-SF16(10),
                                                    chCode5-SF16(11),
                                                    chCode4-SF16(12),
                                                    chCode3-SF16(13),
                                                    chCode2-SF16(14),
                                                    chCode1-SF16(15)
                                                    }   (SIZE (16))
    }
}

DownlinkAdditionalTimeslots ::=     SEQUENCE {
    parameters                              CHOICE {
```

```
        sameAsLast                          SEQUENCE {
            timeslotNumber                      TimeslotNumber
        },
        newParameters                       SEQUENCE {
            individualTimeslotInfo              IndividualTimeslotInfo,
            dl-TS-ChannelisationCodesShort      DL-TS-ChannelisationCodesShort
        }
    }
}

DownlinkAdditionalTimeslots-LCR-r4 ::=  SEQUENCE {
    parameters                          CHOICE {
        sameAsLast                          SEQUENCE {
            timeslotNumber                      TimeslotNumber-LCR-r4
        },
        newParameters                       SEQUENCE {
            individualTimeslotInfo              IndividualTimeslotInfo-LCR-r4,
            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
        }
    }
}

DownlinkTimeslotsCodes-LCR-r4 ::=   SEQUENCE {
    firstIndividualTimeslotInfo         IndividualTimeslotInfo-LCR-r4,
    dl-TS-ChannelisationCodesShort      DL-TS-ChannelisationCodesShort,
    moreTimeslots                       CHOICE {
        noMore                              NULL,
        additionalTimeslots                 CHOICE {
            consecutive                         INTEGER (1..maxTS-LCR-1),
            timeslotList                        SEQUENCE (SIZE (1..maxTS-LCR-1)) OF
                                                    DownlinkAdditionalTimeslots-LCR-r4
        }
    }
}

DPC-Mode ::=                        ENUMERATED {
                                        singleTPC,
                                        tpcTripletInSoft }

-- Actual value DPCCH-PowerOffset = IE value * 2
DPCCH-PowerOffset ::=               INTEGER (-82..-3)

-- Actual value DPCCH-PowerOffset2 = 2 + (IE value * 4)
DPCCH-PowerOffset2 ::=              INTEGER (-28..-13)

DPCH-CompressedModeInfo ::=         SEQUENCE {
    tgp-SequenceList                    TGP-SequenceList
}

DPCH-CompressedModeStatusInfo ::=   SEQUENCE {
    tgps-Reconfiguration-CFN            TGPS-Reconfiguration-CFN,
    tgp-SequenceShortList                   SEQUENCE (SIZE (1..maxTGPS)) OF
                                            TGP-SequenceShort
}

-- Actual value DPCH-FrameOffset = 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)

DSCH-TransportChannelsInfo ::=      SEQUENCE (SIZE (1..maxTrCH)) OF
                                        SEQUENCE {
    dsch-transport-channel-identity         TransportChannelIdentity,
    dsch-TFS                                TransportFormatSet
}

DurationTimeInfo ::=                INTEGER (1..4096)

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..maxFACHPCH)) OF
                                        FACH-PCH-Information

Feedback-cycle ::=                  ENUMERATED {
                                        fc0, fc2, fc4, fc8, fc10, fc20, fc40, fc80, fc160}

FPACH-Info-r4 ::=                       SEQUENCE {
    timeslot                            TimeslotNumber-LCR-r4,
    channelisationCode                  TDD-FPACH-CCode16-r4,
    midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
    wi                                  Wi-LCR
}

FrequencyInfo ::=                   SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 FrequencyInfoFDD,
        tdd                                 FrequencyInfoTDD    }
}

FrequencyInfoFDD ::=                SEQUENCE {
    uarfcn-UL                           UARFCN              OPTIONAL,
    uarfcn-DL                           UARFCN
}

FrequencyInfoTDD ::=                SEQUENCE {
    uarfcn-Nt                           UARFCN
}

HS-ChannelisationCode-LCR ::=       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 }

HS-PDSCH-Midamble-Configuration-TDD128 ::=  SEQUENCE {
    midambleAllocationMode              CHOICE{
        defaultMidamble                     NULL,
        commonMidamble                      NULL,
        ueSpecificMidamble                  INTEGER (0..15)
    },
    -- Actual value midambleConfiguration = IE value * 2
    midambleConfiguration               INTEGER (1..8)
}

HS-SCCH-Info ::=                    SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            hS-SCCHChannelisationCodeInfo       SEQUENCE (SIZE (1..maxHSSCCHs)) OF
                                                    HS-SCCH-Codes,
            dl-ScramblingCode                   SecondaryScramblingCode     OPTIONAL
        },
```

```
        tdd                                 CHOICE {
            tdd384                              SEQUENCE {
                nack-ack-power-offset              INTEGER (-7..8),
                hs-SICH-PowerControl-Info          HS-SICH-Power-Control-Info-TDD384,
                hS-SCCH-SetConfiguration           SEQUENCE (SIZE (1..maxHSSCCHs)) OF
                        HS-SCCH-TDD384
                },
            tdd128                              SEQUENCE (SIZE (1..maxHSSCCHs)) OF
                                                    HS-SCCH-TDD128
        }
    }
}

HS-SCCH-Codes ::=                   INTEGER (0..127)

HS-SCCH-TDD128 ::=              SEQUENCE {
    timeslotNumber                      TimeslotNumber-LCR-r4,
    firstChannelisationCode             HS-ChannelisationCode-LCR,
    secondChannelisationCode            HS-ChannelisationCode-LCR,
    midambleAllocationMode              CHOICE {
        defaultMidamble                     NULL,
        commonMidamble                      NULL,
        ueSpecificMidamble                  INTEGER(0..15)
    },
    -- Actual value midambleConfiguration = IE value * 2
    midambleConfiguration               INTEGER (1..8),
    bler-target                         Bler-Target,
    hs-sich-configuration               HS-SICH-Configuration-TDD128
}

HS-SICH-Configuration-TDD128 ::=    SEQUENCE {
    timeslotNumber                      TimeslotNumber-LCR-r4,
    channelisationCode                  HS-ChannelisationCode-LCR,
    midambleAllocationMode              CHOICE {
        defaultMidamble                     NULL,
        ueSpecificMidamble                  SEQUENCE {
            midambleShift                       MidambleShiftLong
        }
    },
    -- Actual value midambleConfiguration = IE value * 2
    midambleConfiguration               INTEGER (1..8),
    nack-ack-power-offset               INTEGER (-7..8),
    power-level-HSSICH                  INTEGER (-120..-58),
    tpc-step-size                       ENUMERATED { s1, s2, s3 , spare1}
}

HS-SCCH-TDD384 ::=              SEQUENCE {
    timeslotNumber                      TimeslotNumber,
    channelisationCode                  DL-TS-ChannelisationCode,
    midambleAllocationMode              CHOICE {
        defaultMidamble                     NULL,
        commonMidamble                      NULL,
        ueSpecificMidamble                  SEQUENCE {
            midambleShift                       MidambleShiftLong
        }
    },
    midambleconfiguration               MidambleConfigurationBurstType1and3,
    bler-target                         Bler-Target,
    hs-sich-configuration               HS-SICH-Configuration-TDD384
}

HS-SICH-Configuration-TDD384 ::=    SEQUENCE {
    timeslotNumber                      TimeslotNumber,
    channelisationCode                  DL-TS-ChannelisationCode,
    midambleAllocationMode              CHOICE {
        defaultMidamble                     NULL,
        ueSpecificMidamble                  SEQUENCE {
            midambleShift                       MidambleShiftLong
        }
    },
    midambleconfiguration               MidambleConfigurationBurstType1and3
}

HS-SICH-Power-Control-Info-TDD384 ::= SEQUENCE {
    -- Actual value ul-target-SIR = IE value * 0.5
    ul-target-SIR                       INTEGER (-22..40),
    hs-sich-ConstantValue               ConstantValue
}
```

```
IndividualTimeslotInfo ::=          SEQUENCE {
    timeslotNumber                      TimeslotNumber,
    tfci-Existence                      BOOLEAN,
    midambleShiftAndBurstType           MidambleShiftAndBurstType
}

IndividualTimeslotInfo-LCR-r4 ::=   SEQUENCE {
    timeslotNumber                      TimeslotNumber-LCR-r4,
    tfci-Existence                      BOOLEAN,
    midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
    modulation                          ENUMERATED { mod-QPSK, mod-8PSK },
    ss-TPC-Symbols                      ENUMERATED { zero, one, sixteenOverSF },
    additionalSS-TPC-Symbols            INTEGER(1..15)      OPTIONAL
}

IndividualTimeslotInfo-LCR-r4-ext ::=       SEQUENCE {
-- timeslotNumber and tfci-Existence is taken from IndividualTimeslotInfo.
-- midambleShiftAndBurstType in IndividualTimeslotInfo shall be ignored.
    midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
    modulation                          ENUMERATED { mod-QPSK, mod-8PSK },
    ss-TPC-Symbols                      ENUMERATED { zero, one, sixteenOverSF }
}

IndividualTS-Interference ::=       SEQUENCE {
    timeslot                            TimeslotNumber,
    ul-TimeslotInterference             TDD-UL-Interference
}

IndividualTS-InterferenceList ::=   SEQUENCE (SIZE (1..maxTS)) OF
                                        IndividualTS-Interference

ITP ::=                             ENUMERATED {
                                        mode0, mode1 }

NidentifyAbort ::=  INTEGER (1..128)

MaxAllowedUL-TX-Power ::=           INTEGER (-50..33)

MaxAvailablePCPCH-Number ::=        INTEGER (1..64)

MaxPowerIncrease-r4 ::=             INTEGER (0..3)

MaxTFCI-Field2Value ::=             INTEGER (1..1023)

Measurement-Feedback-Info ::=       SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            measurementPowerOffset          MeasurementPowerOffset,
            feedback-cycle                  Feedback-cycle,
            cqi-RepetitionFactor            CQI-RepetitionFactor,
            deltaCQI                        DeltaCQI
        },
        tdd                             NULL
    }
}


MidambleConfigurationBurstType1and3 ::= ENUMERATED {ms4, ms8, ms16}

MidambleConfigurationBurstType2 ::=     ENUMERATED {ms3, ms6}

MidambleShiftAndBurstType ::=       SEQUENCE {
    burstType                           CHOICE {
        type1                               SEQUENCE {
            midambleConfigurationBurstType1and3 MidambleConfigurationBurstType1and3,
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftLong
                }
            }
        },
        type2                               SEQUENCE {
            midambleConfigurationBurstType2     MidambleConfigurationBurstType2,
            midambleAllocationMode              CHOICE {
```

```
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftShort
                }
            }
        },
        type3                               SEQUENCE {
            midambleConfigurationBurstType1and3 MidambleConfigurationBurstType1and3,
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftLong
                }
            }
        }
    }
}

MidambleShiftAndBurstType-LCR-r4 ::=    SEQUENCE {
    midambleAllocationMode              CHOICE {
        defaultMidamble                     NULL,
        commonMidamble                      NULL,
        ueSpecificMidamble                  SEQUENCE {
            midambleShift                       INTEGER (0..15)
        }
    },
    -- Actual value midambleConfiguration = IE value * 2
    midambleConfiguration               INTEGER (1..8)
}

MidambleShiftAndBurstType-DL ::=        SEQUENCE {
    burstType                           CHOICE {
        type1                               SEQUENCE {
            midambleConfigurationBurstType1and3 MidambleConfigurationBurstType1and3,
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftLong
                }
            }
        },
        type2                               SEQUENCE {
            midambleConfigurationBurstType2     MidambleConfigurationBurstType2,
            midambleAllocationMode              CHOICE {
                defaultMidamble                     NULL,
                commonMidamble                      NULL,
                ueSpecificMidamble                  SEQUENCE {
                    midambleShift                       MidambleShiftShort
                }
            }
        }
    }
}

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, prach-ConstantValue, dpch-ConstantValue and pusch-ConstantValue
    -- shall be ignored in 1.28Mcps TDD mode.
    alpha                               Alpha                       OPTIONAL,
    prach-ConstantValue                 ConstantValueTdd,
    dpch-ConstantValue                  ConstantValueTdd,
    pusch-ConstantValue                 ConstantValueTdd            OPTIONAL
}

OpenLoopPowerControl-IPDL-TDD-r4 ::=    SEQUENCE {
    ipdl-alpha                          Alpha,
    maxPowerIncrease                    MaxPowerIncrease-r4
}

PagingIndicatorLength ::=           ENUMERATED {
                                        pi4, pi8, pi16 }

PC-Preamble ::=                     INTEGER (0..7)

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 is conditional on new-configuration branch below, if this
    -- selected the IE is OPTIONAL otherwise it should not be sent
    pdsch-PowerControlInfo              PDSCH-PowerControlInfo              OPTIONAL,
    pdsch-AllocationPeriodInfo          AllocationPeriodInfo,
    configuration                       CHOICE {
        old-Configuration                   SEQUENCE {
            tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
            pdsch-Identity                      PDSCH-Identity
        },
        new-Configuration                   SEQUENCE {
            pdsch-Info                          PDSCH-Info,
            pdsch-Identity                      PDSCH-Identity              OPTIONAL
        }
    }
}

PDSCH-CapacityAllocationInfo-r4 ::= SEQUENCE {
    pdsch-AllocationPeriodInfo          AllocationPeriodInfo,
    configuration                       CHOICE {
        old-Configuration                   SEQUENCE {
            tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
            pdsch-Identity                      PDSCH-Identity
        },
        new-Configuration                   SEQUENCE {
            pdsch-Info                          PDSCH-Info-r4,
            pdsch-Identity                      PDSCH-Identity              OPTIONAL,
            pdsch-PowerControlInfo              PDSCH-PowerControlInfo      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-config                     PDSCH-CodeInfoList,
        replace                             ReplacedPDSCH-CodeInfoList
    }
}

PDSCH-Identity ::=                  INTEGER (1..hiPDSCHidentities)


PDSCH-Info ::=                      SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    pdsch-TimeslotsCodes                DownlinkTimeslotsCodes              OPTIONAL
}

PDSCH-Info-r4 ::=                       SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    tddOption                           CHOICE {
        tdd384                              SEQUENCE {
            pdsch-TimeslotsCodes                DownlinkTimeslotsCodes      OPTIONAL
        },
        tdd128                              SEQUENCE {
            pdsch-TimeslotsCodes                DownlinkTimeslotsCodes-LCR-r4   OPTIONAL
        }
    }
}

PDSCH-Info-LCR-r4 ::=               SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    pdsch-TimeslotsCodes                DownlinkTimeslotsCodes-LCR-r4       OPTIONAL
}

PDSCH-PowerControlInfo ::=          SEQUENCE {
    tpc-StepSizeTDD                     TPC-StepSizeTDD                     OPTIONAL,
    ul-CCTrChTPCList                    UL-CCTrChTPCList                    OPTIONAL
}

PDSCH-SHO-DCH-Info ::=              SEQUENCE {
    dsch-RadioLinkIdentifier            DSCH-RadioLinkIdentifier,
    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-SysInfo-HCR-r5 ::=                SEQUENCE {
    pdsch-Identity                      PDSCH-Identity,
    pdsch-Info                          PDSCH-Info,
    dsch-TransportChannelsInfo          DSCH-TransportChannelsInfo          OPTIONAL,
    dsch-TFCS                           TFCS                                OPTIONAL
```

```
}

PDSCH-SysInfo-LCR-r4 ::=            SEQUENCE {
    pdsch-Identity                      PDSCH-Identity,
    pdsch-Info                          PDSCH-Info-LCR-r4,
    dsch-TFS                            TransportFormatSet                  OPTIONAL,
    dsch-TFCS                           TFCS                                OPTIONAL
}

PDSCH-SysInfoList ::=               SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        PDSCH-SysInfo

PDSCH-SysInfoList-HCR-r5 ::=            SEQUENCE (SIZE (1..maxPDSCH)) OF PDSCH-SysInfo-HCR-r5

PDSCH-SysInfoList-LCR-r4 ::=        SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        PDSCH-SysInfo-LCR-r4

PDSCH-SysInfoList-SFN ::=           SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        SEQUENCE {
    pdsch-SysInfo                           PDSCH-SysInfo,
    sfn-TimeInfo                            SFN-TimeInfo                    OPTIONAL
}

PDSCH-SysInfoList-SFN-HCR-r5 ::=            SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        SEQUENCE {
    pdsch-SysInfo                           PDSCH-SysInfo-HCR-r5,
    sfn-TimeInfo                            SFN-TimeInfo                    OPTIONAL
}

PDSCH-SysInfoList-SFN-LCR-r4 ::=    SEQUENCE (SIZE (1..maxPDSCH)) OF
                                        SEQUENCE {
    pdsch-SysInfo                           PDSCH-SysInfo-LCR-r4,
    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 }

PichChannelisationCodeList-LCR-r4 ::=   SEQUENCE (SIZE (1..2)) OF
                                            DL-TS-ChannelisationCode

PICH-Info ::=                       CHOICE {
    fdd                                 SEQUENCE {
        channelisationCode256               ChannelisationCode256,
        pi-CountPerFrame                    PI-CountPerFrame,
        sttd-Indicator                      BOOLEAN
    },
    tdd                                 SEQUENCE {
        channelisationCode                  TDD-PICH-CCode                  OPTIONAL,
        timeslot                            TimeslotNumber                  OPTIONAL,
        midambleShiftAndBurstType           MidambleShiftAndBurstType,
        repetitionPeriodLengthOffset        RepPerLengthOffset-PICH         OPTIONAL,
        pagingIndicatorLength               PagingIndicatorLength           DEFAULT pi4,
        n-GAP                               N-GAP                           DEFAULT f4,
        n-PCH                               N-PCH                           DEFAULT 2
    }
}

PICH-Info-LCR-r4 ::=                SEQUENCE {
    timeslot                            TimeslotNumber-LCR-r4               OPTIONAL,
    pichChannelisationCodeList-LCR-r4   PichChannelisationCodeList-LCR-r4,
    midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
    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 }

    -- Actual measurement power offset value = IE value * 0.5
MeasurementPowerOffset ::=          INTEGER (-12..26)

PositionFixedOrFlexible ::=         ENUMERATED {
                                        fixed,
                                        flexible }

PowerControlAlgorithm ::=           CHOICE {
    algorithm1                          TPC-StepSizeFDD,
    algorithm2                          NULL
}

PowerOffsetPilot-pdpdch ::=         INTEGER (0..24)

PowerOffsetTPC-pdpdch ::=           INTEGER (0..24)

PowerRampStep ::=                   INTEGER (1..8)

PRACH-ChanCodes-LCR-r4 ::=          SEQUENCE (SIZE (1..4)) OF
                                        TDD-PRACH-CCode-LCR-r4

PRACH-Definition-LCR-r4 ::=         SEQUENCE {
    timeslot                            TimeslotNumber-PRACH-LCR-r4,
    prach-ChanCodes-LCR                 PRACH-ChanCodes-LCR-r4,
    midambleShiftAndBurstType           MidambleShiftAndBurstType-LCR-r4,
    fpach-Info                          FPACH-Info-r4
}

PRACH-Midamble ::=                  ENUMERATED {
                                        direct,
                                        direct-Inverted }

PRACH-Partitioning ::=              CHOICE {
    fdd                                 SEQUENCE (SIZE (1..maxASC)) OF
    -- TABULAR: If only "NumASC+1" (with, NumASC+1 < maxASC) ASCSetting-FDD are listed,
    -- the remaining (NumASC+2 through maxASC) ASCs are unspecified.
                                            ASCSetting-FDD,
    tdd                                 SEQUENCE (SIZE (1..maxASC)) OF
    -- TABULAR: If only "NumASC+1" (with, NumASC+1 < maxASC) ASCSetting-TDD are listed,
    -- the remaining (NumASC+2 through maxASC) ASCs are unspecified.
                                            ASCSetting-TDD
}

PRACH-Partitioning-LCR-r4 ::=       SEQUENCE (SIZE (1..maxASC)) OF
    -- TABULAR: If only "NumASC+1" (with, NumASC+1 < maxASC) ASCSetting-TDD-LCR-r4 are listed,
    -- the remaining (NumASC+2 through maxASC) ASCs are unspecified.
                                            ASCSetting-TDD-LCR-r4

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,
            channelisationCodeList              TDD-PRACH-CCodeList,
            prach-Midamble                      PRACH-Midamble
        }
    }
}

PRACH-RACH-Info-LCR-r4 ::=          SEQUENCE {
    sync-UL-Info                        SYNC-UL-Info-r4,
    prach-DefinitionList                SEQUENCE (SIZE (1..maxPRACH-FPACH)) OF
```

```
                                          PRACH-Definition-LCR-r4
}

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-SystemInformation-LCR-r4 ::=  SEQUENCE {
    prach-RACH-Info-LCR                 PRACH-RACH-Info-LCR-r4,
    rach-TransportFormatSet-LCR         TransportFormatSet-LCR         OPTIONAL,
    prach-Partitioning-LCR              PRACH-Partitioning-LCR-r4      OPTIONAL
}

PRACH-SystemInformationList ::=     SEQUENCE (SIZE (1..maxPRACH)) OF
                                        PRACH-SystemInformation

PRACH-SystemInformationList-LCR-r4 ::=  SEQUENCE (SIZE (1..maxPRACH)) OF
                                            PRACH-SystemInformation-LCR-r4

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 should be ignored for 1.28Mcps TDD mode
        syncCase                            CHOICE {
            syncCase1                           SEQUENCE {
                timeslot                            TimeslotNumber
            },
            syncCase2                           SEQUENCE {
                timeslotSync2                       TimeslotSync2
            }
        }                                                                  OPTIONAL,
        cellParametersID                    CellParametersID               OPTIONAL,
        sctd-Indicator                      BOOLEAN
    }
}

PrimaryCCPCH-Info-r4 ::=            CHOICE {
    fdd                                 SEQUENCE {
        tx-DiversityIndicator               BOOLEAN
    },
    tdd                                 SEQUENCE {
        tddOption                           CHOICE {
            tdd384                              SEQUENCE {
                syncCase                            CHOICE {
                    syncCase1                           SEQUENCE {
                        timeslot                            TimeslotNumber
                    },
                    syncCase2                           SEQUENCE {
                        timeslotSync2                       TimeslotSync2
                    }
                }                                                          OPTIONAL
```

```
            },
            tdd128                              SEQUENCE {
                tstd-Indicator                      BOOLEAN
            }
        },
        cellParametersID                    CellParametersID                OPTIONAL,
        sctd-Indicator                      BOOLEAN
    }
}

PrimaryCCPCH-Info-LCR-r4 ::=        SEQUENCE {
    tstd-Indicator                      BOOLEAN,
    cellParametersID                    CellParametersID                OPTIONAL,
    sctd-Indicator                      BOOLEAN
}

-- For 1.28Mcps TDD, the following IE includes elements for the PCCPCH Info additional to those
-- in PrimaryCCPCH-Info
PrimaryCCPCH-Info-LCR-r4-ext ::=    SEQUENCE {
    tstd-Indicator                      BOOLEAN
}

PrimaryCCPCH-InfoPost ::=           SEQUENCE {
    syncCase                            CHOICE {
        syncCase1                           SEQUENCE {
            timeslot                            TimeslotNumber
        },
        syncCase2                           SEQUENCE {
            timeslotSync2                       TimeslotSync2
        }
    },
    cellParametersID                    CellParametersID,
    sctd-Indicator                      BOOLEAN
}

PrimaryCCPCH-InfoPostTDD-LCR-r4 ::= SEQUENCE {
    tstd-Indicator                      BOOLEAN,
    cellParametersID                    CellParametersID,
    sctd-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 {
            pusch-AllocationPeriodInfo          AllocationPeriodInfo,
            pusch-PowerControlInfo              UL-TargetSIR                OPTIONAL,
            configuration                       CHOICE {
                old-Configuration                   SEQUENCE {
                    tfcs-ID                             TFCS-IdentityPlain          DEFAULT 1,
                    pusch-Identity                      PUSCH-Identity
                },
                new-Configuration                   SEQUENCE {
                    pusch-Info                          PUSCH-Info,
                    pusch-Identity                      PUSCH-Identity      OPTIONAL
                }
            }
        }
    }
}

PUSCH-CapacityAllocationInfo-r4 ::= SEQUENCE {
    pusch-Allocation                    CHOICE {
```

```
        pusch-AllocationPending             NULL,
        pusch-AllocationAssignment          SEQUENCE {
            pusch-AllocationPeriodInfo          AllocationPeriodInfo,
            pusch-PowerControlInfo              PUSCH-PowerControlInfo-r4   OPTIONAL,
            configuration                       CHOICE {
                old-Configuration                   SEQUENCE {
                    tfcs-ID                             TFCS-IdentityPlain          DEFAULT 1,
                    pusch-Identity                      PUSCH-Identity
                },
                new-Configuration                   SEQUENCE {
                    pusch-Info                          PUSCH-Info-r4,
                    pusch-Identity                      PUSCH-Identity      OPTIONAL
                }
            }
        }
    }
}

PUSCH-Identity ::=                  INTEGER (1..hiPUSCHidentities)

PUSCH-Info ::=                      SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    pusch-TimeslotsCodes                UplinkTimeslotsCodes                OPTIONAL
}

PUSCH-Info-r4 ::=                   SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    tddOption                           CHOICE {
        tdd384                              SEQUENCE {
            pusch-TimeslotsCodes                UplinkTimeslotsCodes        OPTIONAL
        },
        tdd128                              SEQUENCE {
            pusch-TimeslotsCodes                UplinkTimeslotsCodes-LCR-r4 OPTIONAL
        }
    }
}

PUSCH-Info-LCR-r4 ::=               SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,

    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    pusch-TimeslotsCodes                UplinkTimeslotsCodes-LCR-r4         OPTIONAL
}

PUSCH-PowerControlInfo-r4 ::=       SEQUENCE {
    -- The IE ul-TargetSIR corresponds to PRX-PUSCHdes for 1.28Mcps TDD
    -- Actual value PRX-PUSCHdes = (value of IE "ul-TargetSIR" – 120)
    ul-TargetSIR                        UL-TargetSIR,
    tddOption                           CHOICE {
        tdd384                              NULL,
        tdd128                              SEQUENCE {
            tpc-StepSize                        TPC-StepSizeTDD             OPTIONAL
        }
    }
}

PUSCH-SysInfo ::=                   SEQUENCE {
    pusch-Identity                      PUSCH-Identity,
    pusch-Info                          PUSCH-Info,
    usch-TFS                            TransportFormatSet                  OPTIONAL,
    usch-TFCS                           TFCS                                OPTIONAL
}

PUSCH-SysInfo-HCR-r5 ::=                    SEQUENCE {
    pusch-Identity                      PUSCH-Identity,
    pusch-Info                          PUSCH-Info,
    usch-TransportChannelsInfo          USCH-TransportChannelsInfo          OPTIONAL,
    usch-TFCS                           TFCS                                OPTIONAL
}

PUSCH-SysInfo-LCR-r4 ::=            SEQUENCE {
    pusch-Identity                      PUSCH-Identity,
    pusch-Info                          PUSCH-Info-LCR-r4,
    usch-TFS                            TransportFormatSet                  OPTIONAL,
    usch-TFCS                           TFCS                                OPTIONAL
}
```

```
PUSCH-SysInfoList ::=               SEQUENCE (SIZE (1..maxPUSCH)) OF
                                        PUSCH-SysInfo

PUSCH-SysInfoList-HCR-r5 ::=            SEQUENCE (SIZE (1..maxPUSCH)) OF PUSCH-SysInfo-HCR-r5

