TSG-RAN Meeting #8 *RP-000226*
Düsseldorf, Germany, 21 – 23 June 2000

Title: **Agreed CRs to TS 25.331 (5)**

Source: **TSG-RAN WG2**

Agenda item: **5.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Subject	Cat	Version	Versio
R2-001178	agreed	25.331	375	1	Changes in RB mapping info	F	3.2.0	3.3.0
R2-001063	agreed	25.331	377		Editorial corrections to PRACH system information and Cell info	D	3.2.0	3.3.0
R2-001064	agreed	25.331	378		Editorial Corrections to 25.331 Procedures and Tabular Format	D	3.2.0	3.3.0
R2-001179	agreed	25.331	379	1	Corrections to figures and procedures for the failure cases	F	3.2.0	3.3.0
R2-001066	agreed	25.331	380		Corrections on use of ORDERED_CONFIG	F	3.2.0	3.3.0
R2-001180	agreed	25.331	382	1	Corrections to Transport Channel and RB Reconfiguration procedures	F	3.2.0	3.3.0
R2-001181	agreed	25.331	383	1	Corrections to INITIAL DIRECT TRANSFER and UE CAPABILITY INFORMATION CONFIRM procedures	F	3.2.0	3.3.0
R2-001070	agreed	25.331	384		Corrections to Transparent mode signalling info Tabular format and ASN.1	F	3.2.0	3.3.0
R2-001071	agreed	25.331	385		Corrections to Soft Handover messages and procedures	C	3.2.0	3.3.0
R2-001073	agreed	25.331	387		Corrections to RRC CONNECTION REJECT procedures	F	3.2.0	3.3.0
R2-001202	agreed	25.331	388	1	Transport format combination in TDD and Transport channel ID	F	3.2.0	3.3.0
R2-001203	agreed	25.331	389	1	Signalling for dynamic TTI in TDD	F	3.2.0	3.3.0
R2-001204	agreed	25.331	390	1	Usage of DCCH for Shared Channel Allocation message	B	3.2.0	3.3.0
R2-001182	agreed	25.331	391	1	Correction to physical channel IEs in TDD	F	3.2.0	3.3.0
R2-001205	agreed	25.331	392	1	TDD preconfiguration for Handover to UTRAN	F	3.2.0	3.3.0
R2-001095	agreed	25.331	393		Corrections to measurement control descriptions and messages	F	3.2.0	3.3.0
R2-001206	agreed	25.331	394	1	Corrections on ASN.1 definitions	F	3.2.0	3.3.0
R2-001097	agreed	25.331	395		Addition of the Segmentation indication field for transparent mode RLC in the RLC Info	C	3.2.0	3.3.0
R2-001281	agreed	25.331	396	1	Radio Bearer identity for CCCH	C	3.2.0	3.3.0
R2-001253	agreed	25.331	397	1	ASN.1 definitions for RRC information between network nodes	C	3.2.0	3.3.0

3GPP TSG RAN WG2#13
Oahu, HI, USA, 22-26 May, 2000

Document R2-001178
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25.331	**CR**	**375r1**	Current Version:	3.2.0

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

For submission to:	TSG-RAN #8	for approval	X	strategic		*(for SMG*
list expected approval meeting # here ↑		for information		non-strategic		*use only)*

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

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

Source: TSG-RAN WG2 **Date:** 2000-05-16

Subject: Changes in RB mapping info

Work item:

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

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

Reason for change: This CR identifies a method to distinguish logical channel IDs for control and data when the number of RLC logical channels, in the uplink, for a RB is 2. Further, the logical channel identity range is (1..15) in 25.321 where as the range is (1..16) in 10.3.4.16. So a correction has been made for this.