PUSCH-SysInfoList-LCR-r4 ::=        SEQUENCE (SIZE (1..maxPUSCH)) OF
                                        PUSCH-SysInfo-LCR-r4

PUSCH-SysInfoList-SFN ::=           SEQUENCE (SIZE (1..maxPUSCH)) OF
                                        SEQUENCE {
    pusch-SysInfo                           PUSCH-SysInfo,
    sfn-TimeInfo                            SFN-TimeInfo                    OPTIONAL
}

PUSCH-SysInfoList-SFN-HCR-r5 ::=            SEQUENCE (SIZE (1..maxPUSCH)) OF
                                        SEQUENCE {
    pusch-SysInfo                           PUSCH-SysInfo-HCR-r5,
    sfn-TimeInfo                            SFN-TimeInfo                    OPTIONAL
}

PUSCH-SysInfoList-SFN-LCR-r4 ::=        SEQUENCE (SIZE (1..maxPUSCH)) OF
                                        SEQUENCE {
    pusch-SysInfo                           PUSCH-SysInfo-LCR-r4,
    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 could just as well be NULL also.
    repetitionPeriod2                   INTEGER (1..1),
    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 {
    dl-restrictedTrCh-Type              DL-TrCH-Type,
    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,
-- dummy is not used in this version of specification
-- and it should be ignored.
    tfci-CombiningIndicatordummy                BOOLEAN,
    sccpch-InfoforFACH                  SCCPCH-InfoForFACH                  OPTIONAL
}

RL-AdditionInformationList ::=      SEQUENCE (SIZE (1..maxRL-1)) OF
                                        RL-AdditionInformation

RL-IdentifierList ::=               SEQUENCE (SIZE (1..maxRL)) OF
                                        PrimaryCPICH-Info

RL-RemovalInformationList ::=       SEQUENCE (SIZE (1..maxRL)) 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,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            fach-PCH-InformationList            FACH-PCH-InformationList,
            sib-ReferenceListFACH               SIB-ReferenceListFACH
        },
        tdd                                 SEQUENCE {
            fach-PCH-InformationList            FACH-PCH-InformationList
        }
    }
}

SCCPCH-InfoForFACH-r4 ::=               SEQUENCE {
    secondaryCCPCH-Info                 SecondaryCCPCH-Info-r4,
    tfcs                                TFCS,
    fach-PCH-InformationList            FACH-PCH-InformationList,
```

```
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            sib-ReferenceListFACH           SIB-ReferenceListFACH
        },
        tdd                             NULL
    }
}

SCCPCH-SystemInformation ::=        SEQUENCE {
    secondaryCCPCH-Info                 SecondaryCCPCH-Info,
    tfcs                                TFCS                            OPTIONAL,
    fach-PCH-InformationList            FACH-PCH-InformationList        OPTIONAL,
    pich-Info                           PICH-Info                       OPTIONAL
}

SCCPCH-SystemInformation-LCR-r4-ext ::= SEQUENCE {
    secondaryCCPCH-LCR-Extensions   SecondaryCCPCH-Info-LCR-r4-ext,
    -- pich-Info in the SCCPCH-SystemInformation IE shall be absent,
    -- and instead the following used.
    pich-Info                       PICH-Info-LCR-r4                    OPTIONAL
}

SCCPCH-SystemInformationList ::=    SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                        SCCPCH-SystemInformation

-- SCCPCH-SystemInformationList-LCR-r4-ext includes elements additional to those in
-- SCCPCH-SystemInformationList for the 1.28Mcps TDD. The order of the IEs
-- indicates which SCCPCH-SystemInformation-LCR-r4-ext IE extends which
-- SCCPCH-SystemInformation IE.
SCCPCH-SystemInformationList-LCR-r4-ext ::= SEQUENCE (SIZE (1..maxSCCPCH)) OF
                                                SCCPCH-SystemInformation-LCR-r4-ext
ScramblingCodeChange ::=            ENUMERATED {
                                        codeChange, noCodeChange }

ScramblingCodeType ::=              ENUMERATED {
                                        shortSC,
                                        longSC }

SecondaryCCPCH-Info ::=             SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            -- dummy1 is not used in this version of the specification and should be ignored.
            dummy1                          PCPICH-UsageForChannelEst,
            -- dummy2 is not used in this version of the specification.  It should not
            -- be sent and if received it should be ignored.
            dummy2                          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
        }
    }
}

SecondaryCCPCH-Info-r4 ::=      SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            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,
            tddOption                       CHOICE {
```

```
                tdd384                          SEQUENCE {
                    individualTimeslotInfo          IndividualTimeslotInfo
                },
                tdd128                          SEQUENCE {
                    individualTimeslotInfo          IndividualTimeslotInfo-LCR-r4
                }
            },
            channelisationCode              SCCPCH-ChannelisationCodeList
        }
    }
}

SecondaryCCPCH-Info-LCR-r4-ext ::=  SEQUENCE {
    individualTimeslotLCR-Ext           IndividualTimeslotInfo-LCR-r4-ext
}

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
}

-- actual scheduling value = 2^(signalled value +1) and is the periodicity of sending special burst frames
SpecialBurstScheduling ::=              INTEGER (0..7)

SpreadingFactor ::=                 ENUMERATED {
                                        sf4, sf8, sf16, sf32,
                                        sf64, sf128, sf256 }
```

```
SRB-delay ::=                       INTEGER (0..7)

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
}

SSDT-Information-r4 ::=             SEQUENCE {
    s-Field                             S-Field,
    codeWordSet                         CodeWordSet,
    ssdt-UL-r4                          SSDT-UL                             OPTIONAL
}

SSDT-UL ::=                         ENUMERATED {
                                        ul, ul-AndDL }

SynchronisationParameters-r4 ::=    SEQUENCE {
    sync-UL-CodesBitmap                 BIT STRING {
                                            code7(0),
                                            code6(1),
                                            code5(2),
                                            code4(3),
                                            code3(4),
                                            code2(5),
                                            code1(6),
                                            code0(7)
                                            } (SIZE (8)),
    fpach-Info                          FPACH-Info-r4,
    -- Actual value prxUpPCHdes = IE value - 120
    prxUpPCHdes                         INTEGER (0..62),
    sync-UL-Procedure                   SYNC-UL-Procedure-r4                OPTIONAL
}

SYNC-UL-Procedure-r4 ::=            SEQUENCE {
    max-SYNC-UL-Transmissions           ENUMERATED { tr1, tr2, tr4, tr8 },
    powerRampStep                       INTEGER (0..3)
}

SYNC-UL-Info-r4 ::=                 SEQUENCE {
    sync-UL-Codes-Bitmap                BIT STRING {
                                            code7(0),
                                            code6(1),
                                            code5(2),
                                            code4(3),
                                            code3(4),
                                            code2(5),
                                            code1(6),
                                            code0(7)
                                            } ( SIZE (8)),
    -- Actual value prxUpPCHdes = IE value - 120
    prxUpPCHdes                         INTEGER (0..62),
    powerRampStep                       INTEGER (0..3),
    max-SYNC-UL-Transmissions           ENUMERATED { tr1, tr2, tr4, tr8 } ,
    mmax                                INTEGER(1..32)
}

TDD-FPACH-CCode16-r4 ::=            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-UL-Interference ::=             INTEGER (-110..-52)

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-CCode-LCR-r4 ::=          ENUMERATED {
                                        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 }

TDD-PRACH-CCodeList ::=             CHOICE {
    sf8                                 SEQUENCE (SIZE (1..8)) OF
                                            TDD-PRACH-CCode8,
-- Channelisation codes cc16-9, cc16-10, cc16-11, cc16-12, cc16-13, cc16-14,
-- cc16-15 and cc16-16 shall not be used
    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 }

TGCFN ::=                           INTEGER (0..255)

-- In TGD, 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,
                                        multi-carrier }

TGP-Sequence ::=                    SEQUENCE {
    tgpsi                               TGPSI,
    tgps-Status                         CHOICE {
        activate                            SEQUENCE {
            tgcfn                               TGCFN
        },
        deactivate                          NULL
    },
    tgps-ConfigurationParams            TGPS-ConfigurationParams            OPTIONAL
}

TGPS-Reconfiguration-CFN ::=        INTEGER (0..255)

TGP-SequenceList ::=                SEQUENCE (SIZE (1..maxTGPS)) OF
                                        TGP-Sequence

TGP-SequenceShort ::=               SEQUENCE {
    tgpsi                               TGPSI,
    tgps-Status                         CHOICE {
        activate                            SEQUENCE {
            tgcfn                               TGCFN
        },
        deactivate                          NULL
    }
}

TGPL ::=                            INTEGER (1..144)

-- TABULAR: In TGPRC, value 0 represents "infinity" in the tabular description.
```

```
TGPRC ::=                           INTEGER (0..511)

TGPS-ConfigurationParams ::=        SEQUENCE {
    tgmp                                TGMP,
    tgprc                               TGPRC,
    tgsn                                TGSN,
    tgl1                                TGL,
    tgl2                                TGL                                 OPTIONAL,
    tgd                                 TGD,
    tgpl1                               TGPL,
    -- dummy is not used in this version of the specification, it should
    -- not be sent and if received it may be ignored.
    dummy                           TGPL                                OPTIONAL,
    rpp                                 RPP,
    itp                                 ITP,
    -- TABULAR: Compressed mode method is nested inside UL-DL-Mode
    ul-DL-Mode                          UL-DL-Mode,
    dl-FrameType                        DL-FrameType,
    deltaSIR1                           DeltaSIR,
    deltaSIRAfter1                      DeltaSIR,
    deltaSIR2                           DeltaSIR                            OPTIONAL,
    deltaSIRAfter2                      DeltaSIR                            OPTIONAL,
    nidentifyAbort                      NidentifyAbort                      OPTIONAL,
    treconfirmAbort                     TreconfirmAbort                     OPTIONAL
}

TGPSI ::=                           INTEGER (1..maxTGPS)

TGSN ::=                            INTEGER (0..14)

TimeInfo ::=                        SEQUENCE {
    activationTime                      ActivationTime                      OPTIONAL,
    durationTimeInfo                    DurationTimeInfo                    OPTIONAL
}

TimeslotList ::=                    SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotNumber

TimeslotList-r4 ::=                 CHOICE {
    tdd384                              SEQUENCE (SIZE (1..maxTS)) OF
                                            TimeslotNumber,
    tdd128                              SEQUENCE (SIZE (1..maxTS-LCR)) OF
                                            TimeslotNumber-LCR-r4
}

-- If TimeslotNumber is included for a 1.28Mcps TDD description, it shall take values from 0..6
TimeslotNumber ::=                      INTEGER (0..14)

TimeslotNumber-LCR-r4 ::=               INTEGER (0..6)

TimeslotNumber-PRACH-LCR-r4 ::=     INTEGER (1..6)

TimeslotSync2 ::=               INTEGER (0..6)

-- Actual value TimingOffset = IE value * 256
TimingOffset ::=                    INTEGER (0..149)

TPC-CombinationIndex ::=            INTEGER (0..5)

-- Actual value TPC-StepSizeFDD = IE value + 1
TPC-StepSizeFDD ::=                 INTEGER (0..1)

TPC-StepSizeTDD ::=                 INTEGER (1..3)

-- Actual value TreconfirmAbort = IE value * 0.5 seconds
TreconfirmAbort ::= INTEGER (1..20)

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-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    ul-TargetSIR                        UL-TargetSIR,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes                OPTIONAL
}

UL-CCTrCH-r4 ::=                    SEQUENCE {
    tfcs-ID                             TFCS-IdentityPlain                  DEFAULT 1,
    -- The IE ul-TargetSIR corresponds to PRX-DPCHdes for 1.28Mcps TDD
    -- Actual value PRX-DPCHdes = (value of IE "ul-TargetSIR" – 120)
    ul-TargetSIR                        UL-TargetSIR,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    tddOption                           CHOICE {
        tdd384                              SEQUENCE {
            ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes        OPTIONAL
        },
        tdd128                              SEQUENCE {
            ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes-LCR-r4 OPTIONAL
        }
    }
}

UL-CCTrCHList ::=                   SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        UL-CCTrCH

UL-CCTrCHList-r4 ::=                SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        UL-CCTrCH-r4

UL-CCTrCHListToRemove ::=           SEQUENCE (SIZE (1..maxCCTrCH)) OF
                                        TFCS-IdentityPlain

UL-CCTrChTPCList ::=                SEQUENCE (SIZE (0..maxCCTrCH)) OF
                                            TFCS-Identity

UL-ChannelRequirement ::=           CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info,
    cpch-SetInfo                        CPCH-SetInfo
}

UL-ChannelRequirement-r4 ::=        CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r4,
    cpch-SetInfo                        CPCH-SetInfo
}

UL-ChannelRequirement-r5 ::=        CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r5,
    cpch-SetInfo                        CPCH-SetInfo
}

UL-ChannelRequirementWithCPCH-SetID ::= CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info,
    cpch-SetInfo                        CPCH-SetInfo,
    cpch-SetID                          CPCH-SetID
}

UL-ChannelRequirementWithCPCH-SetID-r4 ::=  CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r4,
    cpch-SetInfo                        CPCH-SetInfo,
    cpch-SetID                          CPCH-SetID
}

UL-ChannelRequirementWithCPCH-SetID-r5 ::=  CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r5,
    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-and-dl                               SEQUENCE {
        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 is conditional based on history
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvanceControl     OPTIONAL,
            ul-CCTrCHList                       UL-CCTrCHList               OPTIONAL,
            ul-CCTrCHListToRemove               UL-CCTrCHListToRemove       OPTIONAL
        }
    }
}

UL-DPCH-Info-r4 ::=                 SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo-r4         OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            numberOfDPDCH                       NumberOfDPDCH               DEFAULT 1,
            spreadingFactor                     SpreadingFactor,
            tfci-Existence                      BOOLEAN,
            -- numberOfFBI-Bits is conditional based on history
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvanceControl-r4  OPTIONAL,
            ul-CCTrCHList                       UL-CCTrCHList-r4            OPTIONAL,
            ul-CCTrCHListToRemove               UL-CCTrCHListToRemove       OPTIONAL
        }
    }
}

UL-DPCH-Info-r5 ::=                 SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo-r5         OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            numberOfDPDCH                       NumberOfDPDCH               DEFAULT 1,
            spreadingFactor                     SpreadingFactor,
            tfci-Existence                      BOOLEAN,
            -- numberOfFBI-Bits is conditional based on history
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvanceControl-r4  OPTIONAL,
            ul-CCTrCHList                       UL-CCTrCHList-r4            OPTIONAL,
            ul-CCTrCHListToRemove               UL-CCTrCHListToRemove       OPTIONAL
        }
    }
}

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-InfoPostTDD-LCR-r4 ::=      SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoPostTDD-LCR-r4,
    ul-TimingAdvance                    UL-TimingAdvanceControl-LCR-r4              OPTIONAL,
    ul-CCTrCH-TimeslotsCodes            UplinkTimeslotsCodes-LCR-r4
}

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,
        sRB-delay                           SRB-delay,
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
        powerControlAlgorithm               PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        ul-TargetSIR                        UL-TargetSIR                OPTIONAL,
        ul-OL-PC-Signalling                 CHOICE {
            broadcast-UL-OL-PC-info             NULL,
            individuallySignalled               SEQUENCE {
                individualTS-InterferenceList       IndividualTS-InterferenceList,
                dpch-ConstantValue                  ConstantValueTdd,
                primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power
            }
        }                                                               OPTIONAL
    }
}

UL-DPCH-PowerControlInfo-r4 ::=     CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        pc-Preamble                         PC-Preamble,
        sRB-delay                           SRB-delay,
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
        powerControlAlgorithm               PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        -- The IE ul-TargetSIR corresponds to PRX-DPCHdes for 1.28Mcps TDD
        -- Actual value PRX-DPCHdes = (value of IE "ul-TargetSIR" – 120)
        ul-TargetSIR                        UL-TargetSIR                OPTIONAL,
        ul-OL-PC-Signalling                 CHOICE {
            broadcast-UL-OL-PC-info             NULL,
            individuallySignalled               SEQUENCE {
                tddOption                           CHOICE {
                    tdd384                              SEQUENCE {
                        individualTS-InterferenceList       IndividualTS-InterferenceList,
                        dpch-ConstantValue                  ConstantValue
                    },
                    tdd128                              SEQUENCE {
                        tpc-StepSize                        TPC-StepSizeTDD
                    }
                },
                primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power
            }
        }
    }
}
```

```
UL-DPCH-PowerControlInfo-r5 ::=     CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        pc-Preamble                         PC-Preamble,
        sRB-delay                           SRB-delay,
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
        powerControlAlgorithm               PowerControlAlgorithm,
        deltaACK                            DeltaACK    OPTIONAL,
        deltaNACK                           DeltaNACK   OPTIONAL,
        ack-NACK-repetition-factor          ACK-NACK-repetitionFactor   OPTIONAL
    },
    tdd                                 SEQUENCE {
        -- The IE ul-TargetSIR corresponds to PRX-DPCHdes for 1.28Mcps TDD
        -- Actual value PRX-DPCHdes = (value of IE "ul-TargetSIR" – 120)
        ul-TargetSIR                        UL-TargetSIR                OPTIONAL,
        ul-OL-PC-Signalling                 CHOICE {
            broadcast-UL-OL-PC-info             NULL,
            individuallySignalled               SEQUENCE {
                tddOption                           CHOICE {
                    tdd384                              SEQUENCE {
                        individualTS-InterferenceList       IndividualTS-InterferenceList,
                        dpch-ConstantValue                  ConstantValue
                    },
                    tdd128                              SEQUENCE {
                        tpc-StepSize                        TPC-StepSizeTDD
                    }
                },
                primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power
            }
        }
    }
}

UL-DPCH-PowerControlInfoPostFDD ::= SEQUENCE {
    -- DPCCH-PowerOffset2 has a smaller range to save bits
    dpcch-PowerOffset                   DPCCH-PowerOffset2,
    pc-Preamble                         PC-Preamble,
    sRB-delay                           SRB-delay
}

UL-DPCH-PowerControlInfoPostTDD ::= SEQUENCE {
    ul-TargetSIR                        UL-TargetSIR,
    ul-TimeslotInterference             TDD-UL-Interference
}

UL-DPCH-PowerControlInfoPostTDD-LCR-r4 ::=  SEQUENCE {
    -- The IE ul-TargetSIR corresponds to PRX-DPCHdes for 1.28Mcps TDD
    -- Actual value PRX-DPCHdes = (value of IE "ul-TargetSIR" – 120)
    ul-TargetSIR                        UL-TargetSIR
}

UL-DPCH-PowerControlInfoPredef ::=      CHOICE {
    fdd                                 SEQUENCE {
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
        powerControlAlgorithm               PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        -- dpch-ConstantValue shall be ignored if in 1.28Mcps TDD mode.
        dpch-ConstantValue                  ConstantValueTdd
    }
}

UL-Interference ::=                 INTEGER (-110..-70)

UL-ScramblingCode ::=               INTEGER (0..16777215)


UL-SynchronisationParameters-r4 ::= SEQUENCE {
    stepSize                            INTEGER (1..8),
    frequency                           INTEGER (1..8)
}

-- Actual value UL-TargetSIR = (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-TimingAdvanceControl-r4 ::=      CHOICE {
    disabled                            NULL,
    enabled                             SEQUENCE {
        tddOption                           CHOICE {
            tdd384                              SEQUENCE {
                ul-TimingAdvance                    UL-TimingAdvance                OPTIONAL,
                activationTime                      ActivationTime                  OPTIONAL
            },
            tdd128                              SEQUENCE {
                ul-SynchronisationParameters        UL-SynchronisationParameters-r4 OPTIONAL,
                synchronisationParameters           SynchronisationParameters-r4    OPTIONAL
            }
        }
    }
}

UL-TimingAdvanceControl-LCR-r4 ::=  CHOICE {
    disabled                            NULL,
    enabled                             SEQUENCE {
        ul-SynchronisationParameters        UL-SynchronisationParameters-r4 OPTIONAL,
        synchronisationParameters           SynchronisationParameters-r4    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
        }
    }
}

UplinkAdditionalTimeslots-LCR-r4 ::=    SEQUENCE {
    parameters                          CHOICE {
        sameAsLast                          SEQUENCE {
            timeslotNumber                      TimeslotNumber
        },
        newParameters                       SEQUENCE {
            individualTimeslotInfo                  IndividualTimeslotInfo-LCR-r4,
            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
        }
    }
}

UplinkTimeslotsCodes-LCR-r4 ::=     SEQUENCE {
    dynamicSFusage                      BOOLEAN,
    firstIndividualTimeslotInfo         IndividualTimeslotInfo-LCR-r4,
    ul-TS-ChannelisationCodeList        UL-TS-ChannelisationCodeList,
    moreTimeslots                       CHOICE {
        noMore                              NULL,
        additionalTimeslots                 CHOICE {
            consecutive                         SEQUENCE {
                numAdditionalTimeslots              INTEGER (1..maxTS-LCR-1)
            },
            timeslotList                        SEQUENCE (SIZE (1..maxTS-LCR-1)) OF
                                                    UplinkAdditionalTimeslots-LCR-r4
        }
    }
}

Wi-LCR ::=                                                                  INTEGER(1..4)

-- ***************************************************
--
--     MEASUREMENT INFORMATION ELEMENTS (10.3.7)
--
-- ***************************************************

AcquisitionSatInfo ::=              SEQUENCE {
    satID                               SatID,
    -- Actual value dopplerOthOrder = IE value * 2.5
    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


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, spare12, spare11,
                                        spare10, spare9, spare8, spare7, spare6,
                                        spare5, spare4, spare3, spare2, spare1 }
```

```
AzimuthAndElevation ::=             SEQUENCE {
    -- Actual value azimuth = IE value * 11.25
    azimuth                             INTEGER (0..31),
    -- Actual value elevation = IE value * 11.25
    elevation                           INTEGER (0..7)
}

BadSatList ::=                      SEQUENCE (SIZE (1..maxSat)) OF
                                        INTEGER (0..63)

Frequency-Band ::=                  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 {
    -- Value maxCellMeas is not allowed for verifiedBSIC
    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
}

CellDCH-ReportCriteria-LCR-r4 ::=   CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria-LCR-r4,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

-- Actual value CellIndividualOffset = 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,
            readSFN-Indicator                   BOOLEAN
        }
    }
}

CellInfo-r4 ::=                     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-r4,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power       OPTIONAL,
            timeslotInfoList                    TimeslotInfoList-r4         OPTIONAL,
            readSFN-Indicator                   BOOLEAN

        }
    }
}

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,
            readSFN-Indicator                   BOOLEAN
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-RSCP        OPTIONAL
}

CellInfoSI-RSCP-LCR-r4 ::=          SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    primaryCCPCH-Info                   PrimaryCCPCH-Info-LCR-r4,
    primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power               OPTIONAL,
    timeslotInfoList                    TimeslotInfoList-LCR-r4             OPTIONAL,
    readSFN-Indicator                   BOOLEAN,
    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,
            readSFN-Indicator                   BOOLEAN
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-ECN0    OPTIONAL
}

CellInfoSI-ECN0-LCR-r4 ::=          SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    primaryCCPCH-Info                   PrimaryCCPCH-Info-r4,
    primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power               OPTIONAL,
    timeslotInfoList                    TimeslotInfoList-LCR-r4             OPTIONAL,
    readSFN-Indicator                   BOOLEAN,
    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,
            readSFN-Indicator                   BOOLEAN
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-RSCP    OPTIONAL
}

CellInfoSI-HCS-RSCP-LCR-r4 ::=      SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    primaryCCPCH-Info                   PrimaryCCPCH-Info-LCR-r4,
    primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power               OPTIONAL,
    timeslotInfoList                    TimeslotInfoList-LCR-r4             OPTIONAL,
    readSFN-Indicator                   BOOLEAN,
    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,
            readSFN-Indicator                   BOOLEAN
        }
    },
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-ECN0    OPTIONAL
}

CellInfoSI-HCS-ECN0-LCR-r4 ::=      SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 0,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    primaryCCPCH-Info                   PrimaryCCPCH-Info-LCR-r4,
    primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power               OPTIONAL,
    timeslotInfoList                    TimeslotInfoList-LCR-r4             OPTIONAL,
    readSFN-Indicator                   BOOLEAN,
    cellSelectionReselectionInfo        CellSelectReselectInfoSIB-11-12-HCS-ECN0    OPTIONAL
}

CellMeasuredResults ::=             SEQUENCE {
    cellIdentity                        CellIdentity                        OPTIONAL,
    -- dummy is not used in this version of the specification, it should
    -- not be sent and if received it should be ignored.
    dummy           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,
            pathloss                            Pathloss                    OPTIONAL,
            timeslotISCP-List                   TimeslotISCP-List           OPTIONAL
        }
```

```
	}
}

CellMeasurementEventResults ::=		CHOICE {
	fdd									SEQUENCE (SIZE (1..maxCellMeas)) OF
											PrimaryCPICH-Info,
	tdd									SEQUENCE (SIZE (1..maxCellMeas)) OF
											PrimaryCCPCH-Info
}

CellMeasurementEventResults-LCR-r4 ::=	SEQUENCE (SIZE (1..maxCellMeas)) OF
											PrimaryCCPCH-Info-LCR-r4

CellReportingQuantities ::=			SEQUENCE {
	-- dummy is not used in this version of the specification, it should
	-- not be sent and if received it should be ignored.
	dummy					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
        }
    }
}

CellSelectReselectInfo-v590ext ::= SEQUENCE {
    deltaQrxlevmin                      DeltaQrxlevmin                  OPTIONAL,
    deltaQhcs                           DeltaRSCP                       OPTIONAL
}

CellSelectReselectInfoPCHFACH-v5b0ext ::= SEQUENCE {
    q-Hyst-l-S-PCH                  Q-Hyst-S-Fine                       OPTIONAL,
    q-Hyst-l-S-FACH                 Q-Hyst-S-Fine                       OPTIONAL,
    q-Hyst-2-S-PCH                  Q-Hyst-S-Fine                       OPTIONAL,
    q-Hyst-2-S-FACH                 Q-Hyst-S-Fine                       OPTIONAL,
    t-Reselection-S-PCH             T-Reselection-S                     OPTIONAL,
    t-Reselection-S-FACH            T-Reselection-S-Fine                OPTIONAL
}

CellSelectReselectInfoTreselectionScaling-v5c0ext ::= SEQUENCE {
    -- For speed detection, the same HCS parameters are utilised
    non-HCS-t-CR-Max                            T-CRMax                                 OPTIONAL,
    speedDependentScalingFactor                 SpeedDependentScalingFactor             OPTIONAL,
    interFrequencyTreselectionScalingFactor     TreselectionScalingFactor               OPTIONAL,
    interRATTreselectionScalingFactor           TreselectionScalingFactor               OPTIONAL
}

CellsForInterFreqMeasList ::=       SEQUENCE (SIZE  (1..maxCellMeas)) OF
                                        InterFreqCellID
CellsForInterRATMeasList ::=            SEQUENCE (SIZE  (1..maxCellMeas)) OF
                                        InterRATCellID
CellsForIntraFreqMeasList ::=       SEQUENCE (SIZE  (1..maxCellMeas)) OF
                                        IntraFreqCellID
```

```
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     OPTIONAL
        }
    }
}

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 {
    -- Actual value countC-SFN-High = IE value * 256
    countC-SFN-High                 INTEGER(0..15),
    off                             INTEGER(0..255)
}

-- SPARE: CPICH-Ec-No, Max = 49
-- Values above Max are spare
CPICH-Ec-N0 ::=                     INTEGER (0..63)

-- SPARE: CPICH- RSCP, Max = 91
-- Values above Max are spare
CPICH-RSCP ::=                      INTEGER (0..127)


DeltaPRC ::=                        INTEGER (-127..127)

--Actual value DeltaQrxlevmin = IE value * 2
DeltaQrxlevmin ::= INTEGER (-2..-1)

DeltaRSCP ::= INTEGER (-5..-1)

DeltaRSCPPerCell ::= SEQUENCE {
    deltaRSCP                       DeltaRSCP   OPTIONAL
}

-- Actual value DeltaRRC = IE value * 0.032
DeltaRRC ::=                        INTEGER (-7..7)

DGPS-CorrectionSatInfo ::=          SEQUENCE {
    satID                               SatID,
    iode                                IODE,
    udre                                UDRE,
    prc                                 PRC,
    rrc                                 RRC,
-- dummy1 and dummy2 are not used in this version of the specification and should be ignored.
    dummy1                          DeltaPRC,
    dummy2                          DeltaRRC,
    -- dummy3 and dummy4 are not used in this version of the specification. They should not
    -- be sent and if received they should be ignored.
    dummy3                          DeltaPRC            OPTIONAL,
    dummy4                          DeltaRRC            OPTIONAL
}

DGPS-CorrectionSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
                                        DGPS-CorrectionSatInfo

DiffCorrectionStatus ::=            ENUMERATED {
                                        udre-1-0, udre-0-75, udre-0-5, udre-0-3,
                                        udre-0-2, udre-0-1, noData, invalidData }

DL-TransportChannelBLER ::=         INTEGER (0..63)
```

```
DopplerUncertainty ::=              ENUMERATED {
                                        hz12-5, hz25, hz50, hz100, hz200,
                                        spare3, spare2, spare1 }

EllipsoidPoint ::=                  SEQUENCE {
    latitudeSign        ENUMERATED { north, south },
    latitude            INTEGER (0..8388607),
    longitude           INTEGER (-8388608..8388607)
}


EllipsoidPointAltitude ::=          SEQUENCE {
    latitudeSign        ENUMERATED { north, south },
    latitude            INTEGER (0..8388607),
    longitude           INTEGER (-8388608..8388607),
    altitudeDirection   ENUMERATED {height, depth},
    altitude            INTEGER (0..32767)
}


EllipsoidPointAltitudeEllipsoide ::=    SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude                INTEGER (0..8388607),
    longitude               INTEGER (-8388608..8388607),
    altitudeDirection       ENUMERATED {height, depth},
    altitude                INTEGER (0..32767),
    uncertaintySemiMajor    INTEGER (0..127),
    uncertaintySemiMinor    INTEGER (0..127),
    -- Actual value orientationMajorAxis = IE value * 2
    orientationMajorAxis    INTEGER (0..89),
    uncertaintyAltitude     INTEGER (0..127),
    confidence              INTEGER (0..100)
}


EllipsoidPointUncertCircle ::=      SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude                INTEGER (0..8388607),
    longitude               INTEGER (-8388608..8388607),
    uncertaintyCode         INTEGER (0..127)
}


EllipsoidPointUncertEllipse ::=     SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude                INTEGER (0..8388607),
    longitude               INTEGER (-8388608..8388607),
    uncertaintySemiMajor    INTEGER (0..127),
    uncertaintySemiMinor    INTEGER (0..127),
    -- Actual value orientationMajorAxis = IE value * 2
    orientationMajorAxis    INTEGER (0..89),
    confidence              INTEGER (0..100)
}


EnvironmentCharacterisation ::=     ENUMERATED {
                                        possibleHeavyMultipathNLOS,
                                        lightMultipathLOS,
                                        notDefined,
                                        spare }

Event1a ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W,
    reportDeactivationThreshold         ReportDeactivationThreshold,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event1a-r4 ::=                      SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList-r4          OPTIONAL,
    w                                   W,
    reportDeactivationThreshold         ReportDeactivationThreshold,
    reportingAmount                     ReportingAmount,
```

```
    reportingInterval                   ReportingInterval
}

Event1a-LCR-r4 ::=                  SEQUENCE {
    triggeringCondition                 TriggeringCondition2,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList-LCR-r4          OPTIONAL,
    w                                   W,
    reportDeactivationThreshold         ReportDeactivationThreshold,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event1b ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList             OPTIONAL,
    w                                   W
}

Event1b-r4 ::=                      SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList-r4          OPTIONAL,
    w                                   W
}

Event1b-LCR-r4 ::=                  SEQUENCE {
    triggeringCondition                 TriggeringCondition1,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList-LCR-r4          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 {
    -- dummy is not used in this version of the specification and should be ignored
    dummy                               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, spare2, spare1 }

EventIDInterRAT ::=                 ENUMERATED {
                                        e3a, e3b, e3c, e3d }

EventIDIntraFreq ::=                ENUMERATED {
                                        e1a, e1b, e1c, e1d, e1e,
                                        e1f, e1g, e1h, e1i, spare7,
                                        spare6, spare5, spare4, spare3, spare2,
                                        spare1 }

EventResults ::=                    CHOICE {
    intraFreqEventResults               IntraFreqEventResults,
    interFreqEventResults               InterFreqEventResults,
    interRATEventResults                InterRATEventResults,
    trafficVolumeEventResults           TrafficVolumeEventResults,
    qualityEventResults                 QualityEventResults,
    ue-InternalEventResults             UE-InternalEventResults,
    ue-positioning-MeasurementEventResults          UE-Positioning-MeasurementEventResults,
    spare                               NULL
}

ExtraDopplerInfo ::=                SEQUENCE {
    -- Actual value doppler1stOrder = IE value * 0.023
    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 is for 3.84Mcps TDD. For 1.28Mcps TDD, the IE in
    -- FACH-MeasurementOccasionInfo-LCR-r4-ext is used.
    inter-freq-TDD-meas-ind             BOOLEAN,
    inter-RAT-meas-ind                  SEQUENCE (SIZE (1..maxOtherRAT)) OF
                                            RAT-Type                        OPTIONAL
}

FACH-MeasurementOccasionInfo-LCR-r4-ext ::= SEQUENCE {
    inter-freq-TDD128-meas-ind                  BOOLEAN
}

FilterCoefficient ::=               ENUMERATED {
                                        fc0, fc1, fc2, fc3, fc4, fc5,
                                        fc6, fc7, fc8, fc9, fc11, fc13,
                                        fc15, fc17, fc19, spare1 }

-- Actual value FineSFN-SFN = IE value * 0.0625
FineSFN-SFN ::=                     INTEGER (0..15)

ForbiddenAffectCell ::=             CHOICE {
    fdd                                 PrimaryCPICH-Info,
    tdd                                 PrimaryCCPCH-Info
}

ForbiddenAffectCell-r4 ::=          CHOICE {
    fdd                                 PrimaryCPICH-Info,
    tdd                                 PrimaryCCPCH-Info-r4
}

ForbiddenAffectCell-LCR-r4 ::=      SEQUENCE {
    tdd                                 PrimaryCCPCH-Info-LCR-r4
}

ForbiddenAffectCellList ::=         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        ForbiddenAffectCell

ForbiddenAffectCellList-r4 ::=          SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        ForbiddenAffectCell-r4

ForbiddenAffectCellList-LCR-r4 ::=  SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        ForbiddenAffectCell-LCR-r4

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..1022),
    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,
    -- dummy is not used in this version of the specification, it should
    -- not be sent and if received it should be ignored.
    dummy                               INTEGER (46..173)                   OPTIONAL,
    bsicReported                        BSICReported,
    observedTimeDifferenceToGSM         ObservedTimeDifferenceToGSM         OPTIONAL
}
```

```
GSM-MeasuredResultsList ::=         SEQUENCE (SIZE (1..maxReportedGSMCells)) OF
                                        GSM-MeasuredResults

GPS-TOW-1msec ::=                   INTEGER (0..604799999)

GPS-TOW-Assist ::=                  SEQUENCE {
    satID                               SatID,
    tlm-Message                         BIT STRING (SIZE (14)),
    tlm-Reserved                        BIT STRING (SIZE (2)),
    alert                               BOOLEAN,
    antiSpoof                           BOOLEAN
}

GPS-TOW-AssistList ::=              SEQUENCE (SIZE (1..maxSat)) OF
                                        GPS-TOW-Assist

HCS-CellReselectInformation-RSCP ::=        SEQUENCE {
    -- TABULAR: The default value for penaltyTime is "notUsed"
    -- Temporary offset is nested inside PenaltyTime-RSCP
    penaltyTime                                 PenaltyTime-RSCP
}

HCS-CellReselectInformation-ECN0 ::=        SEQUENCE {
    -- TABULAR: The default value for penaltyTime is "notUsed"
    -- Temporary offset is nested inside PenaltyTime-ECN0
    penaltyTime                         PenaltyTime-ECN0
}

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 Hysteresis = IE value * 0.5
Hysteresis ::=                      INTEGER (0..15)

-- Actual value HysteresisInterFreq = IE value * 0.5
HysteresisInterFreq ::=             INTEGER (0..29)

InterFreqCell ::=                   SEQUENCE {
    frequencyInfo                       FrequencyInfo,
    nonFreqRelatedEventResults          CellMeasurementEventResults
}

InterFreqCell-LCR-r4 ::=            SEQUENCE {
    frequencyInfo                       FrequencyInfo,
    nonFreqRelatedEventResults          CellMeasurementEventResults-LCR-r4
}

InterFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

InterFreqCellInfoList ::=           SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellList                OPTIONAL,
    cellsForInterFreqMeasList           CellsForInterFreqMeasList           OPTIONAL
}

InterFreqCellInfoList-r4 ::=        SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellList-r4             OPTIONAL,
    cellsForInterFreqMeasList           CellsForInterFreqMeasList           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
}

InterFreqCellInfoSI-List-RSCP-LCR ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-RSCP-LCR-r4     OPTIONAL
}

InterFreqCellInfoSI-List-ECN0-LCR ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-ECN0-LCR-r4     OPTIONAL
}

InterFreqCellInfoSI-List-HCS-RSCP-LCR ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-HCS-RSCP-LCR-r4 OPTIONAL
}
InterFreqCellInfoSI-List-HCS-ECN0-LCR ::=       SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List-HCS-ECN0-LCR-r4 OPTIONAL
}

InterFreqCellList ::=               SEQUENCE (SIZE (1..maxFreq)) OF
                                        InterFreqCell

InterFreqCellList-LCR-r4-ext ::=    SEQUENCE (SIZE (1..maxFreq)) OF
                                        InterFreqCell-LCR-r4

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

--Following IE shall be used regardless of CPICH RSCP(FDD) or Primary CCPCH RSCP(TDD)
--The order of the list corresponds to the order of the cells in Inter-FrequencyMeasuredResultsList
InterFrequencyMeasuredResultsList-v590ext ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                DeltaRSCPPerCell

Inter-FreqEventCriteria-v590ext ::= SEQUENCE {
    threholdUsedFrequency-delta             DeltaRSCP,
    threholdNonUsedFrequency-deltaList      ThreholdNonUsedFrequency-deltaList      OPTIONAL
}

--The order of the list corresponds to the order of the events in Inter-FreqEventList
Inter-FreqEventCriteriaList-v590ext ::= SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                            Inter-FreqEventCriteria-v590ext

--The order of the list corresponds to the order of relevant events in Intra-FreqEventCriteriaList
--i.e. the first element of the list corresponds to the first occurance of event 1e, 1f, 1h, 1i,
--the second element of the list corresponds to the second occurance of event 1e, 1f, 1h, 1i
Intra-FreqEventCriteriaList-v590ext ::= SEQUENCE (SIZE (1..maxMeasEvent)) OF
```

```
                                                DeltaRSCP

--Following IE shall be used regardless of CPICH RSCP(FDD) or Primary CCPCH RSCP(TDD)
--The order of the list corresponds to the order of the cells in Intra-FrequencyMeasuredResultsList
IntraFrequencyMeasuredResultsList-v590ext ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                DeltaRSCPPerCell

IntraFreqReportingCriteria-1b-r5 ::= SEQUENCE {
    periodicReportingInfo-1b            PeriodicReportingInfo-1b
}

PeriodicReportingInfo-1b ::= SEQUENCE {
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

InterFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDInterFreq,
    interFreqCellList                   InterFreqCellList                   OPTIONAL
}

InterFreqEventResults-LCR-r4-ext ::=    SEQUENCE {
    eventID                             EventIDInterFreq,
    interFreqCellList                   InterFreqCellList-LCR-r4-ext        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
}

InterFreqMeasurementSysInfo-RSCP-LCR-r4 ::= SEQUENCE {
    interFreqCellInfoSI-List                InterFreqCellInfoSI-List-RSCP-LCR       OPTIONAL
}

InterFreqMeasurementSysInfo-ECN0-LCR-r4 ::=     SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-ECN0-LCR       OPTIONAL
}
```

```
InterFreqMeasurementSysInfo-HCS-RSCP-LCR-r4 ::=     SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-RSCP-LCR   OPTIONAL
}

InterFreqMeasurementSysInfo-HCS-ECN0-LCR-r4 ::=     SEQUENCE {
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List-HCS-ECN0-LCR   OPTIONAL
}

InterFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    interFreqReportingCriteria          InterFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterFreqReportCriteria-r4 ::=      CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria-r4,
    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
}

InterFrequencyMeasurement-r4 ::=    SEQUENCE {
    interFreqCellInfoList               InterFreqCellInfoList-r4,
    interFreqMeasQuantity               InterFreqMeasQuantity               OPTIONAL,
    interFreqReportingQuantity          InterFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    interFreqSetUpdate                  UE-AutonomousUpdateMode             OPTIONAL,
    reportCriteria                      InterFreqReportCriteria-r4
}

InterRAT-TargetCellDescription ::=  SEQUENCE {
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            bsic                                BSIC,
            frequency-band                      Frequency-Band,
            bcch-ARFCN                          BCCH-ARFCN,
            ncMode                              NC-Mode             OPTIONAL
        },
        is-2000                             NULL,
        spare2                              NULL,
        spare1                              NULL
    }
}

InterRATCellID ::=              INTEGER (0..maxCellMeas-1)

InterRATCellInfoIndication ::=      INTEGER (0..3)

InterRATCellInfoList ::=            SEQUENCE {
    removedInterRATCellList         RemovedInterRATCellList,
    -- NOTE: Future revisions of dedicated messages including IE newInterRATCellList
    -- should use a corrected version of this IE
    newInterRATCellList             NewInterRATCellList,
    cellsForInterRATMeasList            CellsForInterRATMeasList            OPTIONAL
}

InterRATCellInfoList-B ::=          SEQUENCE {
```

```
    removedInterRATCellList         RemovedInterRATCellList,
    -- NOTE: IE newInterRATCellList should be optional.  However, system information
    -- does not support message versions.  Hence, this can not be corrected
    newInterRATCellList             NewInterRATCellList-B
}

InterRATCellInfoList-r4 ::=         SEQUENCE {
    removedInterRATCellList                 RemovedInterRATCellList,
    newInterRATCellList                     NewInterRATCellList                 OPTIONAL,
    cellsForInterRATMeasList                CellsForInterRATMeasList            OPTIONAL
}

InterRATCellIndividualOffset ::=            INTEGER (-50..50)

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 fc0,
            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-16)) OF
                                    InterRATMeasuredResults

InterRATMeasurement ::=         SEQUENCE {
    interRATCellInfoList                InterRATCellInfoList                OPTIONAL,
    interRATMeasQuantity                InterRATMeasQuantity                OPTIONAL,
    interRATReportingQuantity           InterRATReportingQuantity       OPTIONAL,
    reportCriteria                      InterRATReportCriteria
}

InterRATMeasurement-r4 ::=          SEQUENCE {
    interRATCellInfoList                InterRATCellInfoList-r4             OPTIONAL,
    interRATMeasQuantity                InterRATMeasQuantity                OPTIONAL,
    interRATReportingQuantity           InterRATReportingQuantity       OPTIONAL,
    reportCriteria                      InterRATReportCriteria
}

InterRATMeasurementSysInfo ::=  SEQUENCE {
    interRATCellInfoList                InterRATCellInfoList                OPTIONAL
}

InterRATMeasurementSysInfo-B ::=    SEQUENCE {
    interRATCellInfoList                InterRATCellInfoList-B          OPTIONAL
}
```

```
InterRATReportCriteria ::=      CHOICE {
    interRATReportingCriteria           InterRATReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

InterRATReportingCriteria ::=   SEQUENCE {
    interRATEventList               InterRATEventList               OPTIONAL
}

InterRATReportingQuantity ::=   SEQUENCE {
    utran-EstimatedQuality              BOOLEAN,
    ratSpecificInfo                 CHOICE {
        gsm                                 SEQUENCE {
            dummy                                   BOOLEAN,
            observedTimeDifferenceGSM               BOOLEAN,
            gsm-Carrier-RSSI                        BOOLEAN
        }
    }
}

IntraFreqCellID ::=                 INTEGER (0..maxCellMeas-1)

IntraFreqCellInfoList ::=           SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellList                OPTIONAL,
    cellsForIntraFreqMeasList           CellsForIntraFreqMeasList           OPTIONAL
}

IntraFreqCellInfoList-r4 ::=        SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellList-r4             OPTIONAL,
    cellsForIntraFreqMeasList           CellsForIntraFreqMeasList           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
}

IntraFreqCellInfoSI-List-RSCP-LCR-r4 ::=    SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-RSCP-LCR-r4
}

IntraFreqCellInfoSI-List-ECN0-LCR-r4 ::=        SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-ECN0-LCR-r4
}

IntraFreqCellInfoSI-List-HCS-RSCP-LCR-r4 ::=        SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-RSCP-LCR-r4
}

IntraFreqCellInfoSI-List-HCS-ECN0-LCR-r4 ::=        SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellSI-List-HCS-ECN0-LCR-r4
}

IntraFreqEvent ::=                  CHOICE {
    e1a                                 Event1a,
```

```
    e1b                                 Event1b,
    e1c                                 Event1c,
    e1d                                 NULL,
    e1e                                 Event1e,
    e1f                                 Event1f,
    e1g                                 NULL,
    e1h                                 ThresholdUsedFrequency,
    e1i                                 ThresholdUsedFrequency
}

IntraFreqEvent-r4 ::=               CHOICE {
    e1a                                 Event1a-r4,
    e1b                                 Event1b-r4,
    e1c                                 Event1c,
    e1d                                 NULL,
    e1e                                 Event1e,
    e1f                                 Event1f,
    e1g                                 NULL,
    e1h                                 ThresholdUsedFrequency,
    e1i                                 ThresholdUsedFrequency
}

IntraFreqEvent-LCR-r4 ::=           CHOICE {
    e1a                                 Event1a-LCR-r4,
    e1b                                 Event1b-LCR-r4,
    e1c                                 Event1c,
    e1d                                 NULL,
    e1e                                 Event1e,
    e1f                                 Event1f,
    e1g                                 NULL,
    e1h                                 ThresholdUsedFrequency,
    e1i                                 ThresholdUsedFrequency
}

IntraFreqEvent-1d-r5 ::=        SEQUENCE {
    triggeringCondition                 TriggeringCondition2    OPTIONAL,
    useCIO                              BOOLEAN                 OPTIONAL
}

IntraFreqEventCriteria ::=          SEQUENCE {
    event                               IntraFreqEvent,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

IntraFreqEventCriteria-r4 ::=       SEQUENCE {
    event                               IntraFreqEvent-r4,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

IntraFreqEventCriteria-LCR-r4 ::=   SEQUENCE {
    event                               IntraFreqEvent-LCR-r4,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}

IntraFreqEventCriteriaList ::=      SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        IntraFreqEventCriteria

IntraFreqEventCriteriaList-r4 ::=   SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        IntraFreqEventCriteria-r4

IntraFreqEventCriteriaList-LCR-r4 ::=   SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        IntraFreqEventCriteria-LCR-r4

IntraFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDIntraFreq,
    cellMeasurementEventResults         CellMeasurementEventResults
}

IntraFreqMeasQuantity ::=           SEQUENCE {
    filterCoefficient                   FilterCoefficient                   DEFAULT fc0,
    modeSpecificInfo                    CHOICE {
        fdd                             SEQUENCE {
```

```
            intraFreqMeasQuantity-FDD       IntraFreqMeasQuantity-FDD
        },
        tdd                             SEQUENCE {
            intraFreqMeasQuantity-TDDList   IntraFreqMeasQuantity-TDDList
        }
    }
}

-- If IntraFreqMeasQuantity-FDD is used in InterRATMeasQuantity, then only
-- cpich-Ec-N0 and cpich-RSCP are allowed.
-- dummy is not used in this version of the specification, it should
-- not be sent and if received it should be ignored.
IntraFreqMeasQuantity-FDD ::=       ENUMERATED {
                                        cpich-Ec-N0,
                                        cpich-RSCP,
                                        pathloss,
                                        dummy }

-- dummy is not used in this version of the specification, it should
-- not be sent and if received it should be ignored.
IntraFreqMeasQuantity-TDD ::=       ENUMERATED {
                                        primaryCCPCH-RSCP,
                                        pathloss,
                                        timeslotISCP,
                                        dummy }

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
}

IntraFreqMeasurementSysInfo-RSCP-LCR-r4 ::= SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-RSCP-LCR-r4    OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH-LCR-r4      OPTIONAL
}

IntraFreqMeasurementSysInfo-ECN0-LCR-r4 ::=     SEQUENCE {
```

```
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-ECN0-LCR-r4    OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH-LCR-r4      OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-RSCP-LCR-r4 ::= SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-RSCP-LCR-r4    OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH-LCR-r4      OPTIONAL
}

IntraFreqMeasurementSysInfo-HCS-ECN0-LCR-r4 ::= SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentity         DEFAULT 1,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List-HCS-ECN0-LCR-r4    OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH-LCR-r4      OPTIONAL
}

IntraFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

IntraFreqReportCriteria-r4 ::=      CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria-r4,
    periodicalReportingCriteria         PeriodicalWithReportingCellStatus,
    noReporting                         ReportingCellStatusOpt
}

IntraFreqReportingCriteria ::=      SEQUENCE {
    eventCriteriaList                   IntraFreqEventCriteriaList      OPTIONAL
}

IntraFreqReportingCriteria-r4 ::=   SEQUENCE {
    eventCriteriaList                   IntraFreqEventCriteriaList-r4   OPTIONAL
}

IntraFreqReportingCriteria-LCR-r4 ::=   SEQUENCE {
    eventCriteriaList                   IntraFreqEventCriteriaList-LCR-r4   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
}

IntraFrequencyMeasurement-r4 ::=    SEQUENCE {
    intraFreqCellInfoList               IntraFreqCellInfoList-r4            OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantity          IntraFreqReportingQuantity          OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                      IntraFreqReportCriteria-r4          OPTIONAL
}

IODE ::=                            INTEGER (0..255)

IP-Length ::=                       ENUMERATED {
                                        ipl5, ipl10 }

IP-PCCPCH-r4 ::=                    BOOLEAN

IP-Spacing ::=                      ENUMERATED {
                                        e5, e7, e10, e15, e20,
                                        e30, e40, e50 }

IP-Spacing-TDD ::=                      ENUMERATED {
                                        e30, e40, e50, e70, e100}

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,
    ue-positioning-MeasuredResults      UE-Positioning-MeasuredResults,
    spare                               NULL
}

MeasuredResults-v390ext ::=                 SEQUENCE {
    ue-positioning-MeasuredResults-v390ext                  UE-Positioning-MeasuredResults-v390ext
}


MeasuredResults-v590ext ::= CHOICE {
    intraFrequencyMeasuredResultsList       IntraFrequencyMeasuredResultsList-v590ext,
```

```
    interFrequencyMeasuredResultsList       InterFrequencyMeasuredResultsList-v590ext
}

MeasuredResults-LCR-r4 ::=          CHOICE {
    intraFreqMeasuredResultsList        IntraFreqMeasuredResultsList,
    interFreqMeasuredResultsList        InterFreqMeasuredResultsList,
    interRATMeasuredResultsList     InterRATMeasuredResultsList,
    trafficVolumeMeasuredResultsList    TrafficVolumeMeasuredResultsList,
    qualityMeasuredResults              QualityMeasuredResults,
    ue-InternalMeasuredResults          UE-InternalMeasuredResults-LCR-r4,
    ue-positioniing-MeasuredResults     UE-Positioning-MeasuredResults,
    spare                               NULL
}

MeasuredResultsList ::=             SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasuredResults

MeasuredResultsList-LCR-r4-ext ::=  SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasuredResults-LCR-r4

MeasuredResultsOnRACH ::=           SEQUENCE {
    currentCell                         SEQUENCE {
        modeSpecificInfo                    CHOICE {
            fdd                                 SEQUENCE {
                measurementQuantity                 CHOICE {
                    cpich-Ec-N0                         CPICH-Ec-N0,
                    cpich-RSCP                          CPICH-RSCP,
                    pathloss                            Pathloss,
                    spare                               NULL
                }
            },
            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
}

MeasurementCommand-r4 ::=           CHOICE {
    setup                               MeasurementType-r4,
    modify                              SEQUENCE {
        measurementType                     MeasurementType-r4              OPTIONAL
    },
    release                             NULL
}

MeasurementControlSysInfo ::=       SEQUENCE {
    -- CHOICE cellSelectQualityMeasure represents PCCPCH-RSCP in TDD mode.
    use-of-HCS                          CHOICE  {
        hcs-not-used                        SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-RSCP
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-RSCP    OPTIONAL
                },
                cpich-Ec-N0             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-ECN0
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-ECN0    OPTIONAL
                }
            },
            interRATMeasurementSysInfo      InterRATMeasurementSysInfo-B        OPTIONAL
        },
        hcs-used                        SEQUENCE    {
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
```

```
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-HCS-RSCP
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-HCS-RSCP
    OPTIONAL
                },
                cpich-Ec-N0             SEQUENCE    {
                    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo-HCS-ECN0
    OPTIONAL,
                    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo-HCS-ECN0
    OPTIONAL                }
            },
            interRATMeasurementSysInfo      InterRATMeasurementSysInfo      OPTIONAL
        }
    },

    trafficVolumeMeasSysInfo            TrafficVolumeMeasSysInfo            OPTIONAL,
    -- dummy is not used in this version of specification and it shall be ignored by the UE.
    dummy       UE-InternalMeasurementSysInfo       OPTIONAL
}

MeasurementControlSysInfo-LCR-r4-ext ::=    SEQUENCE {
    -- CHOICE use-of-HCS shall have the same value as the use-of-HCS
    -- in MeasurementControlSysInfo
    -- CHOICE cellSelectQualityMeasure represents PCCPCH-RSCP in TDD mode.
    use-of-HCS                          CHOICE  {
        hcs-not-used                    SEQUENCE    {
            -- CHOICE cellSelectQualityMeasure shall have the same value as the
            -- cellSelectQualityMeasure in MeasurementControlSysInfo
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo IntraFreqMeasurementSysInfo-RSCP-LCR-r4 OPTIONAL,
                    interFreqMeasurementSysInfo InterFreqMeasurementSysInfo-RSCP-LCR-r4 OPTIONAL
                },
                cpich-Ec-N0             SEQUENCE    {
                    intraFreqMeasurementSysInfo IntraFreqMeasurementSysInfo-ECN0-LCR-r4 OPTIONAL,
                    interFreqMeasurementSysInfo InterFreqMeasurementSysInfo-ECN0-LCR-r4 OPTIONAL
                }
            }
        },
        hcs-used                        SEQUENCE    {
            -- CHOICE cellSelectQualityMeasure shall have the same value as the
            -- cellSelectQualityMeasure in MeasurementControlSysInfo
            cellSelectQualityMeasure    CHOICE  {
                cpich-RSCP              SEQUENCE    {
                    intraFreqMeasurementSysInfo IntraFreqMeasurementSysInfo-HCS-RSCP-LCR-r4
    OPTIONAL,
                    interFreqMeasurementSysInfo InterFreqMeasurementSysInfo-HCS-RSCP-LCR-r4 OPTIONAL
                },
                cpich-Ec-N0             SEQUENCE    {
                    intraFreqMeasurementSysInfo IntraFreqMeasurementSysInfo-HCS-ECN0-LCR-r4
    OPTIONAL,
                    interFreqMeasurementSysInfo InterFreqMeasurementSysInfo-HCS-ECN0-LCR-r4 OPTIONAL
                }
            }
        }
    }
}