Clauses affected: 10.3.4.16, 11.3.4

Other specs affected:

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

Other comments:

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10.3.4.16 RB mapping info

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Information for each multiplexing option	MP	1 to <maxMuxOptionsCount>		
>Number of RLC logical channels	CV-*UL-RLC info*	1 to 2		1 or 2 logical channels per RLC entity or radio bearer RLC [TS 25.322]
>>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.
>>Uplink transport channel type	MP		Enumerated(DCH,RACH, CPCH,USCH)	CPCH is FDD only USCH is TDD only
>>Transport channel identity	OP		Transport channel identity 10.3.5.16	This is the ID of a transport channel that this RB could be mapped onto.
>>Logical channel identity	OP		Integer(1..15~~16~~)	This parameter is used to distinguish logical channels multiplexed by MAC on a transport channel.
>>MAC logical channel priority	OP		Integer(1..8)	This is priority between a user's different RBs (or logical channels). The different priorities for this user's RBs are mapped (through the MAC's C/T MUX) to the TFC selection algorithm. Priority 1 shall have the highest priority and priority 8 the lowest.
>Number of RLC logical channels	CV-*DL-RLC info*	1 to 2		1 or 2 logical channels per RLC entity or radio bearer RLC [TS 25.322]
>>Downlink transport channel type	MP		Enumerated(DCH,FACH, DSCH)	
>>Transport channel identity	OP		Transport channel identity 10.3.5.16	
>>Logical channel identity	OP		Enumerated(1..15~~16~~)	

Condition	Explanation
UL-RLC info	If "CHOICE Uplink RLC mode" in IE "RLC info" is present this IE is MP. Otherwise the IE is not needed.
DL-RLC info	If "CHOICE Downlink RLC mode" in IE "RLC info" is present this IE is MP. Otherwise the IE is not needed.
UL-RLCLogicalChannels	If "Number of RLC logical channels" in IE "RB mapping info" is 2, in the uplink, then this is present. Otherwise this IE is not needed.