MeasurementIdentity ::=     INTEGER (1..16)

MeasurementQuantityGSM ::=          ENUMERATED {
                                        gsm-CarrierRSSI,
                                        dummy }

MeasurementReportingMode ::=        SEQUENCE {
    measurementReportTransferMode       TransferMode,
    periodicalOrEventTrigger            PeriodicalOrEventTrigger
}

MeasurementType ::=                 CHOICE {
    intraFrequencyMeasurement           IntraFrequencyMeasurement,
    interFrequencyMeasurement           InterFrequencyMeasurement,
    interRATMeasurement                 InterRATMeasurement,
    ue-positioning-Measurement          UE-Positioning-Measurement,
    trafficVolumeMeasurement            TrafficVolumeMeasurement,
    qualityMeasurement                  QualityMeasurement,
    ue-InternalMeasurement              UE-InternalMeasurement
}
```

```
MeasurementType-r4 ::=              CHOICE {
    intraFrequencyMeasurement           IntraFrequencyMeasurement-r4,
    interFrequencyMeasurement           InterFrequencyMeasurement-r4,
    interRATMeasurement                 InterRATMeasurement-r4,
    up-Measurement                      UE-Positioning-Measurement-r4,
    trafficVolumeMeasurement            TrafficVolumeMeasurement,
    qualityMeasurement                  QualityMeasurement,
    ue-InternalMeasurement              UE-InternalMeasurement-r4
}

MeasurementValidity ::=             SEQUENCE {
    ue-State                            ENUMERATED {
                                            cell-DCH, all-But-Cell-DCH, all-States }
}

MonitoredCellRACH-List ::=          SEQUENCE (SIZE (1..8)) 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,
                spare                               NULL
            }                                                               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,
    ephemerisParameter                  EphemerisParameter      OPTIONAL
}

NavigationModelSatInfoList ::=      SEQUENCE (SIZE (1..maxSat)) OF
                                        NavigationModelSatInfo

EphemerisParameter ::=                  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,
            uE-RX-TX-TimeDifferenceType2Info    UE-RX-TX-TimeDifferenceType2Info    OPTIONAL
        },
        tdd                             SEQUENCE {
            neighbourAndChannelIdentity     CellAndChannelIdentity                  OPTIONAL
        }
    },
    neighbourQuality                    NeighbourQuality,
    sfn-SFN-ObsTimeDifference2          SFN-SFN-ObsTimeDifference2}

Neighbour-v390ext ::=                   SEQUENCE {
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            frequencyInfo                       FrequencyInfo
        },
        tdd                             NULL
    }
}

NeighbourList ::=                   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        Neighbour

-- The order of the cells in IE NeighbourList-v390ext shall be the
-- same as the order in IE NeighbourList
NeighbourList-v390ext ::=               SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        Neighbour-v390ext

NeighbourQuality ::=                SEQUENCE {
    ue-Positioning-OTDOA-Quality        UE-Positioning-OTDOA-Quality
}

NewInterFreqCell ::=                SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfo
}

NewInterFreqCell-r4 ::=             SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfo-r4
}

NewInterFreqCellList ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCell

NewInterFreqCellList-r4 ::=         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                        NewInterFreqCell-r4

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-RSCP-LCR-r4 ::=		SEQUENCE {
	interFreqCellID						InterFreqCellID					OPTIONAL,
	frequencyInfo						FrequencyInfo					OPTIONAL,
	cellInfo							CellInfoSI-RSCP-LCR-r4
}

NewInterFreqCellSI-ECN0-LCR-r4 ::=		SEQUENCE {
	interFreqCellID						InterFreqCellID					OPTIONAL,
	frequencyInfo						FrequencyInfo					OPTIONAL,
	cellInfo							CellInfoSI-ECN0-LCR-r4
}

NewInterFreqCellSI-HCS-RSCP-LCR-r4 ::=	SEQUENCE {
	interFreqCellID						InterFreqCellID					OPTIONAL,
	frequencyInfo						FrequencyInfo					OPTIONAL,
	cellInfo							CellInfoSI-HCS-RSCP-LCR-r4
}

NewInterFreqCellSI-HCS-ECN0-LCR-r4 ::=	SEQUENCE {
	interFreqCellID						InterFreqCellID					OPTIONAL,
	frequencyInfo						FrequencyInfo					OPTIONAL,
	cellInfo							CellInfoSI-HCS-ECN0-LCR-r4
}

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

NewInterFreqCellSI-List-ECN0-LCR-r4 ::=	SEQUENCE (SIZE (1..maxCellMeas)) OF
										NewInterFreqCellSI-ECN0-LCR-r4

NewInterFreqCellSI-List-HCS-RSCP-LCR-r4 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
										NewInterFreqCellSI-HCS-RSCP-LCR-r4

NewInterFreqCellSI-List-HCS-ECN0-LCR-r4 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
										NewInterFreqCellSI-HCS-ECN0-LCR-r4

NewInterFreqCellSI-List-RSCP-LCR-r4 ::=	SEQUENCE (SIZE (1..maxCellMeas)) OF
										NewInterFreqCellSI-RSCP-LCR-r4

NewInterRATCell ::=				SEQUENCE {
	interRATCellID						InterRATCellID			OPTIONAL,
	technologySpecificInfo				CHOICE {
		gsm									SEQUENCE {
			cellSelectionReselectionInfo		CellSelectReselectInfoSIB-11-12		OPTIONAL,
			interRATCellIndividualOffset		InterRATCellIndividualOffset,
			bsic								BSIC,
			frequency-band						Frequency-Band,
			bcch-ARFCN							BCCH-ARFCN,
			-- dummy is not used in this version of the specification, it should
			-- not be sent and if received it should be ignored.
			dummy								NULL				OPTIONAL
		},
		is-2000								SEQUENCE {
			is-2000SpecificMeasInfo				IS-2000SpecificMeasInfo
		},
		-- ASN.1 inconsistency: NewInterRATCellList should be optional within
		-- InterRATCellInfoList. The UE shall consider IE NewInterRATCell with
		-- technologySpecificInfo set to "absent" as valid and handle the
```

```
		-- message as if the IE NewInterRATCell was absent
		absent							NULL,
		spare1							NULL
	}
}

NewInterRATCell-B ::=				SEQUENCE {
	interRATCellID						InterRATCellID				OPTIONAL,
	technologySpecificInfo				CHOICE {
		gsm								SEQUENCE {
			cellSelectionReselectionInfo		CellSelectReselectInfoSIB-11-12		OPTIONAL,
			interRATCellIndividualOffset		InterRATCellIndividualOffset,
			bsic								BSIC,
			frequency-band						Frequency-Band,
			bcch-ARFCN							BCCH-ARFCN,
			-- dummy is not used in this version of the specification, it should
			-- not be sent and if received it should be ignored.
			dummy								NULL				OPTIONAL
		},
		is-2000							SEQUENCE {
			is-2000SpecificMeasInfo				IS-2000SpecificMeasInfo
		},
		-- ASN.1 inconsistency: NewInterRATCellList-B should be optional within
		-- InterRATCellInfoList-B. The UE shall consider IE NewInterRATCell-B with
		-- technologySpecificInfo set to "absent" as valid and handle the
		-- message as if the IE NewInterRATCell-B was absent
		absent							NULL,
		spare1							NULL
	}
}

NewInterRATCellList ::=			SEQUENCE (SIZE (1..maxCellMeas)) OF
										NewInterRATCell

NewInterRATCellList-B ::=			SEQUENCE (SIZE (1..maxCellMeas)) OF
										NewInterRATCell-B

NewIntraFreqCell ::=				SEQUENCE {
	intraFreqCellID						IntraFreqCellID						OPTIONAL,
	cellInfo							CellInfo
}

NewIntraFreqCell-r4 ::=			SEQUENCE {
	intraFreqCellID						IntraFreqCellID						OPTIONAL,
	cellInfo							CellInfo-r4
}

NewIntraFreqCellList ::=			SEQUENCE (SIZE (1..maxCellMeas)) OF
										NewIntraFreqCell

NewIntraFreqCellList-r4 ::=		SEQUENCE (SIZE (1..maxCellMeas)) OF
										NewIntraFreqCell-r4

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-RSCP-LCR-r4 ::=		SEQUENCE {
	intraFreqCellID						IntraFreqCellID						OPTIONAL,
	cellInfo							CellInfoSI-RSCP-LCR-r4
}

NewIntraFreqCellSI-ECN0-LCR-r4 ::=		SEQUENCE {
```

```
    intraFreqCellID                    IntraFreqCellID                    OPTIONAL,
    cellInfo                           CellInfoSI-ECN0-LCR-r4
}
NewIntraFreqCellSI-HCS-RSCP-LCR-r4 ::= SEQUENCE {
    intraFreqCellID                    IntraFreqCellID                    OPTIONAL,
    cellInfo                           CellInfoSI-HCS-RSCP-LCR-r4
}

NewIntraFreqCellSI-HCS-ECN0-LCR-r4 ::= SEQUENCE {
    intraFreqCellID                    IntraFreqCellID                    OPTIONAL,
    cellInfo                           CellInfoSI-HCS-ECN0-LCR-r4
}

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

NewIntraFreqCellSI-List-RSCP-LCR-r4 ::=    SEQUENCE (SIZE (1..maxCellMeas)) OF
                                           NewIntraFreqCellSI-RSCP-LCR-r4

NewIntraFreqCellSI-List-ECN0-LCR-r4 ::=    SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewIntraFreqCellSI-ECN0-LCR-r4

NewIntraFreqCellSI-List-HCS-RSCP-LCR-r4 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewIntraFreqCellSI-HCS-RSCP-LCR-r4

NewIntraFreqCellSI-List-HCS-ECN0-LCR-r4 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                       NewIntraFreqCellSI-HCS-ECN0-LCR-r4

    -- IE "nonUsedFreqThreshold" is not needed in case of event 2a
    -- In case of event 2a UTRAN should include value 0 within IE "nonUsedFreqThreshold"
    -- In case of event 2a, the UE shall be ignore IE "nonUsedFreqThreshold"
    -- In later versions of the message including this IE, a special version of
    -- IE "NonUsedFreqParameterList" may be defined for event 2a, namely a
    -- version not including IE "nonUsedFreqThreshold"
NonUsedFreqParameter ::=           SEQUENCE {
    nonUsedFreqThreshold               Threshold,
    nonUsedFreqW                       W
}

NonUsedFreqParameterList ::=       SEQUENCE (SIZE (1..maxFreq)) OF
                                       NonUsedFreqParameter

ObservedTimeDifferenceToGSM ::=    INTEGER (0..4095)

OTDOA-SearchWindowSize ::=         ENUMERATED {
                                       c20, c40, c80, c160, c320,
                                       c640, c1280, moreThan1280 }

-- SPARE: Pathloss, Max = 158
-- Values above Max are spare
Pathloss ::=                       INTEGER (46..173)

PenaltyTime-RSCP ::=               CHOICE {
    notUsed                            NULL,
    pt10                               TemporaryOffset1,
    pt20                               TemporaryOffset1,
    pt30                               TemporaryOffset1,
    pt40                               TemporaryOffset1,
    pt50                               TemporaryOffset1,
    pt60                               TemporaryOffset1
}

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
}

PLMNIdentitiesOfNeighbourCells ::=  SEQUENCE {
        plmnsOfIntraFreqCellsList       PLMNsOfIntraFreqCellsList           OPTIONAL,
        plmnsOfInterFreqCellsList       PLMNsOfInterFreqCellsList           OPTIONAL,
        plmnsOfInterRATCellsList        PLMNsOfInterRATCellsList            OPTIONAL
}

PLMNsOfInterFreqCellsList ::=           SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            SEQUENCE {
    plmn-Identity                               PLMN-Identity               OPTIONAL
}

PLMNsOfIntraFreqCellsList ::=           SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            SEQUENCE {
    plmn-Identity                               PLMN-Identity               OPTIONAL
}

PLMNsOfInterRATCellsList ::=            SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            SEQUENCE {
    plmn-Identity                               PLMN-Identity               OPTIONAL
}

PositionEstimate ::=                CHOICE {
    ellipsoidPoint                      EllipsoidPoint,
    ellipsoidPointUncertCircle          EllipsoidPointUncertCircle,
    ellipsoidPointUncertEllipse         EllipsoidPointUncertEllipse,
    ellipsoidPointAltitude              EllipsoidPointAltitude,
    ellipsoidPointAltitudeEllipse       EllipsoidPointAltitudeEllipsoide
}

PositioningMethod ::=               ENUMERATED {
                                        otdoa,
                                        gps,
                                        otdoaOrGPS, cellID }

-- Actual value PRC = IE value * 0.32
PRC ::=                             INTEGER (-2047..2047)

-- SPARE: PrimaryCCPCH-RSCP, Max = 91
-- Values above Max are spare
PrimaryCCPCH-RSCP ::=               INTEGER (0..127)

Q-HCS ::=                           INTEGER (0..99)

Q-OffsetS-N ::=                     INTEGER (-50..50)

Q-QualMin ::=                       INTEGER (-24..0)

-- Actual value Q-RxlevMin = (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
        }
    }
}

RAT-Type ::=                        ENUMERATED {
                                        gsm, is2000 }

ReferenceCellPosition ::=           CHOICE {
    ellipsoidPoint                      EllipsoidPoint,
    ellipsoidPointWithAltitude          EllipsoidPointAltitude
}

-- ReferenceLocation, as defined in 23.032
ReferenceLocation ::=           SEQUENCE {
    ellipsoidPointAltitudeEllipsoide        EllipsoidPointAltitudeEllipsoide
}

ReferenceTimeDifferenceToCell ::=   CHOICE {
    -- Actual value accuracy40 = IE value * 40
    accuracy40                          INTEGER (0..960),
    -- Actual value accuracy256 = IE value * 256
    accuracy256                         INTEGER (0..150),
    -- Actual value accuracy2560 = 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,
    withinMonitoredAndOrVirtualActiveSetNonUsedFreq
                                        MaxNumberOfReportingCellsType1,
    allVirtualActSetplusMonitoredSetNonUsedFreq
                                        MaxNumberOfReportingCellsType3,
    withinActSetOrVirtualActSet-InterRATcells
                                        MaxNumberOfReportingCellsType2,
    withinActSetAndOrMonitoredUsedFreqOrVirtualActSetAndOrMonitoredNonUsedFreq
                                        MaxNumberOfReportingCellsType2
}

ReportingCellStatusOpt ::=          SEQUENCE {
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL
}


ReportingInfoForCellDCH ::=         SEQUENCE {
    intraFreqReportingQuantity          IntraFreqReportingQuantity,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteria                      CellDCH-ReportCriteria
}

ReportingInfoForCellDCH-LCR-r4 ::=  SEQUENCE {
    intraFreqReportingQuantity          IntraFreqReportingQuantity,
    measurementReportingMode            MeasurementReportingMode,
    reportCriteria                      CellDCH-ReportCriteria-LCR-r4
}

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 }
                                    -- When the value “ril0” is used, the UE behaviour is not
                                    -- defined.

-- Actual value ReportingRange = 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-RemovalInformationList           RL-RemovalInformationList           OPTIONAL
}
```

```
RLC-BuffersPayload ::=              ENUMERATED {
                                        pl0, pl4, pl8, pl16, pl32,
                                        pl64, pl128, pl256, pl512, pl1024,
                                        pl2k, pl4k, pl8k, pl16k, pl32k,
                                        pl64k, pl128k, pl256k, pl512k, pl1024k,
                                        spare12, spare11, spare10, spare9, spare8,
                                        spare7, spare6, spare5, spare4, spare3,
                                        spare2, spare1 }

-- Actual value RRC = IE value * 0.032
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,
                                        rev2,
                                        rev }

-- Identifies the satellite and is equal to (SV ID No - 1) where SV ID No is defined in [12].
SatID ::=                           INTEGER (0..63)

SFN-Offset-Validity ::=         ENUMERATED { false }

SFN-SFN-Drift ::=                   ENUMERATED {
                                        sfnsfndrift0, sfnsfndrift1, sfnsfndrift2,
                                        sfnsfndrift3, sfnsfndrift4, sfnsfndrift5,
                                        sfnsfndrift8, sfnsfndrift10, sfnsfndrift15,
                                        sfnsfndrift25, sfnsfndrift35, sfnsfndrift50,
                                        sfnsfndrift65, sfnsfndrift80, sfnsfndrift100,
                                        sfnsfndrift-1, sfnsfndrift-2, sfnsfndrift-3,
                                        sfnsfndrift-4, sfnsfndrift-5, sfnsfndrift-8,
                                        sfnsfndrift-10, sfnsfndrift-15, sfnsfndrift-25,
                                        sfnsfndrift-35, sfnsfndrift-50, sfnsfndrift-65,
                                        sfnsfndrift-80, sfnsfndrift-100}

SFN-SFN-ObsTimeDifference ::=       CHOICE {
    type1                               SFN-SFN-ObsTimeDifference1,
    type2                               SFN-SFN-ObsTimeDifference2
}

-- SPARE: SFN-SFN-ObsTimeDifference1, Max = 9830399
-- For 1.28Mcps TDD, Max value of SFN-SFN-ObsTimeDifference1 is 3276799.
-- Values above Max are spare
SFN-SFN-ObsTimeDifference1 ::=      INTEGER (0..16777215)

-- SPARE: SFN-SFN-ObsTimeDifference2, Max = 40961
-- For 1.28Mcps TDD, Max value of SFN-SFN-ObsTimeDifference2 is 27649.
-- Values above Max are spare
SFN-SFN-ObsTimeDifference2 ::=     INTEGER (0..65535)


SFN-SFN-OTD-Type ::=                ENUMERATED {
                                        noReport,
                                        type1,
                                        type2 }

SFN-SFN-RelTimeDifference1 ::=      SEQUENCE {
    sfn-Offset                          INTEGER (0 .. 4095),
    sfn-sfn-Reltimedifference           INTEGER (0.. 38399)
}

SFN-TOW-Uncertainty ::=             ENUMERATED {
                                        lessThan10,
                                        moreThan10 }


SIR ::=                             INTEGER (0..63)
```

```
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

-- Actual value ScalingFactor = IE value * 0.1
SpeedDependentScalingFactor ::=     INTEGER (0..10)

-- SubFrame1Reserved, 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-ADVinfo ::=                       SEQUENCE {
                t-ADV                   INTEGER(0..2047),
                sfn                     INTEGER(0..4095)
}

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 }

TemporaryOffset1 ::=                ENUMERATED {
                                        to3, to6, to9, to12, to15,
                                        to18, to21, infinite }

TemporaryOffset2 ::=                ENUMERATED {
                                        to2, to3, to4, to6, to8,
                                        to10, to12, infinite }

TemporaryOffsetList ::=             SEQUENCE    {
        temporaryOffset1                TemporaryOffset1,
        temporaryOffset2                TemporaryOffset2
}

Threshold ::=                       INTEGER (-115..0)

-- The order of the list corresponds to the order of frequency defined in Inter-FreqEventCriteria
ThreholdNonUsedFrequency-deltaList ::= SEQUENCE (SIZE (1..maxFreq)) OF
                                            DeltaRSCPPerCell

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 TimeInterval = IE value * 20.
TimeInterval ::=                    INTEGER (1..13)


TimeslotInfo ::=                    SEQUENCE {
    timeslotNumber                      TimeslotNumber,
    burstType                           BurstType
}

TimeslotInfo-LCR-r4 ::=             SEQUENCE {
    timeslotNumber                      TimeslotNumber-LCR-r4
}

TimeslotInfoList ::=                SEQUENCE (SIZE (1..maxTS)) OF
                                        TimeslotInfo

TimeslotInfoList-LCR-r4 ::=         SEQUENCE (SIZE (1..maxTS-LCR)) OF
                                        TimeslotInfo-LCR-r4

TimeslotInfoList-r4 ::=             CHOICE {
    tdd384                              SEQUENCE (SIZE (1..maxTS)) OF
                                            TimeslotInfo,
    tdd128                              SEQUENCE (SIZE (1..maxTS-LCR)) OF
                                            TimeslotInfo-LCR-r4
}

-- SPARE: TimeslotISCP, Max = 91
-- Values above Max are spare
TimeslotISCP ::=                    INTEGER (0..127)


-- TimeslotISCP-List shall not include more than 6 elements in 1.28Mcps TDD mode.
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     UL-TrCH-Identity,
    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,
    -- dummy is not used in this version of specification, it should
    -- not be sent and if received it should be ignored.
    dummy                               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
                                            UL-TrCH-Identity

TrafficVolumeReportCriteria ::=     CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

TrafficVolumeReportCriteriaSysInfo ::=  CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

TrafficVolumeReportingCriteria ::= SEQUENCE {
    -- NOTE: transChCriteriaList should be mandatory in later versions of this message
    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               UL-TrCH-Identity                    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,
    -- in 1.28 Mcps TDD ue-RX-TX-TimeDifferenceThreshold corresponds to TADV Threshold
    ue-RX-TX-TimeDifferenceThreshold    UE-RX-TX-TimeDifferenceThreshold
}

-- dummy and dummy2 are not used in this version of the specification, they should
-- not be sent and if received the UE behaviour is not specified.
UE-AutonomousUpdateMode ::=         CHOICE {
    dummy                               NULL,
    onWithNoReporting                   NULL,
    dummy2                              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,
    spare                               NULL
}

UE-InternalMeasQuantity ::=         SEQUENCE {
    measurementQuantity                 UE-MeasurementQuantity,
    filterCoefficient                   FilterCoefficient                   DEFAULT fc0
}

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-InternalMeasuredResults-LCR-r4 ::=   SEQUENCE {
        ue-TransmittedPowerTDD-List         UE-TransmittedPowerTDD-List     OPTIONAL,
        t-ADVinfo                           T-ADVinfo                       OPTIONAL
}

UE-InternalMeasurement ::=          SEQUENCE {
    ue-InternalMeasQuantity             UE-InternalMeasQuantity             OPTIONAL,
    ue-InternalReportingQuantity        UE-InternalReportingQuantity        OPTIONAL,
    reportCriteria                      UE-InternalReportCriteria
}

UE-InternalMeasurement-r4 ::=       SEQUENCE {
    ue-InternalMeasQuantity             UE-InternalMeasQuantity             OPTIONAL,
    ue-InternalReportingQuantity        UE-InternalReportingQuantity-r4     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-TimeDifference             BOOLEAN
        },
        tdd                                 SEQUENCE {
            appliedTA                           BOOLEAN
        }
    }
}

UE-InternalReportingQuantity-r4 ::= SEQUENCE {
    ue-TransmittedPower                 BOOLEAN,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ue-RX-TX-TimeDifference             BOOLEAN
        },
        tdd                                 SEQUENCE {
            tddOption                           CHOICE {
                tdd384                              SEQUENCE {
                    appliedTA                           BOOLEAN
                },
                tdd128                              SEQUENCE {
                    t-ADVinfo                           BOOLEAN
                }
            }
        }
    }
}

-- TABULAR: UE-MeasurementQuantity, for 3.84 Mcps TDD only the first two values
-- ue-TransmittedPower and utra-Carrier-RSSI are used.
-- For 1.28 Mcps TDD ue-RX-TX-TimeDifference corresponds to T-ADV in the tabular
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

-- SPARE: UE-RX-TX-TimeDifferenceType1, Max = 1280
-- Values above Max are spare
UE-RX-TX-TimeDifferenceType1 ::=            INTEGER (768..1791)


UE-RX-TX-TimeDifferenceType2 ::=    INTEGER (0..8191)

UE-RX-TX-TimeDifferenceType2Info ::=    SEQUENCE {
    ue-RX-TX-TimeDifferenceType2            UE-RX-TX-TimeDifferenceType2,
    neighbourQuality                        NeighbourQuality
}

-- In 1.28 Mcps TDD, actual value for
-- T-ADV Threshold = (UE-RX-TX-TimeDifferenceThreshold - 768) * 0.125
UE-RX-TX-TimeDifferenceThreshold ::= INTEGER (768..1280)

UE-TransmittedPower ::=             INTEGER (0..104)

UE-TransmittedPowerTDD-List ::=     SEQUENCE (SIZE (1..maxTS)) OF
                                        UE-TransmittedPower

UL-TrCH-Identity ::=                    CHOICE{
    dch                                 TransportChannelIdentity,
    -- Default transport channel in the UL is either RACH or CPCH, but not both.
    rachorcpch                          NULL,
    usch                                TransportChannelIdentity
}

UE-Positioning-Accuracy ::=                 BIT STRING (SIZE (7))


UE-Positioning-CipherParameters ::=         SEQUENCE {
    cipheringKeyFlag                    BIT STRING (SIZE (1)),
    cipheringSerialNumber               INTEGER (0..65535)
}

UE-Positioning-Error ::=                        SEQUENCE {
    errorReason                         UE-Positioning-ErrorCause,
    ue-positioning-GPS-additionalAssistanceDataRequest          UE-Positioning-GPS-
AdditionalAssistanceDataRequest OPTIONAL
}

UE-Positioning-ErrorCause ::=                   ENUMERATED {
                                        notEnoughOTDOA-Cells,
                                        notEnoughGPS-Satellites,
                                        assistanceDataMissing,
                                        notAccomplishedGPS-TimingOfCellFrames,
                                        undefinedError,
                                        requestDeniedByUser,
                                        notProcessedAndTimeout,
                                        referenceCellNotServingCell }

UE-Positioning-EventParam ::=                   SEQUENCE {
    reportingAmount                     ReportingAmount,
    reportFirstFix                      BOOLEAN,
    measurementInterval                 UE-Positioning-MeasurementInterval,
    eventSpecificInfo                   UE-Positioning-EventSpecificInfo
}

UE-Positioning-EventParamList ::=               SEQUENCE (SIZE (1..maxMeasEvent)) OF
                                        UE-Positioning-EventParam

UE-Positioning-EventSpecificInfo ::=            CHOICE {
    e7a                                 ThresholdPositionChange,
    e7b                                 ThresholdSFN-SFN-Change,
    e7c                                 ThresholdSFN-GPS-TOW
}

UE-Positioning-GPS-AcquisitionAssistance ::=    SEQUENCE {
    gps-ReferenceTime                   INTEGER (0..604799999),
```

```
    utran-GPSReferenceTime              UTRAN-GPSReferenceTime          OPTIONAL,
    satelliteInformationList            AcquisitionSatInfoList
}