11.3.4 Radio bearer information elements

```
LogicalChannelIdentity ::=          INTEGER (1..156)

RB-MappingOption ::=                SEQUENCE {
    ul-LogicalChannelMappingsList       UL-LogicalChannelMappingsList       OPTIONAL,
```

```
    dl-LogicalChannelMappingList        DL-LogicalChannelMappingList        OPTIONAL
}

UL-LogicalChannelMapping2 ::=       SEQUENCE {
    rlc-LogicalChannelMappingIndicator  BOOLEAN,
    ul-TransportChannelType             UL-TransportChannelType,
    transportChannelIdentity            TransportChannelIdentity            OPTIONAL,
    logicalChannelIdentity              LogicalChannelIdentity              OPTIONAL,
    mac-LogicalChannelPriority          MAC-LogicalChannelPriority          OPTIONAL
}

UL-LogicalChannelMappingList ::=    SEQUENCE (SIZE (1..2)) OF
                                        UL-LogicalChannelMapping2

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

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Oahu, Hawaii, U.S.A.; May 22-26, 2000

Document ***R2-001063***
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25.331	**CR**	**377**	Current Version:	3.2.0

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

For submission to: TSG-RAN #8 *list expected approval meeting # here ↑*
for approval **X**
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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

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

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

Subject: Editorial corrections to “PRACH system information” and “Cell info”

Work item:

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

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

Release:

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

Reason for change:

The following items are proposed to be corrected:

1. The definition of “PRACH system information” seems to be recursive in 10.3.6.39. The ASN.1 is correct. “PRACH system information list” has been introduced in 10.2.49.4.7, 10.2.49.4.8, 10.3.6.39, aligning the tabular format with the ASN.1 description.

2. The definition of “Cell info” includes the optional IE “Reference time difference to cell”, which is defined twice, in the tabular format of “Cell info” 10.3.7.2 and in 10.3.7.87. The latter is the correct definition and it is in agreement with the ASN.1 coding. Clause 10.3.7.2 has been accordingly corrected.

Clauses affected: 10.2.49.4.7, 10.2.49.4.8, 10.3.6.39, 10.3.7.2

Other specs affected:

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

Other comments:


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10.2.49.4.7 System Information Block type 5

The system information block type 5 contains parameters for the configuration of the common physical channels in the cell. The block may also contain scheduling information for other system information blocks.

Information Element	Need	Multi	Type and reference	Semantics description
References to other system information blocks	OP		References to other system information blocks 10.3.8.10	
PhyCH information elements				
Frequency info	OP		Frequency info 10.3.6.24	
Maximum allowed UL TX power	OP		Maximum allowed UL TX power 10.3.6.27	
CHOICE *mode*	MP			
>TDD				
>>Midamble configuration	MD		Midamble configuration 10.3.6.28	Default value is defined in 10.3.6.23
>FDD				(no data)
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.41	Note 1
PRACH system information list	MP		PRACH system information list 10.3.6.39	
Secondary CCPCH system information	MP		Secondary CCPCH system information 10.3.6.53	
CBS DRX Level 1 information	CV CTCH		CBS DRX Level 1 information 10.3.8.3	

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

Condition	Explanation
CTCH	The IE is mandatory if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed in the message

10.2.49.4.8 System Information Block type 6

The system information block type 6 contains parameters for the configuration of the common and shared physical channels to be used in connected mode. The block may also contain scheduling information for other system information blocks.

Information Element	Need	Multi	Type and reference	Semantics description
References to other system information blocks	OP		References to other system information blocks 10.3.8.10	
PhyCH information elements				
Frequency info	OP		Frequency info 10.3.6.24	
Maximum allowed UL TX power	OP		Maximum allowed UL TX power 10.3.6.27	
Primary CCPCH info	OP		Primary CCPCH info 10.3.6.41	Note 1
CHOICE *mode*	MP			
>FDD				
>>PICH Power offset	MP		PICH Power offset 10.3.6.35	
>>AICH Power offset	MP		AICH Power offset 10.3.6.3	
>TDD				
>>PUSCH system information	OP		PUSCH system information 10.3.6.48	
>>PDSCH system information	OP		PDSCH system information 10.3.6.31	
PRACH system information list	MP		PRACH system information list 10.3.6.39	
Secondary CCPCH system information	MP		Secondary CCPCH system information 10.3.6.53	
CBS DRX Level 1 information	CV CTCH		CBS DRX Level 1 information 10.3.8.3	

NOTE 1: DL scrambling code of the Primary CCPCH is the same as the one for Primary CPICH (FDD only).

Condition	Explanation
CTCH	The IE is mandatory if the IE "CTCH indicator" is equal to TRUE for at least one FACH, otherwise the IE is not needed

[…]

10.3.6.39 PRACH system information list

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

Multi bound	Explanation
MaxPRACHcount	Maximum number of PRACHs

[…]

10.3.7.2 Cell info

Includes non-frequency related cell info used in the IE "inter-frequency cell info list" and "intra frequency cell info list".

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Cell individual offset	MD		Real(-10..10 by step of 0.5)	In dB Default value is 0 dB
Reference time difference to cell	OP		Reference time difference to cell 10.3.7.87~~Integer (-153088..153088 by step of 512)~~	~~In chips.~~
CHOICE *mode*	MP			
>FDD				
>>Primary CPICH info	OP		Primary CPICH info 10.3.6.43	Not required if measuring RSSI only
>>Primary CPICH Tx power	OP		Primary CPICH Tx power 10.3.6.44	
>>Read SFN indicator	MP		Boolean	TRUE indicates that read of SFN is requested for the target cell
>>TX Diversity Indicator	MP		Boolean	
>TDD				
>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.41	
>>Primary CCPCH TX power	OP		Primary CCPCH TX power 10.3.6.42	
>>DL CCTrCH info	OP			List of TFCS ID's to measure
>>DL Timeslot info	OP			List of timeslots to measure
Cell Selection and Re-selection Info	CV		Cell Selection and Re-selection Info 10.3.2.3	Only when sent in system information
>CHOICE *mode*	MP			
>>FDD				
>>>Qmin	MD		Integer (-20..0)	Ec/N0, [dB] Default value is Qmin for the serving cell
>>TDD				
>>> Qmin	MD		Integer (-115..-25 by step of 2)	RSCP, [dBm] Default value is Qmin for the serving cell
>Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	[dBm] UE_TXPWR_MAX_RACH in 25.304. Default is the Maximum allowed UL TX power for the serving cell
>CHOICE *signalling option*	MP			
>>Alternative 1				Used when Alternative 1 according to TS 25.304 of how offset parameters should be signalled
>>>$Qoffset_{s,n}$	MD		Real(-50.0..50.0 by step of 1)	Default value is 0.
>>Alternative 2				(no data) Used when Alternative 2 according to TS 25.304 of how

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				offset parameters should be signalled
>HCS neighbouring cell information	OP		HCS Neighbouring cell information 10.3.7.11	

[…]

10.3.7.87 Reference time difference to cell

The reference time difference to cell indicates the time difference between the primary CCPCH of the current cell and the primary CCPCH of a neighbouring cell. It is notified to UE by System Information or Measurement Control message.

In case of macro-diversity the reference is the primary CCPCH of one the cells used in the active set.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *accuracy*	MP			
>40 chips				
>>Reference time difference	MP		Integer(0..38400 by step of 40)	In chips
>256 chips				
>>Reference time difference	MP		Integer(0.. 38400 by step of 256)	In chips
>2560 chips				
>>Reference time difference	MP		Enumerated(0.. 38400 by step of 2560)	In chips

NOTE: Exactly how the reference cell is pointed out in this case in the messages is FFS.

[…]