UE-Positioning-GPS-AdditionalAssistanceDataRequest ::=      SEQUENCE {
    almanacRequest                      BOOLEAN,
    utcModelRequest                     BOOLEAN,
    ionosphericModelRequest             BOOLEAN,
    navigationModelRequest              BOOLEAN,
    dgpsCorrectionsRequest              BOOLEAN,
    referenceLocationRequest            BOOLEAN,
    referenceTimeRequest                BOOLEAN,
    aquisitionAssistanceRequest         BOOLEAN,
    realTimeIntegrityRequest            BOOLEAN,
    navModelAddDataRequest              UE-Positioning-GPS-NavModelAddDataReq       OPTIONAL
}

UE-Positioning-GPS-Almanac ::=                  SEQUENCE {
    wn-a                                BIT STRING (SIZE (8)),
    almanacSatInfoList                  AlmanacSatInfoList,
    sv-GlobalHealth                     BIT STRING (SIZE (364))             OPTIONAL
}

UE-Positioning-GPS-AssistanceData ::=           SEQUENCE {
    ue-positioning-GPS-ReferenceTime                UE-Positioning-GPS-ReferenceTime
    OPTIONAL,
    ue-positioning-GPS-ReferenceLocation            ReferenceLocation               OPTIONAL,
    ue-positioning-GPS-DGPS-Corrections             UE-Positioning-GPS-DGPS-Corrections
    OPTIONAL,
    ue-positioning-GPS-NavigationModel              UE-Positioning-GPS-NavigationModel
    OPTIONAL,
    ue-positioning-GPS-IonosphericModel             UE-Positioning-GPS-IonosphericModel
    OPTIONAL,
    ue-positioning-GPS-UTC-Model                    UE-Positioning-GPS-UTC-Model
    OPTIONAL,
    ue-positioning-GPS-Almanac                      UE-Positioning-GPS-Almanac
    OPTIONAL,
    ue-positioning-GPS-AcquisitionAssistance        UE-Positioning-GPS-AcquisitionAssistance
    OPTIONAL,
    ue-positioning-GPS-Real-timeIntegrity           BadSatList                          OPTIONAL,
    -- dummy is not used in this version of the specification, it should
    -- not be sent and if received it should be ignored.
    dummy           UE-Positioning-GPS-ReferenceCellInfo        OPTIONAL
}

UE-Positioning-GPS-DGPS-Corrections ::=     SEQUENCE {
    gps-TOW                             INTEGER (0..604799),
    statusHealth                        DiffCorrectionStatus,
    dgps-CorrectionSatInfoList          DGPS-CorrectionSatInfoList
}

UE-Positioning-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))
}

UE-Positioning-GPS-MeasurementResults ::=       SEQUENCE {
    referenceTime                       CHOICE {
        utran-GPSReferenceTimeResult        UTRAN-GPSReferenceTimeResult,
        gps-ReferenceTimeOnly               INTEGER (0..604799999)
    },
    gps-MeasurementParamList            GPS-MeasurementParamList
}

UE-Positioning-GPS-NavigationModel ::=          SEQUENCE {
    navigationModelSatInfoList          NavigationModelSatInfoList
}

UE-Positioning-GPS-NavModelAddDataReq ::=       SEQUENCE {
    gps-Week                            INTEGER (0..1023),
    -- SPARE: gps-Toe, Max = 167
    -- Values above Max are spare
```

```
    gps-Toe                             INTEGER (0..255),
    -- SPARE: tToeLimit, Max = 10
    -- Values above Max are spare
    tToeLimit                           INTEGER (0..15),
    satDataList                         SatDataList
}

UE-Positioning-GPS-ReferenceCellInfo ::=        SEQUENCE{
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            referenceIdentity               PrimaryCPICH-Info
        },
        tdd                             SEQUENCE {
            referenceIdentity               CellParametersID
        }
    }
}

UE-Positioning-GPS-ReferenceTime ::=            SEQUENCE {
    gps-Week                            INTEGER (0..1023),
    gps-tow-1msec                       GPS-TOW-1msec,  utran-GPSReferenceTime              UTRAN-
GPSReferenceTime                OPTIONAL,
    sfn-tow-Uncertainty                 SFN-TOW-Uncertainty                 OPTIONAL,
    utran-GPS-DriftRate                 UTRAN-GPS-DriftRate                 OPTIONAL,
    gps-TOW-AssistList                  GPS-TOW-AssistList                  OPTIONAL
}

UE-Positioning-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))
}

UE-Positioning-IPDL-Parameters ::=              SEQUENCE {
    ip-Spacing                          IP-Spacing,
    ip-Length                           IP-Length,
    ip-Offset                           INTEGER (0..9),
    seed                                INTEGER (0..63),
    burstModeParameters                 BurstModeParameters         OPTIONAL
}

UE-Positioning-IPDL-Parameters-r4 ::=           SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ip-Spacing                          IP-Spacing,
            ip-Length                           IP-Length,
            ip-Offset                           INTEGER (0..9),
            seed                                INTEGER (0..63)
        },
        tdd                                 SEQUENCE {
            ip-Spacing-TDD                      IP-Spacing-TDD,
            ip-slot                             INTEGER (0..14),
            ip-Start                            INTEGER (0..4095),
            ip-PCCPCG                           IP-PCCPCH-r4            OPTIONAL
        }
    },
    burstModeParameters                 BurstModeParameters             OPTIONAL
}

UE-Positioning-IPDL-Parameters-TDD-r4-ext ::=   SEQUENCE {
    ip-Spacing                          IP-Spacing-TDD,
    ip-slot                             INTEGER (0..14),
    ip-Start                            INTEGER (0..4095),
    ip-PCCPCG                           IP-PCCPCH-r4                    OPTIONAL,
    burstModeParameters                 BurstModeParameters
}

UE-Positioning-MeasuredResults ::=              SEQUENCE {
    ue-positioning-OTDOA-Measurement                UE-Positioning-OTDOA-Measurement
    OPTIONAL,
    ue-positioning-PositionEstimateInfo             UE-Positioning-PositionEstimateInfo
        OPTIONAL,
```

```
    ue-positioning-GPS-Measurement                  UE-Positioning-GPS-MeasurementResults
        OPTIONAL,
    ue-positioning-Error                            UE-Positioning-Error
    OPTIONAL
}

UE-Positioning-MeasuredResults-v390ext ::=      SEQUENCE {
    ue-Positioning-OTDOA-Measurement-v390ext        UE-Positioning-OTDOA-Measurement-v390ext
}

UE-Positioning-Measurement ::=                  SEQUENCE {
    ue-positioning-ReportingQuantity                UE-Positioning-ReportingQuantity,
    reportCriteria                          UE-Positioning-ReportCriteria,
    ue-positioning-OTDOA-AssistanceData         UE-Positioning-OTDOA-AssistanceData
    OPTIONAL,
    ue-positioning-GPS-AssistanceData               UE-Positioning-GPS-AssistanceData
    OPTIONAL
}

UE-Positioning-Measurement-v390ext ::=          SEQUENCE {
    ue-positioning-ReportingQuantity-v390ext        UE-Positioning-ReportingQuantity-v390ext
    OPTIONAL,
    measurementValidity                     MeasurementValidity                 OPTIONAL,
    ue-positioning-OTDOA-AssistanceData-UEB         UE-Positioning-OTDOA-AssistanceData-UEB
    OPTIONAL
}

UE-Positioning-Measurement-r4 ::=               SEQUENCE {
    ue-positioning-ReportingQuantity                UE-Positioning-ReportingQuantity-r4,
    measurementValidity                             MeasurementValidity
    OPTIONAL,
    reportCriteria                                  UE-Positioning-ReportCriteria,
    ue-positioning-OTDOA-AssistanceData             UE-Positioning-OTDOA-AssistanceData-r4
    OPTIONAL,
    ue-positioning-GPS-AssistanceData               UE-Positioning-GPS-AssistanceData
    OPTIONAL
}

UE-Positioning-MeasurementEventResults ::=      CHOICE {
    event7a                                 UE-Positioning-PositionEstimateInfo,
    event7b                                 UE-Positioning-OTDOA-Measurement,
    event7c                                 UE-Positioning-GPS-MeasurementResults,
    spare                                   NULL
}

UE-Positioning-MeasurementInterval ::=          ENUMERATED {
                                        e5, e15, e60, e300,
                                        e900, e1800, e3600, e7200 }

UE-Positioning-MethodType ::=                   ENUMERATED {
                                        ue-Assisted,
                                        ue-Based,
                                        ue-BasedPreferred,
                                        ue-AssistedPreferred }

UE-Positioning-OTDOA-AssistanceData ::=     SEQUENCE {
    ue-positioning-OTDOA-ReferenceCellInfo          UE-Positioning-OTDOA-ReferenceCellInfo
    OPTIONAL,
    ue-positioning-OTDOA-NeighbourCellList              UE-Positioning-OTDOA-NeighbourCellList
        OPTIONAL
}

UE-Positioning-OTDOA-AssistanceData-r4 ::=  SEQUENCE {
    ue-positioning-OTDOA-ReferenceCellInfo          UE-Positioning-OTDOA-ReferenceCellInfo-r4
        OPTIONAL,
    ue-positioning-OTDOA-NeighbourCellList          UE-Positioning-OTDOA-NeighbourCellList-r4
        OPTIONAL
}

UE-Positioning-OTDOA-AssistanceData-r4ext ::= SEQUENCE {
    -- In case of TDD these IPDL parameters shall be used for the reference cell instead of
    -- IPDL Parameters in IE UE-Positioning-OTDOA-ReferenceCellInfo
    ue-Positioning-IPDL-Parameters-TDD-r4-ext       UE-Positioning-IPDL-Parameters-TDD-r4-ext
    OPTIONAL,
    -- These IPDL parameters shall be used for the neighbour cells in case of TDD instead of
    -- IPDL Parameters in IE UE-Positioning-OTDOA-NeighbourCellInfoList. The cells shall be
    -- listed in the same order as in IE UE-Positioning-OTDOA-NeighbourCellInfoList
```

```
    ue-Positioning-IPDL-Parameters-TDDList-r4-ext   UE-Positioning-IPDL-Parameters-TDDList-r4-ext
    OPTIONAL
}

UE-Positioning-OTDOA-AssistanceData-UEB ::=     SEQUENCE {
    ue-positioning-OTDOA-ReferenceCellInfo-UEB          UE-Positioning-OTDOA-ReferenceCellInfo-UEB
                OPTIONAL,
    ue-positioning-OTDOA-NeighbourCellList-UEB              UE-Positioning-OTDOA-NeighbourCellList-
UEB             OPTIONAL
}

UE-Positioning-IPDL-Parameters-TDDList-r4-ext ::=   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            UE-Positioning-IPDL-Parameters-TDD-r4-ext

UE-Positioning-OTDOA-Measurement ::=            SEQUENCE {
    sfn                                 INTEGER (0..4095),
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            referenceCellIDentity               PrimaryCPICH-Info,
            ue-RX-TX-TimeDifferenceType2Info    UE-RX-TX-TimeDifferenceType2Info
        },
        tdd                                 SEQUENCE {
            referenceCellIdentity           CellParametersID
        }
    },
    neighbourList                       NeighbourList                       OPTIONAL
}

UE-Positioning-OTDOA-Measurement-v390ext ::=            SEQUENCE {
    neighbourList-v390ext                       NeighbourList-v390ext
}

UE-Positioning-OTDOA-NeighbourCellInfo ::= SEQUENCE {
    modeSpecificInfo    CHOICE  {
        fdd                             SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                             SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    },
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    ue-positioning-IPDL-Paremeters                  UE-Positioning-IPDL-Parameters
    OPTIONAL,
    sfn-SFN-RelTimeDifference           SFN-SFN-RelTimeDifference1,
    sfn-SFN-Drift                       SFN-SFN-Drift                       OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    positioningMode     CHOICE{
        ueBased                                 SEQUENCE {},
        ueAssisted                              SEQUENCE {}
    }
}

UE-Positioning-OTDOA-NeighbourCellInfo-r4 ::= SEQUENCE {
    modeSpecificInfo    CHOICE  {
        fdd                             SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                             SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    },
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    ue-positioning-IPDL-Paremeters      UE-Positioning-IPDL-Parameters-r4   OPTIONAL,
    sfn-SFN-RelTimeDifference           SFN-SFN-RelTimeDifference1,
    sfn-Offset-Validity                 SFN-Offset-Validity                 OPTIONAL,
    sfn-SFN-Drift                       SFN-SFN-Drift                       OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    positioningMode     CHOICE {
        ueBased                                 SEQUENCE {
            relativeNorth                       INTEGER (-20000..20000)             OPTIONAL,
            relativeEast                        INTEGER (-20000..20000)             OPTIONAL,
            relativeAltitude                    INTEGER (-4000..4000)               OPTIONAL,
            fineSFN-SFN                         FineSFN-SFN                         OPTIONAL,
            -- actual value roundTripTime = (IE value * 0.0625) + 876
            roundTripTime                       INTEGER (0.. 32766)                 OPTIONAL
        },
        ueAssisted                              SEQUENCE {}
```

```
    }
}

UE-Positioning-OTDOA-NeighbourCellInfo-UEB ::= SEQUENCE {
    modeSpecificInfo    CHOICE  {
        fdd                             SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                             SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    },
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    ue-positioning-IPDL-Paremeters      UE-Positioning-IPDL-Parameters      OPTIONAL,
    sfn-SFN-RelTimeDifference           SFN-SFN-RelTimeDifference1,
    sfn-SFN-Drift                       SFN-SFN-Drift                       OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    relativeNorth                       INTEGER (-20000..20000)             OPTIONAL,
    relativeEast                        INTEGER (-20000..20000)             OPTIONAL,
    relativeAltitude                    INTEGER (-4000..4000)               OPTIONAL,
    fineSFN-SFN                         FineSFN-SFN,
    -- actual value roundTripTime = (IE value * 0.0625) + 876
    roundTripTime                       INTEGER (0..32766)                  OPTIONAL
}

UE-Positioning-OTDOA-NeighbourCellList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            UE-Positioning-OTDOA-NeighbourCellInfo

UE-Positioning-OTDOA-NeighbourCellList-r4 ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                UE-Positioning-OTDOA-NeighbourCellInfo-r4

UE-Positioning-OTDOA-NeighbourCellList-UEB ::= SEQUENCE (SIZE (1..maxCellMeas)) OF
                                            UE-Positioning-OTDOA-NeighbourCellInfo-UEB

UE-Positioning-OTDOA-Quality ::=            SEQUENCE {
    stdResolution                       BIT STRING (SIZE (2)),
    numberOfOTDOA-Measurements          BIT STRING (SIZE (3)),
    stdOfOTDOA-Measurements             BIT STRING (SIZE (5))
}

UE-Positioning-OTDOA-ReferenceCellInfo ::=          SEQUENCE {
    sfn                                 INTEGER (0..4095)
    OPTIONAL,
    modeSpecificInfo CHOICE {
        fdd                                     SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                                     SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    },
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    positioningMode CHOICE {
        ueBased                                 SEQUENCE {},
        ueAssisted                              SEQUENCE {}
    },
    ue-positioning-IPDL-Paremeters              UE-Positioning-IPDL-Parameters  OPTIONAL
}

UE-Positioning-OTDOA-ReferenceCellInfo-r4 ::=   SEQUENCE {
    sfn                                 INTEGER (0..4095)
    OPTIONAL,
    modeSpecificInfo CHOICE {
        fdd                                     SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                                     SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    },
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    positioningMode CHOICE {
        ueBased                                 SEQUENCE {
            cellPosition                                ReferenceCellPosition   OPTIONAL,
            -- actual value roundTripTime = (IE value * 0.0625) + 876
            roundTripTime                       INTEGER (0..32766)              OPTIONAL
        },
        ueAssisted                              SEQUENCE {}
```

```
    },
    ue-positioning-IPDL-Paremeters              UE-Positioning-IPDL-Parameters-r4   OPTIONAL
}

UE-Positioning-OTDOA-ReferenceCellInfo-UEB ::=          SEQUENCE {
    sfn                                 INTEGER (0..4095)                   OPTIONAL,
    modeSpecificInfo CHOICE {
        fdd                                     SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                                     SEQUENCE{
            cellAndChannelIdentity              CellAndChannelIdentity
        }
    },
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellPosition                        ReferenceCellPosition               OPTIONAL,
    -- actual value roundTripTime = (IE value * 0.0625) + 876
    roundTripTime                       INTEGER (0..32766)                  OPTIONAL,
    ue-positioning-IPDL-Paremeters      UE-Positioning-IPDL-Parameters      OPTIONAL
}

UE-Positioning-PositionEstimateInfo ::=                 SEQUENCE {
    referenceTime                   CHOICE {
        utran-GPSReferenceTimeResult        UTRAN-GPSReferenceTimeResult,
        gps-ReferenceTimeOnly               INTEGER (0..604799999),
        cell-Timing                         SEQUENCE {
            sfn                                     INTEGER (0..4095),
            modeSpecificInfo                CHOICE {
                fdd                                 SEQUENCE {
                    primaryCPICH-Info                   PrimaryCPICH-Info
                },
                tdd                                 SEQUENCE{
                    cellAndChannelIdentity              CellAndChannelIdentity
                }
            }
        }
    },
    positionEstimate                    PositionEstimate
}

UE-Positioning-ReportCriteria ::=               CHOICE {
    ue-positioning-ReportingCriteria                UE-Positioning-EventParamList,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

UE-Positioning-ReportingQuantity ::=            SEQUENCE {
    methodType                          UE-Positioning-MethodType,
    positioningMethod                   PositioningMethod,
    -- dummy1 is not used in this version of specification and it should
    -- be ignored.
    dummy1                              UE-Positioning-ResponseTime,
    horizontal-Accuracy                 UE-Positioning-Accuracy             OPTIONAL,
    gps-TimingOfCellWanted              BOOLEAN,
    -- dummy2 is not used in this version of specification and it should
    -- be ignored.
    dummy2                              BOOLEAN,
    additionalAssistanceDataRequest     BOOLEAN,
    environmentCharacterisation         EnvironmentCharacterisation         OPTIONAL
}

UE-Positioning-ReportingQuantity-v390ext ::=        SEQUENCE {
    vertical-Accuracy                           UE-Positioning-Accuracy
}

UE-Positioning-ReportingQuantity-r4 ::=         SEQUENCE {
    methodType                          UE-Positioning-MethodType,
    positioningMethod                   PositioningMethod,
    horizontalAccuracy                  UE-Positioning-Accuracy             OPTIONAL,
    verticalAccuracy                    UE-Positioning-Accuracy             OPTIONAL,
    gps-TimingOfCellWanted              BOOLEAN,
    additionalAssistanceDataReq         BOOLEAN,
    environmentCharacterisation         EnvironmentCharacterisation         OPTIONAL
}

UE-Positioning-ResponseTime ::=             ENUMERATED {
                                        s1, s2, s4, s8, s16,
                                        s32, s64, s128 }
```

```
-- SPARE: UTRA-CarrierRSSI, Max = 76
-- Values above Max are spare
UTRA-CarrierRSSI ::=                INTEGER (0..127)

UTRAN-GPS-DriftRate ::=             ENUMERATED {
                                    utran-GPSDrift0, utran-GPSDrift1, utran-GPSDrift2,
                                    utran-GPSDrift5, utran-GPSDrift10, utran-GPSDrift15,
                                    utran-GPSDrift25, utran-GPSDrift50, utran-GPSDrift-1,
                                    utran-GPSDrift-2, utran-GPSDrift-5, utran-GPSDrift-10,
                                    utran-GPSDrift-15, utran-GPSDrift-25, utran-GPSDrift-50}

UTRAN-GPSReferenceTime ::=              SEQUENCE {
    -- For utran-GPSTimingOfCell values above 2322431999999 are not
    -- used in this version of the specification
    -- Actual value utran-GPSTimingOfCell = (ms-part * 4294967296) + ls-part
    utran-GPSTimingOfCell           SEQUENCE {
        ms-part                         INTEGER (0..1023),
        ls-part                         INTEGER (0..4294967295)
    },
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            referenceIdentity               PrimaryCPICH-Info
        },
        tdd                             SEQUENCE {
            referenceIdentity               CellParametersID
        }
    }               OPTIONAL,
    sfn                                 INTEGER (0..4095)
}

UTRAN-GPSReferenceTimeResult ::=                SEQUENCE {
    -- For ue-GPSTimingOfCell values above 37158911999999 are not
    -- used in this version of the specification
    -- Actual value ue-GPSTimingOfCell = (ms-part * 4294967296) + ls-part
    ue-GPSTimingOfCell          SEQUENCE {
        ms-part                         INTEGER (0.. 16383),
        ls-part                         INTEGER (0..4294967295)
    },
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            referenceIdentity               PrimaryCPICH-Info
        },
        tdd                             SEQUENCE {
            referenceIdentity               CellParametersID
        }
    },
    sfn                                 INTEGER (0..4095)
}

VarianceOfRLC-BufferPayload ::=     ENUMERATED {
                                        plv0, plv4, plv8, plv16, plv32, plv64,
                                        plv128, plv256, plv512, plv1024,
                                        plv2k, plv4k, plv8k, plv16k, spare2, spare1 }

-- Actual value W = 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 BCCH-ModificationTime = 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)
ExpirationTimeFactor ::=                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))
}

GERAN-SystemInfoBlock ::=               OCTET STRING (SIZE (1..23))

GERAN-SystemInformation ::=             SEQUENCE (SIZE (1..maxGERAN-SI)) OF GERAN-SystemInfoBlock

GSM-BA-Range ::=                        SEQUENCE {
                                            gsmLowRangeUARFCN       UARFCN,
                                            gsmUpRangeUARFCN        UARFCN
}

GSM-BA-Range-List ::=                   SEQUENCE (SIZE (1..maxNumGSMFreqRanges)) OF
                                            GSM-BA-Range


-- This IE is formatted as 'TLV' and is coded in the same way as the Mobile Station Classmark 2
-- information element in [5]. The first octet is the Mobile station classmark 2 IEI and its value
-- shall be set to 33H. The second octet is the Length of mobile station classmark 2 and its value
-- shall be set to 3. The octet 3 contains the first octet of the value part of the Mobile Station
-- Classmark 2 information element, the octet 4 contains the second octet of the value part of the
-- Mobile Station Classmark 2 information element and so on. For each of these octets, the first/
-- leftmost/ most significant bit of the octet contains b8 of the corresponding octet of the Mobile
-- Station Classmark 2.
GSM-Classmark2 ::=                  OCTET STRING (SIZE (5))

-- This IE is formatted as 'V' and is coded in the same way as the value part in the Mobile station
-- classmark 3 information element in [5]
-- The value part is specified by means of CSN.1, which encoding results in a bit string, to which
-- final padding may be appended upto the next octet boundary [5]. The first/ leftmost bit of the
-- CSN.1 bit string is placed in the first/ leftmost/ most significant bit of the first
-- octet. This continues until the last bit of the CSN.1 bit string, which is placed in the last/
-- rightmost/ least significant bit of the last octet.
GSM-Classmark3 ::=                  OCTET STRING (SIZE (1..32))

GSM-MessageList ::=                 SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        BIT STRING (SIZE (1..512))

GsmSecurityCapability ::=           BIT STRING {
                                        -- For each bit value “0” means false/ not supported
                                        a5-7(0),
                                        a5-6(1),
                                        a5-5(2),
                                        a5-4(3),
                                        a5-3(4),
                                        a5-2(5),
                                        a5-1(6)
                                        }   (SIZE (7))

IdentificationOfReceivedMessage ::= SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
```

```
        receivedMessageType             ReceivedMessageType
}

InterRAT-ChangeFailureCause ::=     CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    unspecified                         NULL,
    spare4                              NULL,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

GERANIu-MessageList ::=             SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        BIT STRING (SIZE (1..32768))

GERANIu-RadioAccessCapability ::=   BIT STRING (SIZE (1..170))

InterRAT-UE-RadioAccessCapability ::= CHOICE {
    gsm                                 SEQUENCE {
        gsm-Classmark2                      GSM-Classmark2,
        gsm-Classmark3                      GSM-Classmark3
    },
    cdma2000                            SEQUENCE {
        cdma2000-MessageList                CDMA2000-MessageList
    }
}

InterRAT-UE-RadioAccessCapabilityList ::=   SEQUENCE (SIZE(1..maxInterSysMessages)) OF
                                            InterRAT-UE-RadioAccessCapability

InterRAT-UE-RadioAccessCapability-v590ext ::= SEQUENCE {
    geranIu-RadioAccessCapability       GERANIu-RadioAccessCapability
}

InterRAT-UE-SecurityCapability ::= CHOICE {
    gsm                                 SEQUENCE {
        gsmSecurityCapability           GsmSecurityCapability
    }
}

InterRAT-UE-SecurityCapList ::=     SEQUENCE (SIZE(1..maxInterSysMessages)) OF
                                        InterRAT-UE-SecurityCapability

InterRAT-HO-FailureCause ::=        CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    interRAT-ProtocolError              NULL,
    unspecified                         NULL,
    spare11                             NULL,
    spare10                             NULL,
    spare9                              NULL,
    spare8                              NULL,
    spare7                              NULL,
    spare6                              NULL,
    spare5                              NULL,
    spare4                              NULL,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

MasterInformationBlock ::=          SEQUENCE {
        mib-ValueTag                    MIB-ValueTag,
        -- TABULAR: The PLMN identity and ANSI-41 core network information
        -- are included in PLMN-Type.
        plmn-Type                       PLMN-Type,
        sibSb-ReferenceList             SIBSb-ReferenceList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

MIB-ValueTag ::=                    INTEGER (1..8)

NCC ::=                             INTEGER (0..7)
```

```
PLMN-ValueTag ::=                   INTEGER (1..256)


PredefinedConfigIdentityAndValueTag ::= SEQUENCE {
    predefinedConfigIdentity                PredefinedConfigIdentity,
    predefinedConfigValueTag                PredefinedConfigValueTag
}

ProtocolErrorInformation ::=        SEQUENCE {
    diagnosticsType                     CHOICE {
        type1                               SEQUENCE {
            protocolErrorCause                  ProtocolErrorCause
        },
        spare                               NULL
    }
}

ReceivedMessageType ::=             ENUMERATED {
                                        activeSetUpdate,
                                        cellChangeOrderFromUTRAN,
                                        cellUpdateConfirm,
                                        counterCheck,
                                        downlinkDirectTransfer,
                                        interRATHandoverCommand,
                                        measurementControl,
                                        pagingType2,
                                        physicalChannelReconfiguration,
                                        physicalSharedChannelAllocation,
                                        radioBearerReconfiguration,
                                        radioBearerRelease,
                                        radioBearerSetup,
                                        rrcConnectionRelease,
                                        rrcConnectionReject,
                                        rrcConnectionSetup,
                                        securityModeCommand,
                                        signallingConnectionRelease,
                                        transportChannelReconfiguration,
                                        transportFormatCombinationControl,
                                        ueCapabilityEnquiry,
                                        ueCapabilityInformationConfirm,
                                        uplinkPhysicalChannelControl,
                                        uraUpdateConfirm,
                                        utranMobilityInformation,
                                        assistanceDataDelivery,
                                        spare6, spare5, spare4, spare3, spare2,
                                        spare1
}

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 TDD-UMTS-Frequency-List
    OPTIONAL,
                                            cdma2000-UMTS-Frequency-List    CDMA2000-UMTS-Frequency-
List    OPTIONAL
}

Rplmn-Information-r4 ::=        SEQUENCE {
    gsm-BA-Range-List               GSM-BA-Range-List                       OPTIONAL,
    fdd-UMTS-Frequency-List         FDD-UMTS-Frequency-List                 OPTIONAL,
    tdd384-UMTS-Frequency-List      TDD-UMTS-Frequency-List                 OPTIONAL,
    tdd128-UMTS-Frequency-List      TDD-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 SFN-Prime = 2 * IE value
SFN-Prime ::=                       INTEGER (0..2047)