```
PRACH-SystemInformation ::=         SEQUENCE {
    prach-RACH-Info                     PRACH-RACH-Info,
    rach-TransportFormatSet             TransportFormatSet,
    rach-TFCS                           TFCS,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            prach-Partitioning                  PRACH-Partitioning,
            persistenceScalingFactorList        PersistenceScalingFactorList
                                                                        OPTIONAL,
            ac-To-ASC-MappingTable              AC-To-ASC-MappingTable      OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power,
            constantValue                       ConstantValue,
            prach-PowerOffset                   PRACH-PowerOffset,
            rach-TransmissionParameters         RACH-TransmissionParameters,
            aich-Info                           AICH-Info
        },
        tdd                                 SEQUENCE {
            asc-Info                            ASC-Info                    OPTIONAL
        }
    }
}

PRACH-SystemInformationList ::=     SEQUENCE (SIZE (1..maxPRACHcount)) OF
                                        PRACH-SystemInformation
[...]


-- Actual value = IE value * 512
ReferenceTimeDifferenceToCell ::=   CHOICE {
    -- Actual value = IE value * 40
    accuracy40                          INTEGER (0..960),
    -- Actual value = IE value * 256
    accuracy256                         INTEGER (0..150),
    -- Actual value = IE value * 2560
    accuracy2560                        INTEGER (0..15)
}
```

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25.331	**CR**	**378**	Current Version:	3.2.0

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

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

for approval **X**
for information

strategic
non-strategic

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

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

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

Subject: Editorial Corrections to 25.331 Procedures and Tabular Format

Work item:

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

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

Release:

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

Reason for change:

The following items are proposed to be corrected:

1. URA_RCH is corrected in 8.3.9.2
2. "in c" corrected to "in sync" in clause 8.5.4
3. L_DCH corrected to CELL_DCH in 8.5.6
4. Reference for “Downlink DPCH info common for all RL” has been corrected in 10.3.6.17

Clauses affected: 8.3.9.2, 8.5.4, 8.5.6, 10.3.6.17

Other specs Affected:

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

Other comments:


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8.3.9.2 Initiation

This procedure may be initiated in states CELL_FACH, CELL_PCH or URA_~~RCH~~PCH.

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

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

[…]

8.5.4 Physical channel establishment criteria

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 successive "in sync" indications. At this occasion, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

[…]

8.5.6 Radio link failure criteria

In CELL_DCH State the UE shall start timer T313 after receiving N313 consecutive "out of sync" indications for the established DPCCH physical channel from layer 1. The UE shall stop and reset timer T313 upon receiving successive N315 "in sync" indications from layer 1 and upon change of RRC state. If T313 expires, the UE shall consider it as a "Radio link failure".

[…]

10.3.6.17 Downlink information common for all radio links

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	OP		Downlink DPCH info common for all RL 10.3.6. 9.14	
CHOICE *mode*	MP			
>FDD				
>>Default DPCH Offset Value	MD		Default DPCH Offset Value, 10.3.6.13	Default value is 0
>>DPCH compressed mode info	MD		DPCH compressed mode info 10.3.6.22	Default value is the existing value of DPCH compressed mode information
>>TX Diversity Mode	MD		TX Diversity Mode 10.3.6.63	Default value is the existing value of TX Diversity mode
>>SSDT information	OP		SSDT information 10.3.6.57	
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.69	

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25.331	CR	379r1	Current Version:	3.2.0

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

For submission to: TSG-RAN #8 *list expected approval meeting # here ↑*
for approval **X** | for information
strategic | non-strategic *(for SMG use only)*

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

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

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

Subject: Corrections to figures and procedures for the failure cases

Work item:

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

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

Release:

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