SIB-Data-fixed ::=                  BIT STRING (SIZE (222))


SIB-Data-variable ::=               BIT STRING (SIZE (1..214))

SIBOccurIdentity ::=            INTEGER (0..15)

SIBOccurrenceIdentityAndValueTag ::=    SEQUENCE {
    sibOccurIdentity                SIBOccurIdentity,
    sibOccurValueTag                SIBOccurValueTag
}

SIBOccurValueTag ::=            INTEGER (0..15)

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,
```

```
                                        systemInformationBlockType18,
                                        schedulingBlock1,
                                        schedulingBlock2,
                                        systemInformationBlockType15-5,
                                        spare1, spare2 }

SIB-TypeAndTag ::=                  CHOICE {
    sysInfoType1                        PLMN-ValueTag,
    sysInfoType2                        CellValueTag,
    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                     SIBOccurrenceIdentityAndValueTag,
    sysInfoType15-3                     SIBOccurrenceIdentityAndValueTag,
    sysInfoType15-4                     CellValueTag,
    sysInfoType18                       CellValueTag,
    sysInfoType15-5                     CellValueTag,
    spare5                              NULL,
    spare4                              NULL,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

SIBSb-TypeAndTag ::=                    CHOICE {
    sysInfoType1                        PLMN-ValueTag,
    sysInfoType2                        CellValueTag,
    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                     SIBOccurrenceIdentityAndValueTag,
    sysInfoType15-3                     SIBOccurrenceIdentityAndValueTag,
    sysInfoType15-4                     CellValueTag,
    sysInfoType18                       CellValueTag,
    sysInfoType15-5                     CellValueTag,
    spare3                              NULL,
    spare2                              NULL,
    spare1                              NULL
}

SibOFF ::=                          ENUMERATED {
                                        so2, so4, so6, so8, so10,
```

```
                                        so12, so14, so16, so18,
                                        so20, so22, so24, so26,
                                        so28, so30, so32 }

SibOFF-List ::=                     SEQUENCE (SIZE (1..15)) OF
                                        SibOFF

SysInfoType1 ::=                    SEQUENCE {
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants           OPTIONAL,
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants           OPTIONAL,
    -- Extension mechanism for non- release99 information
        v3a0NonCriticalExtensions       SEQUENCE {
            sysInfoType1-v3a0ext        SysInfoType1-v3a0ext-IEs,
            nonCriticalExtensions       SEQUENCE {} OPTIONAL
        }                           OPTIONAL
}

SysInfoType1-v3a0ext-IEs ::= SEQUENCE {
    ue-ConnTimersAndConstants-v3a0ext       UE-ConnTimersAndConstants-v3a0ext,
    ue-IdleTimersAndConstants-v3a0ext       UE-IdleTimersAndConstants-v3a0ext
}

SysInfoType2 ::=                    SEQUENCE {
    -- UTRAN mobility IEs
        ura-IdentityList                URA-IdentityList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType3 ::=                    SEQUENCE {
        sib4indicator                   BOOLEAN,
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType3-v4b0ext            SysInfoType3-v4b0ext-IEs,
            v590NonCriticalExtension        SEQUENCE {
                sysInfoType3-v590ext            SysInfoType3-v590ext,
                v5c0NonCriticalExtension        SEQUENCE {
                    sysInfoType3-v5c0ext            SysInfoType3-v5c0ext-IEs,
                    nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
                }                               OPTIONAL
            }                           OPTIONAL
        }                           OPTIONAL
}

SysInfoType3-v4b0ext-IEs ::= SEQUENCE {
    mapping-LCR                     Mapping-LCR-r4                          OPTIONAL
}

SysInfoType3-v590ext ::= SEQUENCE {
    cellSelectReselectInfo-v590ext      CellSelectReselectInfo-v590ext      OPTIONAL
}

SysInfoType3-v5c0ext-IEs ::= SEQUENCE {
    cellSelectReselectInfoTreselectionScaling-v5c0ext
                                    CellSelectReselectInfoTreselectionScaling-v5c0ext   OPTIONAL
}

SysInfoType4 ::=                    SEQUENCE {
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfoSIB-3-4,
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType4-v4b0ext            SysInfoType4-v4b0ext-IEs,
            v590NonCriticalExtension        SEQUENCE {
                sysInfoType4-v590ext            SysInfoType4-v590ext,
                v5b0NonCriticalExtension        SEQUENCE {
                    sysInfoType4-v5b0ext            SysInfoType4-v5b0ext-IEs,
                    v5c0NonCriticalExtension        SEQUENCE {
```

```
                        sysInfoType4-v5c0ext            SysInfoType4-v5c0ext-IEs,
                        nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
}

SysInfoType4-v4b0ext-IEs ::= SEQUENCE {
    mapping-LCR                         Mapping-LCR-r4                          OPTIONAL
}


SysInfoType4-v590ext ::= SEQUENCE {
    cellSelectReselectInfo-v590ext      CellSelectReselectInfo-v590ext      OPTIONAL
}

SysInfoType4-v5b0ext-IEs ::= SEQUENCE {
    cellSelectReselectInfoPCHFACH-v5b0ext   CellSelectReselectInfoPCHFACH-v5b0ext       OPTIONAL
}

SysInfoType4-v5c0ext-IEs ::= SEQUENCE {
    cellSelectReselectInfoTreselectionScaling-v5c0ext
                                    CellSelectReselectInfoTreselectionScaling-v5c0ext   OPTIONAL
}

SysInfoType5 ::=                    SEQUENCE {
        sib6indicator                   BOOLEAN,
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset
            },
            tdd                             SEQUENCE {
    -- If PDSCH/PUSCH is configured for 1.28Mcps TDD, the following IEs should be absent
    --   and the info included in the tdd128SpecificInfo instead.
    -- If PDSCH/PUSCH is configured for 3.84Mcps TDD in R5, HCR-r5-SpecificInfo should also be
    -- included.
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       OPTIONAL,
                openLoopPowerControl-TDD        OpenLoopPowerControl-TDD
            }
        },
        primaryCCPCH-Info               PrimaryCCPCH-Info                   OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList,
        -- cbs-DRX-Level1Information is conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType5-v4b0ext            SysInfoType5-v4b0ext-IEs        OPTIONAL,
        -- Extension mechanism for non- rel-4 information
            v590NonCriticalExtensions   SEQUENCE {
                sysInfoType5-v590ext            SysInfoType5-v590ext-IEs        OPTIONAL,
                nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
            }                           OPTIONAL
        }                           OPTIONAL
}

SysInfoType5-v4b0ext-IEs ::= SEQUENCE {
    --The following IE PNBSCH-Allocation-r4 shall be used for 3.84Mcps TDD only.
    pNBSCH-Allocation-r4            PNBSCH-Allocation-r4            OPTIONAL,
    -- In case of TDD, the following IE is included instead of the
    -- IE up-IPDL-Parameter in up-OTDOA-AssistanceData.
    openLoopPowerControl-IPDL-TDD   OpenLoopPowerControl-IPDL-TDD-r4    OPTIONAL,
-- If SysInfoType5 is sent to describe a 1.28Mcps TDD cell, the IE PRACH-RACH-Info included in
-- PRACH-SystemInformationList shall be ignored, the IE PRACH-Partitioning and the
-- IE rach-TransportFormatSet shall be absent and the corresponding IE in the following
-- PRACH-SystemInformationList-LCR-r4 shall be used
    prach-SystemInformationList-LCR-r4  PRACH-SystemInformationList-LCR-r4  OPTIONAL,
    tdd128SpecificInfo              SEQUENCE {
        pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN-LCR-r4    OPTIONAL,
        pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN-LCR-r4    OPTIONAL,
        pCCPCH-LCR-Extensions           PrimaryCCPCH-Info-LCR-r4-ext    OPTIONAL,
        sCCPCH-LCR-ExtensionsList       SCCPCH-SystemInformationList-LCR-r4-ext
    }                                                               OPTIONAL,
```

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    frequencyBandIndicator          RadioFrequencyBandFDDSpare      OPTIONAL
}

SysInfoType5-v590ext-IEs ::= SEQUENCE {
    hcr-r5-SpecificInfo             SEQUENCE {
        pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN-HCR-r5    OPTIONAL,
        pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN-HCR-r5    OPTIONAL
    }                                                                   OPTIONAL
}

SysInfoType6 ::=                    SEQUENCE {
    -- Physical channel IEs
        pich-PowerOffset                PICH-PowerOffset,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                aich-PowerOffset                AICH-PowerOffset,
                -- dummy is not used in this version of specification, it should
                -- not be sent and if received it should be ignored.
                dummy                           CSICH-PowerOffset           OPTIONAL
            },
            tdd                             SEQUENCE {
                -- If PDSCH/PUSCH is configured for 1.28Mcps TDD, pusch-SysInfoList-SFN,
                -- pdsch-SysInfoList-SFN and openLoopPowerControl-TDD should be absent
                -- and the info included in the tdd128SpecificInfo instead.
                -- If PDSCH/PUSCH is configured for 3.84Mcps TDD in R5, HCR-r5-SpecificInfo should
                -- also be included.
                pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN       OPTIONAL,
                pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN       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
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType6-v4b0ext            SysInfoType6-v4b0ext-IEs        OPTIONAL,
        -- Extension mechanism for non- rel-4 information
            v590NonCriticalExtensions   SEQUENCE {
                sysInfoType6-v590ext            SysInfoType6-v590ext-IEs        OPTIONAL,
                nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
            }                           OPTIONAL
        }                           OPTIONAL
}

SysInfoType6-v4b0ext-IEs ::= SEQUENCE {
    -- openLoopPowerControl-IPDL-TDD is present only if IPDLs are applied for TDD
    openLoopPowerControl-IPDL-TDD   OpenLoopPowerControl-IPDL-TDD-r4    OPTIONAL,
    -- If SysInfoType6 is sent to describe a 1.28Mcps TDD cell, the IE PRACH-RACH-Info included
    -- in PRACH-SystemInformationList shall be ignored, the IE PRACH-Partitioning and the
    -- IE rach-TransportFormatSet shall be absent and the corresponding IEs in the following
    -- PRACH-SystemInformationList-LCR-r4 shall be used
    prach-SystemInformationList-LCR-r4  PRACH-SystemInformationList-LCR-r4  OPTIONAL,
    tdd128SpecificInfo              SEQUENCE {
        pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN-LCR-r4    OPTIONAL,
        pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN-LCR-r4    OPTIONAL,
        pCCPCH-LCR-Extensions           PrimaryCCPCH-Info-LCR-r4-ext    OPTIONAL,
        sCCPCH-LCR-ExtensionsList       SCCPCH-SystemInformationList-LCR-r4-ext OPTIONAL
    }                                                               OPTIONAL,
    frequencyBandIndicator          RadioFrequencyBandFDDSpare      OPTIONAL
}

SysInfoType6-v590ext-IEs ::= SEQUENCE {
    hcr-r5-SpecificInfo             SEQUENCE {
        pusch-SysInfoList-SFN           PUSCH-SysInfoList-SFN-HCR-r5    OPTIONAL,
        pdsch-SysInfoList-SFN           PDSCH-SysInfoList-SFN-HCR-r5    OPTIONAL
    }                                                                   OPTIONAL
}

SysInfoType7 ::=                    SEQUENCE {
    -- Physical channel IEs
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                ul-Interference                 UL-Interference
            },
```

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            tdd                             NULL
        },
        prach-Information-SIB5-List     DynamicPersistenceLevelList,
        prach-Information-SIB6-List     DynamicPersistenceLevelList         OPTIONAL,
        expirationTimeFactor            ExpirationTimeFactor                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType8 ::=                    SEQUENCE {
    -- User equipment IEs
        cpch-Parameters                 CPCH-Parameters,
    -- Physical channel IEs
        cpch-SetInfoList                CPCH-SetInfoList,
        csich-PowerOffset               CSICH-PowerOffset,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType9 ::=                    SEQUENCE {
    -- Physical channel IEs
        cpch-PersistenceLevelsList      CPCH-PersistenceLevelsList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType10 ::=                   SEQUENCE {
    -- User equipment IEs
        drac-SysInfoList                DRAC-SysInfoList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType11 ::=                   SEQUENCE {
        sib12indicator                  BOOLEAN,
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo        OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType11-v4b0ext           SysInfoType11-v4b0ext-IEs       OPTIONAL,
            v590NonCriticalExtension        SEQUENCE {
                sysInfoType11-v590ext           SysInfoType11-v590ext-IEs,
                nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
            }                           OPTIONAL
        }                           OPTIONAL
}

SysInfoType11-v4b0ext-IEs ::= SEQUENCE {
    fach-MeasurementOccasionInfo-LCR-Ext    FACH-MeasurementOccasionInfo-LCR-r4-ext OPTIONAL,
    measurementControlSysInfo-LCR           MeasurementControlSysInfo-LCR-r4-ext
}

SysInfoType11-v590ext-IEs ::= SEQUENCE {
    --The order of the list corresponds to the order of cell in newIntraFrequencyCellInfoList
    newIntraFrequencyCellInfoList-v590ext   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                CellSelectReselectInfo-v590ext  OPTIONAL,
    --The order of the list corresponds to the order of cell in newInterFrequencyCellInfoList
    newInterFrequencyCellInfoList-v590ext   SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                CellSelectReselectInfo-v590ext  OPTIONAL,
    --The order of the list corresponds to the order of cell in newInterRATCellInfoList
    newInterRATCellInfoList-v590ext         SEQUENCE (SIZE (1..maxCellMeas)) OF
                                                CellSelectReselectInfo-v590ext  OPTIONAL,
    intraFreqEventCriteriaList-v590ext      Intra-FreqEventCriteriaList-v590ext     OPTIONAL,
    intraFreqReportingCriteria-1b-r5        IntraFreqReportingCriteria-1b-r5    OPTIONAL,
    intraFreqEvent-1d-r5                    IntraFreqEvent-1d-r5                OPTIONAL
}

SysInfoType12 ::=                   SEQUENCE {
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo        OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType12-v4b0ext           SysInfoType12-v4b0ext-IEs       OPTIONAL,
            v590NonCriticalExtension        SEQUENCE {
                sysInfoType12-v590ext           SysInfoType12-v590ext-IEs,
                nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
```

```
			}							OPTIONAL
		}							OPTIONAL
}

SysInfoType12-v4b0ext-IEs ::= SEQUENCE {
	fach-MeasurementOccasionInfo-LCR-Ext	FACH-MeasurementOccasionInfo-LCR-r4-ext OPTIONAL,
	measurementControlSysInfo-LCR			MeasurementControlSysInfo-LCR-r4-ext
}

SysInfoType12-v590ext-IEs ::= SEQUENCE {
	--The order of the list corresponds to the order of cell in newIntraFrequencyCellInfoList
	newIntraFrequencyCellInfoList-v590ext	SEQUENCE (SIZE (1..maxCellMeas)) OF
												CellSelectReselectInfo-v590ext	OPTIONAL,
	--The order of the list corresponds to the order of cell in newInterFrequencyCellInfoList
	newInterFrequencyCellInfoList-v590ext	SEQUENCE (SIZE (1..maxCellMeas)) OF
												CellSelectReselectInfo-v590ext	OPTIONAL,
	--The order of the list corresponds to the order of cell in newInterRATCellInfoList
	newInterRATCellInfoList-v590ext			SEQUENCE (SIZE (1..maxCellMeas)) OF
												CellSelectReselectInfo-v590ext	OPTIONAL,
	intraFreqEventCriteriaList-v590ext		Intra-FreqEventCriteriaList-v590ext		OPTIONAL,
	intraFreqReportingCriteria-1b-r5		IntraFreqReportingCriteria-1b-r5	OPTIONAL,
	intraFreqEvent-1d-r5					IntraFreqEvent-1d-r5				OPTIONAL
}

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
		v3a0NonCriticalExtensions				SEQUENCE {
			sysInfoType13-v3a0ext				SysInfoType13-v3a0ext-IEs,
			v4b0NonCriticalExtensions			SEQUENCE {
				sysInfoType13-v4b0ext				SysInfoType13-v4b0ext-IEs,
			-- Extension mechanism for non- release99 information
				nonCriticalExtensions				SEQUENCE {}						OPTIONAL
			}							OPTIONAL
		}							OPTIONAL
}

SysInfoType13-v3a0ext-IEs ::= SEQUENCE {
	ue-IdleTimersAndConstants-v3a0ext		UE-IdleTimersAndConstants-v3a0ext
}

SysInfoType13-v4b0ext-IEs ::= SEQUENCE {
	capabilityUpdateRequirement-r4Ext	CapabilityUpdateRequirement-r4-ext	OPTIONAL
}

SysInfoType13-1 ::=						SEQUENCE {
	-- ANSI-41 IEs
		ansi-41-RAND-Information			ANSI-41-RAND-Information,
	-- Extension mechanism for non- release99 information
		nonCriticalExtensions				SEQUENCE {}							OPTIONAL
}

SysInfoType13-2 ::=						SEQUENCE {
	-- ANSI-41 IEs
		ansi-41-UserZoneID-Information	ANSI-41-UserZoneID-Information,
	-- Extension mechanism for non- release99 information
		nonCriticalExtensions				SEQUENCE {}							OPTIONAL
}

SysInfoType13-3 ::=						SEQUENCE {
	-- ANSI-41 IEs
		ansi-41-PrivateNeighbourListInfo ANSI-41-PrivateNeighbourListInfo,
	-- Extension mechanism for non- release99 information
		nonCriticalExtensions				SEQUENCE {}							OPTIONAL
}

SysInfoType13-4 ::=						SEQUENCE {
	-- ANSI-41 IEs
		ansi-41-GlobalServiceRedirectInfo
											ANSI-41-GlobalServiceRedirectInfo,
	-- Extension mechanism for non- release99 information
		nonCriticalExtensions				SEQUENCE {}							OPTIONAL
}
```

```
SysInfoType14 ::=                   SEQUENCE {
    -- Physical channel IEs
        individualTS-InterferenceList   IndividualTS-InterferenceList,
        expirationTimeFactor            ExpirationTimeFactor                OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType15 ::=                   SEQUENCE {
    -- Measurement IEs

        ue-positioning-GPS-CipherParameters     UE-Positioning-CipherParameters     OPTIONAL,
        ue-positioning-GPS-ReferenceLocation    ReferenceLocation,
        ue-positioning-GPS-ReferenceTime        UE-Positioning-GPS-ReferenceTime,

        ue-positioning-GPS-Real-timeIntegrity       BadSatList                          OPTIONAL,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions           SEQUENCE {
            sysInfoType15-v4b0ext               SysInfoType15-v4b0ext-IEs,
        -- Extension mechanism for non- release4 information
            nonCriticalExtensions               SEQUENCE {}             OPTIONAL
        }   OPTIONAL
}

SysInfoType15-v4b0ext-IEs ::= SEQUENCE {
    up-Ipdl-Parameters-TDD          UE-Positioning-IPDL-Parameters-TDD-r4-ext   OPTIONAL
}

SysInfoType15-1 ::=                 SEQUENCE {
    -- DGPS corrections
        ue-positioning-GPS-DGPS-Corrections         UE-Positioning-GPS-DGPS-Corrections,

    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}             OPTIONAL
}

SysInfoType15-2 ::=                 SEQUENCE {
    -- Ephemeris and clock corrections
        transmissionTOW                 INTEGER (0..604799),
        satID                           SatID,
        ephemerisParameter              EphemerisParameter,

    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}         OPTIONAL
}

SysInfoType15-3 ::=                 SEQUENCE {
    -- Almanac and other data
        transmissionTOW                 INTEGER (0.. 604799),
        ue-positioning-GPS-Almanac                  UE-Positioning-GPS-Almanac
    OPTIONAL,
        ue-positioning-GPS-IonosphericModel         UE-Positioning-GPS-IonosphericModel
    OPTIONAL,
        ue-positioning-GPS-UTC-Model                UE-Positioning-GPS-UTC-Model
    OPTIONAL,
        satMask                         BIT STRING (SIZE (1..32))   OPTIONAL,
        lsbTOW                          BIT STRING (SIZE (8))       OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                 OPTIONAL
}

SysInfoType15-4 ::=                 SEQUENCE {
    -- Measurement IEs
        ue-positioning-OTDOA-CipherParameters   UE-Positioning-CipherParameters         OPTIONAL,
        ue-positioning-OTDOA-AssistanceData     UE-Positioning-OTDOA-AssistanceData,
        v3a0NonCriticalExtensions           SEQUENCE {
            sysInfoType15-4-v3a0ext             SysInfoType15-4-v3a0ext,
        -- Extension mechanism for non- release99 information
            v4b0NonCriticalExtensions           SEQUENCE {
                sysInfoType15-4-v4b0ext             SysInfoType15-4-v4b0ext,
                nonCriticalExtensions               SEQUENCE {}     OPTIONAL
            }   OPTIONAL
        }   OPTIONAL
}

SysInfoType15-4-v3a0ext ::= SEQUENCE {
    sfn-Offset-Validity             SFN-Offset-Validity     OPTIONAL
}
```

```
SysInfoType15-4-v4b0ext ::= SEQUENCE {
    ue-Positioning-OTDOA-AssistanceData-r4ext   UE-Positioning-OTDOA-AssistanceData-r4ext   OPTIONAL
}

SysInfoType15-5 ::=                 SEQUENCE {
    -- Measurement IEs
        ue-positioning-OTDOA-AssistanceData-UEB     UE-Positioning-OTDOA-AssistanceData-UEB,
        v3a0NonCriticalExtensions           SEQUENCE {
            sysInfoType15-5-v3a0ext             SysInfoType15-5-v3a0ext,
        -- Extension mechanism for non- release99 information
            nonCriticalExtensions               SEQUENCE {}     OPTIONAL
        }   OPTIONAL
}

SysInfoType15-5-v3a0ext ::= SEQUENCE {
    sfn-Offset-Validity         SFN-Offset-Validity     OPTIONAL
}

SysInfoType16 ::=                   SEQUENCE {
    -- Radio bearer IEs
        preDefinedRadioConfiguration    PreDefRadioConfiguration,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoType17 ::=                   SEQUENCE {
    -- Physical channel IEs
        -- If PDSCH/PUSCH is configured for 1.28Mcps TDD, pusch-SysInfoList and
        -- pdsch-SysInfoList should be absent and the info included in the
        -- tdd128SpecificInfo instead.
        -- If PDSCH/PUSCH is configured for 3.84Mcps TDD in R5, HCR-r5-SpecificInfo should also be
        -- included.
        pusch-SysInfoList               PUSCH-SysInfoList               OPTIONAL,
        pdsch-SysInfoList               PDSCH-SysInfoList               OPTIONAL,
    -- Extension mechanism for non- release99 information
        v4b0NonCriticalExtensions       SEQUENCE {
            sysInfoType17-v4b0ext           SysInfoType17-v4b0ext-IEs,
            v590NonCriticalExtensions   SEQUENCE {
                sysInfoType17-v590ext           SysInfoType17-v590ext-IEs       OPTIONAL,
                nonCriticalExtensions           SEQUENCE {}                     OPTIONAL
            }                           OPTIONAL
        }                           OPTIONAL
}

SysInfoType17-v4b0ext-IEs ::= SEQUENCE {
    tdd128SpecificInfo              SEQUENCE {
        pusch-SysInfoList               PUSCH-SysInfoList-LCR-r4        OPTIONAL,
        pdsch-SysInfoList               PDSCH-SysInfoList-LCR-r4        OPTIONAL
    }                                                               OPTIONAL
}

SysInfoType17-v590ext-IEs ::= SEQUENCE {
    hcr-r5-SpecificInfo             SEQUENCE {
        pusch-SysInfoList           PUSCH-SysInfoList-HCR-r5    OPTIONAL,
        pdsch-SysInfoList           PDSCH-SysInfoList-HCR-r5    OPTIONAL
    }                                                       OPTIONAL
}

SysInfoType18 ::=                       SEQUENCE {
        idleModePLMNIdentities          PLMNIdentitiesOfNeighbourCells      OPTIONAL,
        connectedModePLMNIdentities PLMNIdentitiesOfNeighbourCells      OPTIONAL,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}     OPTIONAL
}

SysInfoTypeSB1 ::=                  SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
}

SysInfoTypeSB2 ::=                  SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList,
    -- Extension mechanism for non- release99 information
        nonCriticalExtensions           SEQUENCE {}                         OPTIONAL
```

```
}

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
```

11.4 Constant definitions

```
Constant-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

hiPDSCHidentities            INTEGER ::= 64
hiPUSCHidentities            INTEGER ::= 64
hiRM                         INTEGER ::= 256
maxAC                        INTEGER ::= 16
maxAdditionalMeas            INTEGER ::= 4
maxASC                       INTEGER ::= 8
maxASCmap                    INTEGER ::= 7
maxASCpersist                INTEGER ::= 6
maxCCTrCH                    INTEGER ::= 8
maxCellMeas                  INTEGER ::= 32
maxCellMeas-1                INTEGER ::= 31
maxCNdomains                 INTEGER ::= 4
maxCPCHsets                  INTEGER ::= 16
maxDPCH-DLchan               INTEGER ::= 8
maxDPDCH-UL                  INTEGER ::= 6
maxDRACclasses               INTEGER ::= 8
maxFACHPCH                   INTEGER ::= 8
maxFreq                      INTEGER ::= 8
maxFreqBandsFDD              INTEGER ::= 8
maxFreqBandsTDD              INTEGER ::= 4
maxFreqBandsGSM              INTEGER ::= 16
maxGERAN-SI                  INTEGER ::= 8
maxHProcesses                INTEGER ::= 8
maxHSDSCHTBIndex             INTEGER ::= 64
maxHSDSCHTBIndex-tdd384      INTEGER ::= 512
maxHSSCCHs                   INTEGER ::= 4
maxInterSysMessages          INTEGER ::= 4
maxLoCHperRLC                INTEGER ::= 2
maxMAC-d-PDUsizes            INTEGER ::= 8
maxMeasEvent                 INTEGER ::= 8
maxMeasIntervals             INTEGER ::= 3
maxMeasParEvent              INTEGER ::= 2
maxNumCDMA2000Freqs          INTEGER ::=  8
maxNumGSMFreqRanges          INTEGER ::= 32
maxNumFDDFreqs               INTEGER ::=  8
maxNumTDDFreqs               INTEGER ::=  8
maxNoOfMeas                  INTEGER ::= 16
maxOtherRAT                  INTEGER ::= 15
maxOtherRAT-16               INTEGER ::= 16
maxPage1                     INTEGER ::= 8
maxPCPCH-APsig               INTEGER ::= 16
maxPCPCH-APsubCh             INTEGER ::= 12
maxPCPCH-CDsig               INTEGER ::= 16
```