Reason for change:

The following items are proposed to be corrected:

1. For some procedures (8.2.1, 8.2.2, 8.2.3, 8.2.4, 8.2.6, 8.3.4) the RRC STATUS is used in the failure case, as described in the text (8.2.1.8, 8.2.2.13, 8.2.3.9, 8.2.4.12, 8.2.6.12, 8.3.4.7), while only in section 8.2.5.4 the "FAILURE" message is correctly used. All the RRC STATUS messages have been replaced by the appropriate "FAILURE" messages and the procedures have been corrected.

2. To avoid to send the "FAILURE" message in case the same (re-)configuration message is transmitted multiple times in UM mode, the UE shall ignore any subsequent messages of the same type, instead of triggering a protocol error (except for the TRANSPORT FORMAT COMBINATION CONTROL, which is also sent in Tr Mode). Sections 8.2.1.7a, 8.2.2.12a, 8.2.3.8.a, 8.2.4.11a, 8.2.6.11a, 8.3.4.6a, have been added.

~~2.~~3. RNTI REALLOCATION FAILURE is described in section 8.3.3.5. The corresponding figure has been added in section 8.3.5.

~~3.~~4. TRANSPORT FORMAT COMBINATION CONTROL FAILURE is described in section 8.2.5.5. The corresponding figure has been added in section 8.2.5.

Clauses affected: 8.2.1.7a, 8.2.1.8, 8.2.2.12a, 8.2.2.13, 8.2.3.8.a, 8.2.3.9, 8.2.4.11a, 8.2.4.12, 8.2.5, 8.2.6.12, 8.3.3, 8.3.4.6a, 8.3.4.7

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:

		→ List of CRs:	
	O&M specifications	→ List of CRs:	

Other comments:	

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8.2 Radio Bearer control procedures

8.2.1 Radio bearer establishment

Figure 18: Radio Bearer Establishment, normal case

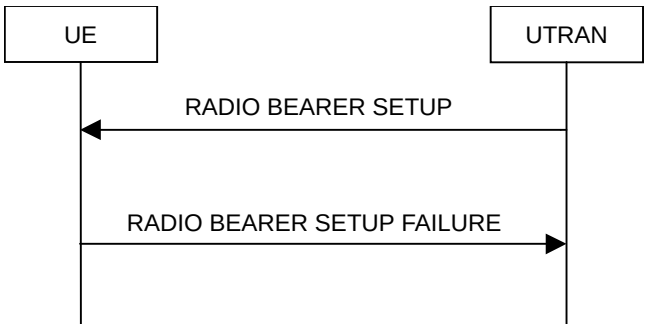

Figure 19: Radio Bearer Establishment, UE reverts to old configuration

8.2.1.1 General

The purpose with this procedure is to establish new radio bearer(s). Each radio bearer established by the procedure belongs to one of the following categories:

- a signalling radio bearer, i.e. used for control plane signalling;
- a radio bearer that implements a radio access bearer (RAB) or RAB subflow(s) in the user plane.

While establishing radio bearers, the procedure may perform a hard handover, see 8.3.5. The procedure may also be used to establish a transport channel for the transparent transfer of signalling.

8.2.1.2 Initiation

The upper layer in the network may request an establishment of radio bearer(s).

To initiate the procedure, UTRAN:

- configures new radio links in any new physical channel configuration and start transmission and reception on the new radio links;
- transmits a RADIO BEARER SETUP message on the downlink DCCH using AM or UM RLC.

If transport channels are added, reconfigured or deleted in uplink and/or downlink, UTRAN shall:

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

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.

8.2.1.3 Reception of a RADIO BEARER SETUP message by the UE

Upon reception of a RADIO BEARER SETUP message the UE shall perform actions as specified below and transmit a RADIO BEARER SETUP COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the RADIO BEARER SETUP COMPLETE message has been confirmed by RLC the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

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

The UE shall be able to receive an RADIO BEARER SETUP message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency:

The UE shall:

- for the new radio bearer(s), use the multiplexing option applicable for the transport channels used according to the IE "RB mapping info";
- for the new radio bearer(s), if the variable CIPHERING_STATUS is set to "Started", initialise ciphering on those radio bearers using the current ciphering hyperframe number;
- for radio bearer(s) existing prior to the message, use the multiplexing option applicable for the transport channels used, according to their IE "RB mapping info" or their previously stored multiplexing options;
- configure MAC multiplexing if that is needed in order to use said transport channel(s);
- use MAC logical channel priority when selecting TFC in MAC;
- suspend data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers.

If the IE "New C-RNTI" is included, the UE shall:

- use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If the IE "RAB information to setup" is included, the procedure is used to establish radio bearers belonging to a radio access bearer and the UE shall:

- Associate the new radio bearers with the radio access bearer that is identified by the IE "RAB info".
- Check whether that radio acces bearer exists in the variable ESTABLISHED_RABS.

  If the radio access bearer exists the UE shall:

  - store information about the radio bearer under the radio access bearer entry in the variable ESTABLISHED_RABS.

  If the radio access bearer does not exist the UE shall:

  - store information about the new radio access bearer in the variable ESTABLISHED_RABS