```
maxPCPCH-CDsubCh            INTEGER ::= 12
maxPCPCH-SF                 INTEGER ::= 7
maxPCPCHs                   INTEGER ::= 64
maxPDCPAlgoType             INTEGER ::= 8
maxPDSCH                    INTEGER ::= 8
maxPDSCH-TFCIgroups         INTEGER ::= 256
maxPRACH                    INTEGER ::= 16
maxPRACH-FPACH              INTEGER ::= 8
maxPredefConfig             INTEGER ::= 16
maxPUSCH                    INTEGER ::= 8
maxQueueIDs                 INTEGER ::= 8
maxRABsetup                 INTEGER ::= 16
maxRAT                      INTEGER ::= 16
maxRB                       INTEGER ::= 32
maxRBallRABs                INTEGER ::= 27
maxRBMuxOptions             INTEGER ::= 8
maxRBperRAB                 INTEGER ::= 8
maxReportedGSMCells         INTEGER ::= 8
maxRL                       INTEGER ::= 8
maxRL-1                     INTEGER ::= 7
maxRFC3095-CID              INTEGER ::= 16384
maxROHC-PacketSizes-r4      INTEGER ::= 16
maxROHC-Profile-r4          INTEGER ::= 8
maxSat                      INTEGER ::= 16
maxSCCPCH                   INTEGER ::= 16
maxSIB                      INTEGER ::= 32
maxSIB-FACH                 INTEGER ::= 8
maxSIBperMsg                INTEGER ::= 16
maxSRBsetup                 INTEGER ::= 8
maxSystemCapability         INTEGER ::= 16
maxTF                       INTEGER ::= 32
maxTF-CPCH                  INTEGER ::= 16
maxTFC                      INTEGER ::= 1024
maxTFCsub                   INTEGER ::= 1024
maxTFCI-2-Combs             INTEGER ::= 512
maxTGPS                     INTEGER ::= 6
maxTrCH                     INTEGER ::= 32
-- maxTrCHpreconf should be 16 but has been set to 32 for compatibility
maxTrCHpreconf              INTEGER ::= 32
maxTS                       INTEGER ::= 14
maxTS-1                     INTEGER ::= 13
maxTS-2                     INTEGER ::= 12
maxTS-LCR                   INTEGER ::= 6
maxTS-LCR-1                 INTEGER ::= 5
maxURA                      INTEGER ::= 8
maxURNTI-Group              INTEGER ::= 8

END
```

11.5 RRC information between network nodes

```
Internode-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    HandoverToUTRANCommand,
    MeasurementReport,
    PhysicalChannelReconfiguration,
    RadioBearerReconfiguration,
    RadioBearerRelease,
    RadioBearerSetup,
    RRC-FailureInfo,
    TransportChannelReconfiguration
FROM PDU-definitions

-- Core Network IEs :
    CN-DomainIdentity,
    CN-DomainInformationList,
    CN-DomainInformationListFull,
    CN-DRX-CycleLengthCoefficient,
    NAS-SystemInformationGSM-MAP,
-- UTRAN Mobility IEs :
    CellIdentity,
    URA-Identity,
```

```
-- User Equipment IEs :
    AccessStratumReleaseIndicator,
    C-RNTI,
    ChipRateCapability,
    DL-CapabilityWithSimultaneousHS-DSCHConfig,
    DL-PhysChCapabilityFDD-v380ext,
    DL-PhysChCapabilityTDD,
    DL-PhysChCapabilityTDD-LCR-r4,
    GSM-Measurements,
    HSDSCH-physical-layer-category,
    FailureCauseWithProtErr,
    MaxHcContextSpace,
    MaximumAM-EntityNumberRLC-Cap,
    MaximumRLC-WindowSize,
    MaxNoPhysChBitsReceived,
    MaxPhysChPerFrame,
    MaxPhysChPerSubFrame-r4,
    MaxPhysChPerTS,
    MaxROHC-ContextSessions-r4,
    MaxTS-PerFrame,
    MaxTS-PerSubFrame-r4,
    MinimumSF-DL,
    MultiModeCapability,
    MultiRAT-Capability,
    NetworkAssistedGPS-Supported,
    RadioFrequencyBandTDDList,
    RLC-Capability,
    RRC-MessageSequenceNumber,
    SecurityCapability,
    SimultaneousSCCPCH-DPCH-Reception,
    STARTList,
    STARTSingle,
    START-Value,
    SupportOfDedicatedPilotsForChEstimation,
    TransportChannelCapability,
    TxRxFrequencySeparation,
    U-RNTI,
    UE-MultiModeRAT-Capability,
    UE-PowerClassExt,
    UE-RadioAccessCapabBandFDDList,
    UE-RadioAccessCapabBandFDDList2,
    UE-RadioAccessCapabBandFDDList-ext,
    UE-RadioAccessCapability,
    UE-RadioAccessCapability-v370ext,
    UE-RadioAccessCapability-v380ext,
    UE-RadioAccessCapability-v3a0ext,
    UE-RadioAccessCapability-v3g0ext,
    UE-RadioAccessCapability-v4b0ext,
    UE-RadioAccessCapability-v590ext,
    UE-RadioAccessCapability-v5c0ext,
    UE-RadioAccessCapability-v650ext,
    UL-PhysChCapabilityFDD,
    UL-PhysChCapabilityTDD,
    UL-PhysChCapabilityTDD-LCR-r4,
-- Radio Bearer IEs :
    PredefinedConfigStatusList,
    PredefinedConfigValueTag,
    RAB-InformationSetupList,
    RAB-InformationSetupList-r4,
    RAB-InformationSetupList-r5,
    RAB-InformationSetupList-r6-ext,
    RAB-InformationSetupList-r6,
    RB-Identity,
    SRB-InformationSetupList,
    SRB-InformationSetupList-r5,
    SRB-InformationSetupList-r6,
-- Transport Channel IEs :
    CPCH-SetID,
    DL-CommonTransChInfo,
    DL-CommonTransChInfo-r4,
    DL-AddReconfTransChInfoList,
    DL-AddReconfTransChInfoList-r4,
    DL-AddReconfTransChInfoList-r5,
    DRAC-StaticInformationList,
    UL-CommonTransChInfo,
    UL-CommonTransChInfo-r4,
    UL-AddReconfTransChInfoList,
    UL-AddReconfTransChInfoList-r6,
```

```
-- Physical Channel IEs :
    PrimaryCPICH-Info,
    TPC-CombinationIndex,
    ScramblingCodeChange,
    TGCFN,
    TGPSI,
    TGPS-ConfigurationParams,
-- Measurement IEs :
    Inter-FreqEventCriteriaList-v590ext,
    Intra-FreqEventCriteriaList-v590ext,
    IntraFreqEvent-1d-r5,
    IntraFreqReportingCriteria-1b-r5,
    InterRATCellInfoIndicator,
    MeasurementIdentity,
    MeasurementReportingMode,
    MeasurementType,
    MeasurementType-r4,
    AdditionalMeasurementID-List,
    PositionEstimate,
-- MBMS IEs :
    MBMS-JoinedInformation-r6,
-- Other IEs :
    GERANIu-RadioAccessCapability,
    InterRAT-UE-RadioAccessCapabilityList,
    InterRAT-UE-RadioAccessCapability-v590ext,
    UESpecificBehaviourInformation1idle,
    UESpecificBehaviourInformation1interRAT

FROM InformationElements

    maxCNdomains,
    maxNoOfMeas,

    maxRB,
    maxRBallRABs,
    maxRFC3095-CID,
    maxSRBsetup,
    maxRL,
    maxTGPS
FROM Constant-definitions
;

-- Part 1: Class definitions similar to what has been defined in 11.1 for RRC messages
-- Information that is tranferred in the same direction and across the same path is grouped

-- ***************************************************
--
-- RRC information, to target RNC
--
-- ***************************************************
-- RRC Information to target RNC sent either from source RNC or from another RAT

ToTargetRNC-Container ::= CHOICE {
    interRATHandoverInfo                InterRATHandoverInfoWithInterRATCapabilities-r3,
    srncRelocation                      SRNC-RelocationInfo-r3,
    rfc3095-ContextInfo                 RFC3095-ContextInfo-r5,
    extension                           NULL
}

-- ***************************************************
--
-- RRC information, target RNC to source RNC
--
-- ***************************************************


TargetRNC-ToSourceRNC-Container ::= CHOICE {
    radioBearerSetup                    RadioBearerSetup,
    radioBearerReconfiguration          RadioBearerReconfiguration,
    radioBearerRelease                  RadioBearerRelease,
    transportChannelReconfiguration     TransportChannelReconfiguration,
    physicalChannelReconfiguration      PhysicalChannelReconfiguration,
    rrc-FailureInfo                     RRC-FailureInfo,
    -- IE dl-DCCHmessage consists of an octet string that includes the IE DL-DCCH-Message
    dL-DCCHmessage                      OCTET STRING,
    extension                           NULL
}
```

```
-- Part 2: Container definitions, similar to the PDU definitions in 11.2 for RRC messages
-- In alphabetical order


-- ***************************************************
--
-- Handover to UTRAN information
--
-- ***************************************************

InterRATHandoverInfoWithInterRATCapabilities-r3 ::= CHOICE {
    r3                              SEQUENCE {
        -- IE InterRATHandoverInfoWithInterRATCapabilities-r3-IEs also
        -- includes non critical extensions
        interRATHandoverInfo-r3         InterRATHandoverInfoWithInterRATCapabilities-r3-IEs,
        v390NonCriticalExtensions           SEQUENCE {
            interRATHandoverInfoWithInterRATCapabilities-v390ext
    InterRATHandoverInfoWithInterRATCapabilities-v390ext-IEs,
            -- Reserved for future non critical extension
            nonCriticalExtensions           SEQUENCE {} OPTIONAL
        }       OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

InterRATHandoverInfoWithInterRATCapabilities-r3-IEs ::=     SEQUENCE {
        -- The order of the IEs may not reflect the tabular format
        --  but has been chosen to simplify the handling of the information in the BSC
    --  Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
        -- interRATHandoverInfo, Octet string is used to obtain 8 bit length field prior to
        -- actual information.  This makes it possible for BSS to transparently handle information
        -- received via GSM air interface even when it includes non critical extensions.
        -- The octet string shall include the InterRATHandoverInfo information
        -- The BSS can re-use the 04.18 length field received from the MS
        interRATHandoverInfo            OCTET STRING (SIZE (0..255))
}

InterRATHandoverInfoWithInterRATCapabilities-v390ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        failureCauseWithProtErr             FailureCauseWithProtErr                 OPTIONAL
}

-- ***************************************************
--
-- RFC3095 context, source RNC to target RNC
--
-- ***************************************************

RFC3095-ContextInfo-r5 ::= CHOICE {
    r5                              SEQUENCE {
        rFC3095-ContextInfoList-r5      RFC3095-ContextInfoList-r5,
        -- Reserved for future non critical extension
        nonCriticalExtensions           SEQUENCE {} OPTIONAL
    },
    criticalExtensions              SEQUENCE {}
}

RFC3095-ContextInfoList-r5 ::=      SEQUENCE (SIZE (1..maxRBallRABs)) OF
                                        RFC3095-ContextInfo


-- ***************************************************
--
-- SRNC Relocation information
--
-- ***************************************************

SRNC-RelocationInfo-r3 ::= CHOICE {
    r3                              SEQUENCE {
        sRNC-RelocationInfo-r3          SRNC-RelocationInfo-r3-IEs,
        v380NonCriticalExtensions           SEQUENCE {
            sRNC-RelocationInfo-v380ext SRNC-RelocationInfo-v380ext-IEs,
            -- Reserved for future non critical extension
            v390NonCriticalExtensions           SEQUENCE {
                sRNC-RelocationInfo-v390ext         SRNC-RelocationInfo-v390ext-IEs,
                v3a0NonCriticalExtensions           SEQUENCE {
                    sRNC-RelocationInfo-v3a0ext         SRNC-RelocationInfo-v3a0ext-IEs,
```

```
                v3b0NonCriticalExtensions           SEQUENCE {
                    sRNC-RelocationInfo-v3b0ext         SRNC-RelocationInfo-v3b0ext-IEs,
                    v3c0NonCriticalExtensions           SEQUENCE {
                        sRNC-RelocationInfo-v3c0ext         SRNC-RelocationInfo-v3c0ext-IEs,
                        laterNonCriticalExtensions          SEQUENCE {
                            sRNC-RelocationInfo-v3d0ext         SRNC-RelocationInfo-v3d0ext-IEs,
                            -- Container for additional R99 extensions
                            sRNC-RelocationInfo-r3-add-ext      BIT STRING
                                    (CONTAINING SRNC-RelocationInfo-v3h0ext-IEs)      OPTIONAL,
                            v3g0NonCriticalExtensions           SEQUENCE {
                                sRNC-RelocationInfo-v3g0ext         SRNC-RelocationInfo-v3g0ext-IEs,
                                v4b0NonCriticalExtensions           SEQUENCE {
                                    sRNC-RelocationInfo-v4b0ext         SRNC-RelocationInfo-v4b0ext-IEs,
                                    v590NonCriticalExtensions           SEQUENCE {
                                        sRNC-RelocationInfo-v590ext
                                                                    SRNC-RelocationInfo-v590ext-IEs,
                                        v5a0NonCriticalExtensions           SEQUENCE {
                                            sRNC-RelocationInfo-v5a0ext
                                                                    SRNC-RelocationInfo-v5a0ext-IEs,
                                            v5b0NonCriticalExtensions           SEQUENCE {
                                                sRNC-RelocationInfo-v5b0ext
                                                                    SRNC-RelocationInfo-v5b0ext-IEs,
                                                v5c0NonCriticalExtensions           SEQUENCE {
                                                    sRNC-RelocationInfo-v5c0ext
                                                                        SRNC-RelocationInfo-v5c0ext-IE
                                                    v6xyNonCriticalExtensions       SEQUENCE {
                                                        sRNC-RelocationInfo-v6xyext
                                                                    SRNC-RelocationInfo-v6xyext-IEs,
                                                        -- Reserved for future non critical extension
                                                        nonCriticalExtensions   SEQUENCE {}  OPTIONAL
                                                    }       OPTIONAL
                                                }       OPTIONAL
                                            }       OPTIONAL
                                        }       OPTIONAL
                                    }       OPTIONAL
                                }       OPTIONAL
                            }       OPTIONAL
                        }       OPTIONAL
                    }       OPTIONAL
                }       OPTIONAL
            }       OPTIONAL
        }       OPTIONAL
    },
    later-than-r3                   CHOICE {
        r4                              SEQUENCE {
            sRNC-RelocationInfo-r4          SRNC-RelocationInfo-r4-IEs,
            v4d0NonCriticalExtensions       SEQUENCE {
                sRNC-RelocationInfo-v4d0ext     SRNC-RelocationInfo-v4d0ext-IEs,
                -- Container for adding non critical extensions after freezing REL-5
                sRNC-RelocationInfo-r4-add-ext      BIT STRING
                                (CONTAINING SRNC-RelocationInfo-v650ext1-IEs)       OPTIONAL,
                v590NonCriticalExtensions           SEQUENCE {
                    sRNC-RelocationInfo-v590ext         SRNC-RelocationInfo-v590ext-IEs,
                    v5a0NonCriticalExtensions           SEQUENCE {
                        sRNC-RelocationInfo-v5a0ext         SRNC-RelocationInfo-v5a0ext-IEs,
                        v5b0NonCriticalExtensions           SEQUENCE {
                            sRNC-RelocationInfo-v5b0ext         SRNC-RelocationInfo-v5b0ext-IEs,
                            v5c0NonCriticalExtensions           SEQUENCE {
                                sRNC-RelocationInfo-v5c0ext         SRNC-RelocationInfo-v5c0ext-IEs,
                                v6xyNonCriticalExtensions           SEQUENCE {
                                    sRNC-RelocationInfo-v6xyext
                                                SRNC-RelocationInfo-v6xyext-IEs,
                                    nonCriticalExtensions               SEQUENCE {} OPTIONAL
                                }   OPTIONAL
                            }   OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        },
        criticalExtensions              CHOICE {
            r5                              SEQUENCE {
                sRNC-RelocationInfo-r5          SRNC-RelocationInfo-r5-IEs,
                sRNC-RelocationInfo-r5-add-ext  BIT STRING      OPTIONAL,
                v5a0NonCriticalExtensions       SEQUENCE {
                    sRNC-RelocationInfo-v5a0ext     SRNC-RelocationInfo-v5a0ext-IEs,
                    v5b0NonCriticalExtensions       SEQUENCE {
```

```
                    sRNC-RelocationInfo-v5b0ext     SRNC-RelocationInfo-v5b0ext-IEs,
                    v5c0NonCriticalExtensions           SEQUENCE {
                        sRNC-RelocationInfo-v5c0ext         SRNC-RelocationInfo-v5c0ext-IEs,
                        v650NonCriticalExtensions       SEQUENCE {
                            sRNC-RelocationInfo-v650ext2    SRNC-RelocationInfo-v650ext2-IEs,
                            v6xyNonCriticalExtensions       SEQUENCE {
                                sRNC-RelocationInfo-v6xyext     SRNC-RelocationInfo-v6xyext-IEs,
                                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                            }   OPTIONAL
                        }   OPTIONAL
                    }   OPTIONAL
                }   OPTIONAL
            }   OPTIONAL
        },
        criticalExtensions              CHOICE {
            r6                              SEQUENCE {
                sRNC-RelocationInfo-r6          SRNC-RelocationInfo-r6-IEs,
                sRNC-RelocationInfo-r6-add-ext  BIT STRING      OPTIONAL,
                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
            },
            criticalExtensions                  SEQUENCE {}
        }
    }
  }
}

SRNC-RelocationInfo-r3-IEs ::=      SEQUENCE {
    -- Non-RRC IEs
        stateOfRRC                      StateOfRRC,
        stateOfRRC-Procedure            StateOfRRC-Procedure,
    -- Ciphering related information IEs
    -- If the extension v380 is included use the extension for the ciphering status per CN domain
        cipheringStatus                 CipheringStatus,
        calculationTimeForCiphering     CalculationTimeForCiphering         OPTIONAL,
        -- The order of occurrence in the IE cipheringInfoPerRB-List is the
        -- same as the RBs in SRB-InformationSetupList in RAB-InformationSetupList.
        -- The signalling RBs are supposed to be listed
        -- first. Only UM and AM RBs that are ciphered are listed here
        cipheringInfoPerRB-List         CipheringInfoPerRB-List             OPTIONAL,
        count-C-List                    COUNT-C-List                        OPTIONAL,
        integrityProtectionStatus       IntegrityProtectionStatus,
         -- In the IE srb-SpecificIntegrityProtInfo, the first information listed corresponds to
         -- signalling radio bearer RB0 and after the order of occurrence is the same as the SRBs in
        -- SRB-InformationSetupList
        -- The target RNC may ignore the IE srb-SpecificIntegrityProtInfo if the
        -- IE integrityProtectionStatus has the value "not started".
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability,
        ue-Positioning-LastKnownPos     UE-Positioning-LastKnownPos         OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainInformationList        CN-DomainInformationList            OPTIONAL,
    -- Measurement IEs
        ongoingMeasRepList              OngoingMeasRepList                  OPTIONAL,
    -- Radio bearer IEs
        predefinedConfigStatusList      PredefinedConfigStatusList,
        srb-InformationList             SRB-InformationSetupList,
        rab-InformationList             RAB-InformationSetupList            OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-TransChInfoList              UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                transChDRAC-Info                DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-TransChInfoList              DL-AddReconfTransChInfoList         OPTIONAL,
```

```
    -- Measurement report
        measurementReport               MeasurementReport                   OPTIONAL
}

SRNC-RelocationInfo-v380ext-IEs ::= SEQUENCE {
    -- Ciphering related information IEs
        cn-DomainIdentity                   CN-DomainIdentity,
        cipheringStatusList                 CipheringStatusList
}

SRNC-RelocationInfo-v390ext-IEs ::= SEQUENCE {
        cn-DomainInformationList-v390ext    CN-DomainInformationList-v390ext        OPTIONAL,
        ue-RadioAccessCapability-v370ext    UE-RadioAccessCapability-v370ext        OPTIONAL,
        ue-RadioAccessCapability-v380ext    UE-RadioAccessCapability-v380ext        OPTIONAL,
        dl-PhysChCapabilityFDD-v380ext      DL-PhysChCapabilityFDD-v380ext,
        failureCauseWithProtErr             FailureCauseWithProtErr                 OPTIONAL
}

SRNC-RelocationInfo-v3a0ext-IEs ::= SEQUENCE {
        cipheringInfoForSRB1-v3a0ext        CipheringInfoPerRB-List-v3a0ext,
        ue-RadioAccessCapability-v3a0ext    UE-RadioAccessCapability-v3a0ext        OPTIONAL,
        -- cn-domain identity for IE startValueForCiphering-v3a0ext is specified
        -- in subsequent extension (SRNC-RelocationInfo-v3b0ext-IEs)
        startValueForCiphering-v3a0ext      START-Value
}

SRNC-RelocationInfo-v3b0ext-IEs ::= SEQUENCE {
        -- cn-domain identity for IE startValueForCiphering-v3a0ext included in previous extension
        cn-DomainIdentity               CN-DomainIdentity,
        -- the IE startValueForCiphering-v3b0ext contains the start values for each CN Domain. The
        -- value of start indicated by the IE startValueForCiphering-v3a0ext should be set to the
        -- same value as the start-Value for the corresponding cn-DomainIdentity in the IE
        -- startValueForCiphering-v3b0ext
        startValueForCiphering-v3b0ext      STARTList2                              OPTIONAL
}

SRNC-RelocationInfo-v3c0ext-IEs ::= SEQUENCE {
        -- IE rb-IdentityForHOMessage includes the identity of the RB used by the source SRNC
        -- to send the message contained in the IE “TargetRNC-ToSourceRNC-Container”.
        -- Only included if type is “UE involved”
        rb-IdentityForHOMessage             RB-Identity         OPTIONAL
}

SRNC-RelocationInfo-v3d0ext-IEs ::= SEQUENCE {
    -- User equipment IEs
        uESpecificBehaviourInformation1idle     UESpecificBehaviourInformation1idle     OPTIONAL,
        uESpecificBehaviourInformation1interRAT     UESpecificBehaviourInformation1interRAT
    OPTIONAL
}

SRNC-RelocationInfo-v3g0ext-IEs ::= SEQUENCE {
        ue-RadioAccessCapability-v3g0ext    UE-RadioAccessCapability-v3g0ext        OPTIONAL
}

SRNC-RelocationInfo-v3h0ext-IEs ::= SEQUENCE {
        tpc-CombinationInfoList         TPC-CombinationInfoList     OPTIONAL,
        v650NonCriticalExtensions       SEQUENCE {
            ue-RadioAccessCapability-v650ext    UE-RadioAccessCapability-v650ext    OPTIONAL,
            nonCriticalExtension                SEQUENCE {}                         OPTIONAL
    }  OPTIONAL
}

SRNC-RelocationInfo-v4d0ext-IEs ::= SEQUENCE {
        tpc-CombinationInfoList     TPC-CombinationInfoList     OPTIONAL
}

TPC-CombinationInfoList ::= SEQUENCE (SIZE (1..maxRL)) OF
        TPC-Combination-Info

STARTList2 ::=                      SEQUENCE (SIZE (2..maxCNdomains)) OF
                                        STARTSingle

SRNC-RelocationInfo-v4b0ext-IEs ::= SEQUENCE {
        ue-RadioAccessCapability-v4b0ext    UE-RadioAccessCapability-v4b0ext        OPTIONAL
}

SRNC-RelocationInfo-v590ext-IEs ::= SEQUENCE {
        ue-RadioAccessCapability-v590ext    UE-RadioAccessCapability-v590ext        OPTIONAL,
```

```
		ue-RATSpecificCapability-v590ext	InterRAT-UE-RadioAccessCapability-v590ext	OPTIONAL
}

SRNC-RelocationInfo-v5a0ext-IEs ::= SEQUENCE {
		storedCompressedModeInfo		StoredCompressedModeInfo	OPTIONAL
}

SRNC-RelocationInfo-v5b0ext-IEs ::= SEQUENCE {
	interRATCellInfoIndicator			InterRATCellInfoIndicator			OPTIONAL
}

SRNC-RelocationInfo-v5c0ext-IEs ::= SEQUENCE {
		ue-RadioAccessCapability-v5c0ext	UE-RadioAccessCapability-v5c0ext		OPTIONAL
}

SRNC-RelocationInfo-v650ext1-IEs ::= SEQUENCE {
	ue-RadioAccessCapability-v650ext	UE-RadioAccessCapability-v650ext	OPTIONAL,
	nonCriticalExtension				SEQUENCE {}		OPTIONAL
}

SRNC-RelocationInfo-v650ext2-IEs ::= SEQUENCE {
		ue-RadioAccessCapability-v650ext		UE-RadioAccessCapability-v650ext
}

CipheringInfoPerRB-List-v3a0ext ::= SEQUENCE {
		dl-UM-SN						BIT STRING (SIZE (7))
}

CipheringStatusList ::=			SEQUENCE (SIZE (1..maxCNdomains)) OF
									CipheringStatusCNdomain

CipheringStatusCNdomain ::=			SEQUENCE {
		cn-DomainIdentity				CN-DomainIdentity,
		cipheringStatus					CipheringStatus
}

CodeChangeStatusList ::= SEQUENCE (SIZE (1..maxRL)) OF
		CodeChangeStatus

CodeChangeStatus ::= SEQUENCE {
		primaryCPICH-Info					PrimaryCPICH-Info,
		scramblingCodeChange				ScramblingCodeChange
}

StoredCompressedModeInfo ::= SEQUENCE {
		storedTGP-SequenceList		StoredTGP-SequenceList,
		codeChangeStatusList		CodeChangeStatusList	OPTIONAL
}

StoredTGP-SequenceList ::=			SEQUENCE (SIZE (1..maxTGPS)) OF
									StoredTGP-Sequence

StoredTGP-Sequence ::=				SEQUENCE {
	tgpsi							TGPSI,
	current-tgps-Status				CHOICE {
		active							SEQUENCE {
			tgcfn							TGCFN
		},
		inactive						NULL
	},
	tgps-ConfigurationParams		TGPS-ConfigurationParams			OPTIONAL
}

SRNC-RelocationInfo-r4-IEs ::=			SEQUENCE {
	-- Non-RRC IEs
		-- IE rb-IdentityForHOMessage includes the identity of the RB used by the source SRNC
		-- to send the message contained in the IE “TargetRNC-ToSourceRNC-Container”.
		-- Only included if type is “UE involved”
		rb-IdentityForHOMessage			RB-Identity							OPTIONAL,
		stateOfRRC						StateOfRRC,
		stateOfRRC-Procedure			StateOfRRC-Procedure,
	-- Ciphering related information IEs
		cipheringStatusList				CipheringStatusList-r4,
		latestConfiguredCN-Domain		CN-DomainIdentity,
		calculationTimeForCiphering		CalculationTimeForCiphering			OPTIONAL,
		count-C-List					COUNT-C-List						OPTIONAL,
		cipheringInfoPerRB-List			CipheringInfoPerRB-List-r4			OPTIONAL,
	-- Integrity protection related information IEs
```

```
        integrityProtectionStatus       IntegrityProtectionStatus,
        -- The target RNC may ignore the IE srb-SpecificIntegrityProtInfo if the
        -- IE integrityProtectionStatus has the value "not started".
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability-r4,
        ue-RadioAccessCapability-ext    UE-RadioAccessCapabBandFDDList      OPTIONAL,
        ue-Positioning-LastKnownPos     UE-Positioning-LastKnownPos         OPTIONAL,
        uESpecificBehaviourInformation1idle     UESpecificBehaviourInformation1idle     OPTIONAL,
        uESpecificBehaviourInformation1interRAT     UESpecificBehaviourInformation1interRAT
    OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList   OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainInformationList        CN-DomainInformationListFull        OPTIONAL,
    -- Measurement IEs
        ongoingMeasRepList              OngoingMeasRepList-r4               OPTIONAL,
    -- Radio bearer IEs
        predefinedConfigStatusList      PredefinedConfigStatusList,
        srb-InformationList             SRB-InformationSetupList,
        rab-InformationList             RAB-InformationSetupList-r4         OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-TransChInfoList              UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                transChDRAC-Info                DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-TransChInfoList              DL-AddReconfTransChInfoList-r4      OPTIONAL,
    -- Measurement report
        measurementReport               MeasurementReport                   OPTIONAL,
        failureCause                    FailureCauseWithProtErr             OPTIONAL
}

SRNC-RelocationInfo-r5-IEs ::=          SEQUENCE {
    -- Non-RRC IEs
        -- IE rb-IdentityForHOMessage includes the identity of the RB used by the source SRNC
        -- to send the message contained in the IE “TargetRNC-ToSourceRNC-Container”.
        -- Only included if type is "UE involved"
        rb-IdentityForHOMessage         RB-Identity                         OPTIONAL,
        stateOfRRC                      StateOfRRC,
        stateOfRRC-Procedure            StateOfRRC-Procedure,
    -- Ciphering related information IEs
        cipheringStatusList             CipheringStatusList-r4,
        latestConfiguredCN-Domain       CN-DomainIdentity,
        calculationTimeForCiphering     CalculationTimeForCiphering         OPTIONAL,
        count-C-List                    COUNT-C-List                        OPTIONAL,
        cipheringInfoPerRB-List         CipheringInfoPerRB-List-r4          OPTIONAL,
    -- Integrity protection related information IEs
        integrityProtectionStatus       IntegrityProtectionStatus,
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList   OPTIONAL,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability-r5,
        ue-RadioAccessCapability-ext    UE-RadioAccessCapabBandFDDList      OPTIONAL,
        ue-Positioning-LastKnownPos     UE-Positioning-LastKnownPos         OPTIONAL,
        uESpecificBehaviourInformation1idle
                                        UESpecificBehaviourInformation1idle     OPTIONAL,
        uESpecificBehaviourInformation1interRAT
                                        UESpecificBehaviourInformation1interRAT     OPTIONAL,
    -- Other IEs
        ue-RATSpecificCapability        InterRAT-UE-RadioAccessCapabilityList-r5    OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
```

```
		cn-DomainInformationList		CN-DomainInformationListFull		OPTIONAL,
	-- Measurement IEs
		ongoingMeasRepList				OngoingMeasRepList-r5				OPTIONAL,
	-- Radio bearer IEs
		predefinedConfigStatusList		PredefinedConfigStatusList,
		srb-InformationList				SRB-InformationSetupList-r5,
		rab-InformationList				RAB-InformationSetupList-r5			OPTIONAL,
	-- Transport channel IEs
		ul-CommonTransChInfo			UL-CommonTransChInfo-r4				OPTIONAL,
		ul-TransChInfoList				UL-AddReconfTransChInfoList			OPTIONAL,
		modeSpecificInfo				CHOICE {
			fdd								SEQUENCE {
				cpch-SetID							CPCH-SetID					OPTIONAL,
				transChDRAC-Info					DRAC-StaticInformationList	OPTIONAL
			},
			tdd								NULL
		}																	OPTIONAL,
		dl-CommonTransChInfo			DL-CommonTransChInfo-r4				OPTIONAL,
		dl-TransChInfoList				DL-AddReconfTransChInfoList-r5		OPTIONAL,
	-- PhyCH IEs
		tpc-CombinationInfoList			TPC-CombinationInfoList				OPTIONAL,
	-- Measurement report
		measurementReport				MeasurementReport					OPTIONAL,
	-- Other IEs
		failureCause					FailureCauseWithProtErr				OPTIONAL
}

SRNC-RelocationInfo-v6xyext-IEs ::= SEQUENCE {
	-- Radio bearer IEs
		rab-InformationSetupList		RAB-InformationSetupList-r6-ext		OPTIONAL,
	-- MBMS IEs
		mbms-JoinedInformation			MBMS-JoinedInformation-r6			OPTIONAL
}

SRNC-RelocationInfo-r6-IEs ::=			SEQUENCE {
	-- Non-RRC IEs
		-- IE rb-IdentityForHOMessage includes the identity of the RB used by the source SRNC
		-- to send the message contained in the IE “TargetRNC-ToSourceRNC-Container”.
		-- Only included if type is "UE involved"
		rb-IdentityForHOMessage			RB-Identity							OPTIONAL,
		stateOfRRC						StateOfRRC,
		stateOfRRC-Procedure			StateOfRRC-Procedure,
	-- Ciphering related information IEs
		cipheringStatusList				CipheringStatusList-r4,
		latestConfiguredCN-Domain		CN-DomainIdentity,
		calculationTimeForCiphering		CalculationTimeForCiphering			OPTIONAL,
		count-C-List					COUNT-C-List						OPTIONAL,
		cipheringInfoPerRB-List			CipheringInfoPerRB-List-r4			OPTIONAL,
	-- Integrity protection related information IEs
		integrityProtectionStatus		IntegrityProtectionStatus,
		srb-SpecificIntegrityProtInfo	SRB-SpecificIntegrityProtInfoList	OPTIONAL,
		implementationSpecificParams	ImplementationSpecificParams		OPTIONAL,
	-- User equipment IEs
		u-RNTI							U-RNTI,
		c-RNTI							C-RNTI								OPTIONAL,
		ue-RadioAccessCapability		UE-RadioAccessCapability-r5,
		ue-RadioAccessCapability-ext	UE-RadioAccessCapabBandFDDList		OPTIONAL,
		ue-Positioning-LastKnownPos		UE-Positioning-LastKnownPos			OPTIONAL,
		uESpecificBehaviourInformation1idle
										UESpecificBehaviourInformation1idle		OPTIONAL,
		uESpecificBehaviourInformation1interRAT
										UESpecificBehaviourInformation1interRAT		OPTIONAL,
	-- Other IEs
		ue-RATSpecificCapability		InterRAT-UE-RadioAccessCapabilityList-r5	OPTIONAL,
	-- UTRAN mobility IEs
		ura-Identity					URA-Identity						OPTIONAL,
	-- Core network IEs
		cn-CommonGSM-MAP-NAS-SysInfo	NAS-SystemInformationGSM-MAP,
		cn-DomainInformationList		CN-DomainInformationListFull		OPTIONAL,
	-- Measurement IEs
		ongoingMeasRepList				OngoingMeasRepList-r5				OPTIONAL,
		interRATCellInfoIndicator		InterRATCellInfoIndicator			OPTIONAL,
	-- Radio bearer IEs
		predefinedConfigStatusList		PredefinedConfigStatusList,
		srb-InformationList				SRB-InformationSetupList-r6,
		rab-InformationList				RAB-InformationSetupList-r6			OPTIONAL,
	-- Transport channel IEs
		ul-CommonTransChInfo			UL-CommonTransChInfo-r4				OPTIONAL,
```

```
        ul-TransChInfoList              UL-AddReconfTransChInfoList-r6      OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                transChDRAC-Info                DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-TransChInfoList              DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- PhyCH IEs
        tpc-CombinationInfoList         TPC-CombinationInfoList             OPTIONAL,
        storedCompressedModeInfo        StoredCompressedModeInfo            OPTIONAL,
    -- Measurement report
        measurementReport               MeasurementReport                   OPTIONAL,
    -- Other IEs
        failureCause                    FailureCauseWithProtErr             OPTIONAL,
    -- MBMS IEs
        mbms-JoinedInformation          MBMS-JoinedInformation-r6           OPTIONAL
}

-- IE definitions

CalculationTimeForCiphering ::=     SEQUENCE {
    cell-Id                             CellIdentity,
    sfn                                 INTEGER (0..4095)
}

CipheringInfoPerRB ::=              SEQUENCE {
    dl-HFN                              BIT STRING (SIZE (20..25)),
    ul-HFN                              BIT STRING (SIZE (20..25))
}

CipheringInfoPerRB-r4 ::=           SEQUENCE {
    rb-Identity                         RB-Identity,
    dl-HFN                              BIT STRING (SIZE (20..25)),
    dl-UM-SN                            BIT STRING (SIZE (7))               OPTIONAL,
    ul-HFN                              BIT STRING (SIZE (20..25))
}

-- TABULAR: CipheringInfoPerRB-List, multiplicity value numberOfRadioBearers
-- has been replaced with maxRB.
CipheringInfoPerRB-List ::=         SEQUENCE (SIZE (1..maxRB)) OF
                                        CipheringInfoPerRB

CipheringInfoPerRB-List-r4 ::=      SEQUENCE (SIZE (1..maxRB)) OF
                                        CipheringInfoPerRB-r4


CipheringStatus ::=                 ENUMERATED {
                                        started, notStarted }

CipheringStatusList-r4 ::=          SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        CipheringStatusCNdomain-r4

CipheringStatusCNdomain-r4 ::=      SEQUENCE {
        cn-DomainIdentity               CN-DomainIdentity,
        cipheringStatus                 CipheringStatus,
        start-Value                     START-Value
}

CN-DomainInformation-v390ext ::=        SEQUENCE {
    cn-DRX-CycleLengthCoeff             CN-DRX-CycleLengthCoefficient
}

CN-DomainInformationList-v390ext ::=    SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        CN-DomainInformation-v390ext

CompressedModeMeasCapability-r4 ::= SEQUENCE {
    fdd-Measurements                    BOOLEAN,
    -- TABULAR: The IEs tdd-Measurements, gsm-Measurements and multiCarrierMeasurements
    -- are made optional since they are conditional based on another information element.
    -- Their absence corresponds to the case where the condition is not true.
    tdd384-Measurements                 BOOLEAN                             OPTIONAL,
    tdd128-Measurements                 BOOLEAN                             OPTIONAL,
    gsm-Measurements                    GSM-Measurements                    OPTIONAL,
    multiCarrierMeasurements            BOOLEAN                             OPTIONAL
}
```

```
COUNT-C-List ::=                        SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        COUNT-CSingle

COUNT-CSingle ::=                       SEQUENCE {
    cn-DomainIdentity                   CN-DomainIdentity,
    count-C                             BIT STRING (SIZE (32))
}

DL-PhysChCapabilityFDD-r4 ::=       SEQUENCE {
-- The IE "maxNoDPCH-PDSCH-Codes" only gives information on the maximum number of DPCH Codes.
    maxNoDPCH-PDSCH-Codes               INTEGER (1..8),
    maxNoPhysChBitsReceived             MaxNoPhysChBitsReceived,
    supportForSF-512                    BOOLEAN,
-- The RNC should ignore this IE on reception.
    supportOfPDSCHdummy                     BOOLEAN,
    simultaneousSCCPCH-DPCH-Reception   SimultaneousSCCPCH-DPCH-Reception,
    supportOfDedicatedPilotsForChEstimation     SupportOfDedicatedPilotsForChEstimation     OPTIONAL
}

DL-PhysChCapabilityFDD-r5 ::=       SEQUENCE {
-- The IE "maxNoDPCH-PDSCH-Codes" only gives information on the maximum number of DPCH Codes.
    maxNoDPCH-PDSCH-Codes               INTEGER (1..8),
    maxNoPhysChBitsReceived             MaxNoPhysChBitsReceived,
    supportForSF-512                    BOOLEAN,
-- The RNC should ignore this IE on reception.
    dummysupportOfPDSCH                     BOOLEAN,
    simultaneousSCCPCH-DPCH-Reception   SimultaneousSCCPCH-DPCH-Reception,
    supportOfDedicatedPilotsForChEstimation     SupportOfDedicatedPilotsForChEstimation     OPTIONAL,
    fdd-hspdsch                         CHOICE {
        supported                           SEQUENCE {
            hsdsch-physical-layer-category      HSDSCH-physical-layer-category,
            supportOfDedicatedPilotsForChannelEstimationOfHSDSCH    BOOLEAN,
            -- simultaneousSCCPCH-DPCH-HSDSCH-Reception shall be true only if the
            -- IE SimultaneousSCCPCH-DPCH-Reception indicates support of simultaneous
            -- reception of S-CCPCH and DPCH
            simultaneousSCCPCH-DPCH-HSDSCH-Reception    BOOLEAN
        },
        unsupported                         NULL
    }
}

DL-PhysChCapabilityTDD-r5 ::=       SEQUENCE {
    maxTS-PerFrame                      MaxTS-PerFrame,
    maxPhysChPerFrame                   MaxPhysChPerFrame,
    minimumSF                           MinimumSF-DL,
    supportOfPDSCH                      BOOLEAN,
    maxPhysChPerTS                      MaxPhysChPerTS,
    tdd384-hspdsch                      CHOICE {
        supported                           HSDSCH-physical-layer-category,
        unsupported                         NULL
    }
}

DL-PhysChCapabilityTDD-LCR-r5 ::=   SEQUENCE {
    maxTS-PerSubFrame                   MaxTS-PerSubFrame-r4,
    maxPhysChPerFrame                   MaxPhysChPerSubFrame-r4,
    minimumSF                           MinimumSF-DL,
    supportOfPDSCH                      BOOLEAN,
    maxPhysChPerTS                      MaxPhysChPerTS,
    supportOf8PSK                       BOOLEAN,
    tdd128-hspdsch                      CHOICE {
        supported                           HSDSCH-physical-layer-category,
        unsupported                         NULL
    }
}

DL-RFC3095-Context ::=              SEQUENCE {
    rfc3095-Context-Identity            INTEGER (0..16383),
    dl-mode                             ENUMERATED {u, o, r},
    dl-ref-ir                           OCTET STRING ( SIZE (1..3000)),
    dl-ref-time                         INTEGER (0..4294967295)     OPTIONAL,
    dl-curr-time                        INTEGER (0..4294967295)     OPTIONAL,
    dl-syn-offset-id                    INTEGER (0..65535)          OPTIONAL,
    dl-syn-slope-ts                     INTEGER (0..4294967295)     OPTIONAL,
    dl-dyn-changed                      BOOLEAN
}
```

```
ImplementationSpecificParams ::=    BIT STRING (SIZE (1..512))


IntegrityProtectionStatus ::=       ENUMERATED {
                                        started, notStarted }

InterRAT-UE-RadioAccessCapabilityList-r5 ::=    SEQUENCE {
    interRAT-UE-RadioAccessCapability   InterRAT-UE-RadioAccessCapabilityList,
    geranIu-RadioAccessCapability       GERANIu-RadioAccessCapability               OPTIONAL
}

-- dummy is not used in this version of the specification, it should
-- not be sent and if received it should be ignored.
MaxHcContextSpace-r5 ::=                ENUMERATED {
                                            dummy, by1024, by2048, by4096, by8192,
                                            by16384, by32768, by65536, by131072 }

MeasurementCapability-r4 ::=        SEQUENCE {
    downlinkCompressedMode              CompressedModeMeasCapability-r4,
    uplinkCompressedMode                CompressedModeMeasCapability-r4
}

MeasurementCommandWithType ::=      CHOICE {
    setup                               MeasurementType,
    modify                              NULL,
    release                             NULL
}

MeasurementCommandWithType-r4 ::=   CHOICE {
    setup                               MeasurementType-r4,
    modify                              NULL,
    release                             NULL
}

OngoingMeasRep ::=                  SEQUENCE {
    measurementIdentity                 MeasurementIdentity,
    -- TABULAR: The CHOICE Measurement in the tabular description is included
    -- in MeasurementCommandWithType
    measurementCommandWithType          MeasurementCommandWithType,
    measurementReportingMode            MeasurementReportingMode            OPTIONAL,
    additionalMeasurementID-List        AdditionalMeasurementID-List        OPTIONAL
}

OngoingMeasRep-r4 ::=               SEQUENCE {
    measurementIdentity                 MeasurementIdentity,
    -- TABULAR: The CHOICE Measurement in the tabular description is included
    -- in MeasurementCommandWithType-r4.
    measurementCommandWithType          MeasurementCommandWithType-r4,
    measurementReportingMode            MeasurementReportingMode            OPTIONAL,
    additionalMeasurementID-List        AdditionalMeasurementID-List        OPTIONAL
}

OngoingMeasRep-r5 ::=               SEQUENCE {
    measurementIdentity                 MeasurementIdentity,
    -- TABULAR: The CHOICE Measurement in the tabular description is included
    -- in MeasurementCommandWithType-r4.
    measurementCommandWithType          MeasurementCommandWithType-r4,
    measurementReportingMode            MeasurementReportingMode            OPTIONAL,
    additionalMeasurementID-List        AdditionalMeasurementID-List        OPTIONAL,
    measurementCommand-v590ext          CHOICE {
        -- the choice "intra-frequency" shall be used for the case of intra-frequency measurement,
        -- as well as when intra-frequency events are configured for inter-frequency measurement
        intra-frequency                     Intra-FreqEventCriteriaList-v590ext,
        inter-frequency                     Inter-FreqEventCriteriaList-v590ext
    }       OPTIONAL,
    intraFreqReportingCriteria-1b-r5        IntraFreqReportingCriteria-1b-r5        OPTIONAL,
    intraFreqEvent-1d-r5                    IntraFreqEvent-1d-r5                    OPTIONAL
}

OngoingMeasRepList ::=              SEQUENCE (SIZE (1..maxNoOfMeas)) OF
                                        OngoingMeasRep

OngoingMeasRepList-r4 ::=           SEQUENCE (SIZE (1..maxNoOfMeas)) OF
                                        OngoingMeasRep-r4

OngoingMeasRepList-r5 ::=           SEQUENCE (SIZE (1..maxNoOfMeas)) OF
                                        OngoingMeasRep-r5
```

```
PDCP-Capability-r4 ::=              SEQUENCE {
    losslessSRNS-RelocationSupport      BOOLEAN,
    supportForRfc2507                   CHOICE {
        notSupported                        NULL,
        supported                           MaxHcContextSpace
    },
    supportForRfc3095                   CHOICE {
        notSupported                        NULL,
        supported                           SEQUENCE {
            maxROHC-ContextSessions             MaxROHC-ContextSessions-r4  DEFAULT s16,
            reverseCompressionDepth             INTEGER (0..65535)          DEFAULT 0
        }
    }
}

PDCP-Capability-r5 ::=              SEQUENCE {
    losslessSRNS-RelocationSupport      BOOLEAN,
    supportForRfc2507                   CHOICE {
        notSupported                        NULL,
        supported                           MaxHcContextSpace-r5
    },
    supportForRfc3095                   CHOICE {
        notSupported                        NULL,
        supported                           SEQUENCE {
            maxROHC-ContextSessions             MaxROHC-ContextSessions-r4  DEFAULT s16,
            reverseCompressionDepth             INTEGER (0..65535)          DEFAULT 0,
            supportForRfc3095ContextRelocation  BOOLEAN
        }
    }
}

PhysicalChannelCapability-r4 ::=        SEQUENCE {
        fddPhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityFDD-r4,
            uplinkPhysChCapability              UL-PhysChCapabilityFDD
        }                                           OPTIONAL,
        tdd384-PhysChCapability             SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD
        }                                           OPTIONAL,
        tdd128-PhysChCapability             SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD-LCR-r4,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD-LCR-r4
        }                                           OPTIONAL
}

PhysicalChannelCapability-r5 ::=        SEQUENCE {
        fddPhysChCapability                 SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityFDD-r5,
            uplinkPhysChCapability              UL-PhysChCapabilityFDD
        }                                           OPTIONAL,
        tdd384-PhysChCapability             SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD-r5,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD
        }                                           OPTIONAL,
        tdd128-PhysChCapability             SEQUENCE {
            downlinkPhysChCapability            DL-PhysChCapabilityTDD-LCR-r5,
            uplinkPhysChCapability              UL-PhysChCapabilityTDD-LCR-r4
        }                                           OPTIONAL
}

RF-Capability-r4 ::=                SEQUENCE {
        fddRF-Capability                SEQUENCE {
            ue-PowerClass                   UE-PowerClassExt,
            txRxFrequencySeparation         TxRxFrequencySeparation
        }                                                                   OPTIONAL,
        tdd384-RF-Capability            SEQUENCE {
            ue-PowerClass                   UE-PowerClassExt,
            radioFrequencyBandTDDList       RadioFrequencyBandTDDList,
            chipRateCapability              ChipRateCapability
        }                                                                   OPTIONAL,
        tdd128-RF-Capability            SEQUENCE {
            ue-PowerClass                   UE-PowerClassExt,
            radioFrequencyBandTDDList       RadioFrequencyBandTDDList,
            chipRateCapability              ChipRateCapability
        }                                                                   OPTIONAL
}
```

```
RFC3095-ContextInfo ::=             SEQUENCE {
    rb-Identity                         RB-Identity,
    rfc3095-Context-List                RFC3095-Context-List
}

RFC3095-Context-List ::=            SEQUENCE (SIZE (1..maxRFC3095-CID)) OF SEQUENCE {
    dl-RFC3095-Context                  DL-RFC3095-Context      OPTIONAL,
    ul-RFC3095-Context                  UL-RFC3095-Context      OPTIONAL
}

RLC-Capability-r5 ::=               SEQUENCE {
    totalRLC-AM-BufferSize              TotalRLC-AM-BufferSize-r5,
    maximumRLC-WindowSize               MaximumRLC-WindowSize,
    maximumAM-EntityNumber              MaximumAM-EntityNumberRLC-Cap
}

SRB-SpecificIntegrityProtInfo ::=   SEQUENCE {
    ul-RRC-HFN                          BIT STRING (SIZE (28)),
    dl-RRC-HFN                          BIT STRING (SIZE (28)),
    ul-RRC-SequenceNumber               RRC-MessageSequenceNumber,
    dl-RRC-SequenceNumber               RRC-MessageSequenceNumber
}

SRB-SpecificIntegrityProtInfoList ::= SEQUENCE (SIZE (4..maxSRBsetup)) OF
                                        SRB-SpecificIntegrityProtInfo

StateOfRRC ::=                      ENUMERATED {
                                        cell-DCH, cell-FACH,
                                        cell-PCH, ura-PCH }

StateOfRRC-Procedure ::=            ENUMERATED {
                                        awaitNoRRC-Message,
                                        awaitRB-ReleaseComplete,
                                        awaitRB-SetupComplete,
                                        awaitRB-ReconfigurationComplete,
                                        awaitTransportCH-ReconfigurationComplete,
                                        awaitPhysicalCH-ReconfigurationComplete,
                                        awaitActiveSetUpdateComplete,
                                        awaitHandoverComplete,
                                        sendCellUpdateConfirm,
                                        sendUraUpdateConfirm,
                                        -- dummy is not used in this version of specification
                                        -- It should not be sent
                                        dummy,
                                        otherStates
}

TotalRLC-AM-BufferSize-r5 ::=       ENUMERATED {
                                        kb10, kb50, kb100, kb150, kb200,
                                        kb300, kb400, kb500, kb750, kb1000 }

TPC-Combination-Info ::= SEQUENCE {
        primaryCPICH-Info                   PrimaryCPICH-Info,
        tpc-CombinationIndex                TPC-CombinationIndex
}

UE-MultiModeRAT-Capability-r5 ::=   SEQUENCE {
    multiRAT-CapabilityList             MultiRAT-Capability,
    multiModeCapability                 MultiModeCapability,
    supportOfUTRAN-ToGERAN-NACC         BOOLEAN
}

UE-Positioning-Capability-r4 ::=    SEQUENCE {
    standaloneLocMethodsSupported           BOOLEAN,
    ue-BasedOTDOA-Supported                 BOOLEAN,
    networkAssistedGPS-Supported            NetworkAssistedGPS-Supported,
    supportForUE-GPS-TimingOfCellFrames     BOOLEAN,
    supportForIPDL                          BOOLEAN,
    rx-tx-TimeDifferenceType2Capable        BOOLEAN,
    validity-CellPCH-UraPCH                 ENUMERATED { true }     OPTIONAL,
    sfn-sfnType2Capability                  ENUMERATED { true }         OPTIONAL
}

UE-Positioning-LastKnownPos ::=     SEQUENCE {
        sfn                             INTEGER (0..4095),
        cell-id                         CellIdentity,
        positionEstimate                PositionEstimate
}
```

```
UE-RadioAccessCapability-r4 ::=     SEQUENCE {
    accessStratumReleaseIndicator       AccessStratumReleaseIndicator,
    pdcp-Capability                     PDCP-Capability-r4,
    rlc-Capability                      RLC-Capability,
    transportChannelCapability          TransportChannelCapability,
    rf-Capability                       RF-Capability-r4,
    physicalChannelCapability           PhysicalChannelCapability-r4,
    ue-MultiModeRAT-Capability          UE-MultiModeRAT-Capability,
    securityCapability                  SecurityCapability,
    ue-positioning-Capability           UE-Positioning-Capability-r4,
    measurementCapability               MeasurementCapability-r4        OPTIONAL
}

UE-RadioAccessCapability-r5 ::=     SEQUENCE {
    accessStratumReleaseIndicator       AccessStratumReleaseIndicator,
    dl-CapabilityWithSimultaneousHS-DSCHConfig
                                        DL-CapabilityWithSimultaneousHS-DSCHConfig  OPTIONAL,
    pdcp-Capability                     PDCP-Capability-r5,
    rlc-Capability                      RLC-Capability-r5,
    transportChannelCapability          TransportChannelCapability,
    rf-Capability                       RF-Capability-r4,
    physicalChannelCapability           PhysicalChannelCapability-r5,
    ue-MultiModeRAT-Capability          UE-MultiModeRAT-Capability-r5,
    securityCapability                  SecurityCapability,
    ue-positioning-Capability           UE-Positioning-Capability-r4,
    measurementCapability               MeasurementCapability-r4        OPTIONAL
}

UL-RFC3095-Context ::=              SEQUENCE {
    rfc3095-Context-Identity            INTEGER (0..16383),
    ul-mode                             ENUMERATED {u, o, r},
    ul-ref-ir                           OCTET STRING ( SIZE (1..3000)),
    ul-ref-time                         INTEGER (0..4294967295)     OPTIONAL,
    ul-curr-time                        INTEGER (0..4294967295)     OPTIONAL,
    ul-syn-offset-id                    INTEGER (0..65535)          OPTIONAL,
    ul-syn-slope-ts                     INTEGER (0..4294967295)     OPTIONAL,
    ul-ref-sn-1                         INTEGER (0..65535)          OPTIONAL

}

END
```

**** Next modified section ****

13.4.3a DSCH_RNTI

In TDD ~~T~~this variable stores the assigned DSCH-RNTI for this UE when in CELL_DCH state.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DSCH-RNTI	OP		DSCH-RNTI 10.3.3.9a	Cleared when entering UTRA RRC connected mode when not otherwise stated in the procedure. Cleared when leaving UTRA RRC connected mode.

**** Next modified section ****

B.3.1 CELL_DCH state

The CELL_DCH state is characterised by

- For 3.84 Mcps TDD: A dedicated physical channel is allocated to the UE in uplink and downlink or a dedicated physical channel is allocated to the UE in the uplink and HS_DSCH_RECEPTION is set to TRUE.

- A dedicated physical channel is allocated to the UE in uplink and downlink.
- The UE is known on cell level according to its current active set.
- Dedicated transport channels, downlink and uplink (TDD) shared transport channels, and a combination of these transport channels can be used by the UE.

The CELL_DCH-state is entered from the Idle Mode through the setup of an RRC connection, or by establishing a dedicated physical channel from the CELL_FACH state.

In TDD ~~A~~a PDSCH may be assigned to the UE in this state, to be used for a DSCH. ~~In TDD a~~A PUSCH may also be assigned to the UE in this state, to be used for a USCH. If PDSCH or PUSCH are used for TDD, a FACH transport channel may be assigned to the UE for reception of physical shared channel allocation messages.