  - store information about the radio bearer under the radio access bearer entry in the variable ESTABLISHED_RABS.

- indicate the establishment of the radio access bearer to the upper layer entity using the IE "CN domain identity", forwarding the content of the IE "RAB identity".

- For each new radio bearer, the UE shall:
  - create a new RAB subflow for the radio access bearer.
  - Number the RAB subflow in the order of when the radio bearers within the radio access bearers where created.
  - Store the number of the RAB subflow in the variable ESTABLISHED_RABS.
- Indicate the establishment of each new RAB subflow to the upper layer entity using the IE "CN domain identity".

The UE should turn off the transmitter during the reconfiguration. The UE may first release the current physical channel configuration and shall then establish a new physical channel configuration according to 8.5.7 and the following.

If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor the IE "Downlink DPCH info" is included, the UE shall

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information:

The UE shall enter a state according to 8.5.8.

8.2.1.4 Unsupported configuration in the UE

If UTRAN instructs the UE to use a configuration that it does not support, the UE transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC and set the IE "failure cause" the cause value "configuration unacceptable".

When the transmission of the RADIO BEARER SETUP FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers, the UE shall clear the variable ORDERED_CONFIG and the procedure ends.

8.2.1.5 Physical channel failure

If the UE failed to establish the physical channel(s) indicated in the RADIO BEARER SETUP message the UE shall:

- Revert to the configuration prior to the reception of the RADIO BEARER SETUP message (old configuration) and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC. The procedure ends and the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers and resumes the normal operation as if no radio bearer establishment attempt had occurred.

A physical channel failure occurs in case the criteria as defined in 8.5.4 are not fulfilled. If the UE is unable to revert to the old configuration or if used, the activation time has expired, the UE shall:

- initiate a RRC connection re-establishment procedure according to subclause 8.1.5 and set the IE "failure cause" the cause value "physical channel failure".

8.2.1.6 Reception of the RADIO BEARER SETUP COMPLETE message by the UTRAN

When UTRAN has received the RADIO BEARER SETUP COMPLETE message, UTRAN may delete any old configuration and the procedure ends on the UTRAN side.

If the IE "UL Timing Advance" is included, UTRAN shall evaluate the timing advance value that the UE has to use in the new cell after handover.

8.2.1.7 Reception of RADIO BEARER SETUP FAILURE by the UTRAN

When UTRAN has received the RADIO BEARER SETUP FAILURE message, UTRAN may restore the old and delete the new configuration and the procedure ends on the UTRAN side. Upper layers should be notified of the failure.

8.2.1.7a Subsequently received RADIO BEARER SETUP messages

If the variable ORDERED_CONFIG is set because of a RADIO BEARER SETUP message previously received, the UE shall

- ignore the subsequently received RADIO BEARER SETUP message
- keep the configuration as before the subsequent RADIO BEARER SETUP message was received.

8.2.1.8 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set (because of any message other than RADIO BEARER SETUP) upon the reception of the RADIO BEARER SETUP message, the UE shall:

- keep the old configuration as before the RADIO BEARER SETUP message was received;
- transmit a RADIO BEARER SETUP FAILURE ~~an RRC STATUS~~ message on the DCCH using AM RLC. The UE shall set the IE "failure cause" to "incompatible simultaneous reconfiguration". ~~The IE "Protocol error cause" shall be set to "Message not compatible with receiver state"~~. When the transmission of RADIO BEARER SETUP FAILURE ~~RRC STATUS~~ message has been confirmed by RLC the procedure ends ~~and the UE shall clear the variable ORDERED_CONFIG and resume normal operation as if no RADIO BEARER SETUP message had been received~~.

8.2.1.9 Invalid RADIO BEARER SETUP message

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

- transmit a RADIO BEARER SETUP FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- when the transmission of the RADIO BEARER SETUP FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid RADIO BEARER SETUP message has not been received and the procedure ends.

8.2.2 Radio bearer reconfiguration

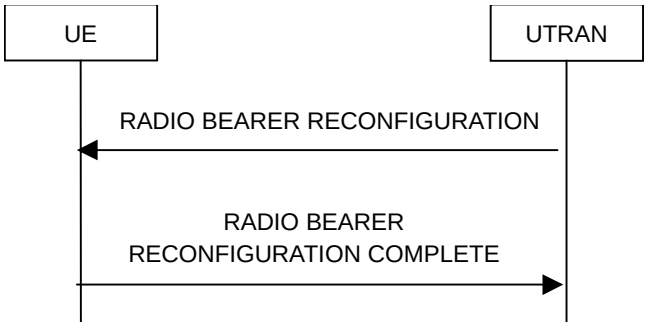

Figure 20: Radio bearer reconfiguration, normal flow

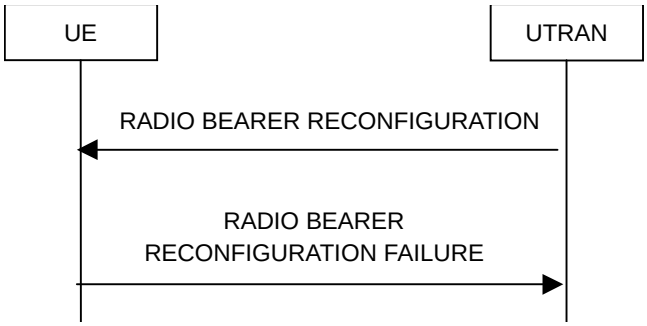

Figure 21: Radio bearer reconfiguration, failure case

8.2.2.1 General

The radio bearer reconfiguration procedure is used to reconfigure parameters for a radio bearer or the signalling link to reflect a change in QoS. While doing so, the procedure may perform a hard handover, see 8.3.5.

8.2.2.2 Initiation

The UTRAN initiates the procedure by:

- configuring new radio links in any new physical channel configuration and start transmission and reception on the new radio links;
- Transmitting a RADIO BEARER RECONFIGURATION message on the downlink DCCH using AM or UM RLC.

If transport channels are added, reconfigured or deleted in uplink and/or downlink, the UTRAN shall:

- Set TFCS according to the new transport channel(s).

UTRAN should indicate that uplink transmission shall be suspended on certain bearers. Uplink transmission on a radio bearer used by the RRC signalling should not be suspended.

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

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

If the message is used to initiate a transition from CELL_DCH to CELL_FACH state, the UTRAN may assign a common channel configuration of a given cell and C-RNTI to be used in that cell to the UE.

8.2.2.3 Reception of RADIO BEARER RECONFIGURATION by the UE in CELL_DCH state

Upon reception of a RADIO BEARER RECONFIGURATION message in CELL_DCH state, the UE shall perform actions specified below.

The UE shall be able to receive an RADIO BEARER RECONFIGURATION message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

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

The UE shall:

- For each reconfigured radio bearer or signalling link, use the multiplexing option applicable for the transport channels used according to the IE "RB mapping info";
- Configure MAC multiplexing if that is needed in order to use said transport channel(s);
- Use MAC logical channel priority when selecting TFC in MAC;
- Suspend or resume uplink transmission for each radio bearer, as indicated by the IE "RB suspend/resume" information element;
- Suspend data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers.

The UE should turn off the transmitter during the reconfiguration. The UE may first release the current physical channel configuration and shall then establish a new physical channel configuration according to 8.5.7 and the following.

If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in.

If neither the IEs "Secondary CCPCH info" nor "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall;

- Delete stored TFS and use the TFS given in system information.

If the IE "Primary CCPCH info" and the IE "New C-RNTI" are included, the UE shall:

- Select the cell indicated by the IE "Primary CCPCH info";
- Use the given C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the RADIO BEARER RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the UE shall resume data transmission on each radio bearer fulfilling the following criteria:

- The radio bearer identity is RB 2 and upward;
- RLC-AM or RLC-UM is used; and
- The radio bearers was not indicated to be suspended by the IE "RB suspend/resume" information element in the RADIO BEARER RECONFIGURATION message.

The procedure ends.

If the RADIO BEARER RECONFIGURATION message is used to initiate a transition from CELL_DCH to CELL_FACH state, the RADIO BEARER RECONFIGURATION COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition. The UE shall clear the variable ORDERED_CONFIG and the procedure ends.

8.2.2.4 Reception of an RADIO BEARER RECONFIGURATION message by the UE in CELL_FACH state

Upon reception of a RADIO BEARER RECONFIGURATION message in CELL_FACH state, the UE shall perform actions specified below.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

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

The UE shall:

- For each reconfigured radio bearer or signalling link, use the multiplexing option applicable for the transport channels used according to the IE "RB mapping info";
- Configure MAC multiplexing if that is needed in order to use said transport channel(s);
- Use MAC logical channel priority when selecting TFC in MAC;
- Suspend or resume uplink transmission for each radio bearer, as indicated by the IE "RB suspend/resume".

If the IE "New C-RNTI" is included, the UE shall:

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor the IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included then the UE shall act upon the 'PDSCH code mapping' IE as specified in Subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted (there being only one link in the active set).

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the RADIO BEARER RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

8.2.2.5 Reception of a RADIO BEARER RECONFIGURATION COMPLETE message by the UTRAN

When UTRAN has received the RADIO BEARER RECONFIGURATION COMPLETE message, UTRAN may delete the old configuration..

If the IE "UL Timing Advance" is included, UTRAN shall evaluate the timing advance value that the UE has to use in the new cell after handover.

8.2.2.6 Unsupported configuration in the UE

If the UTRAN instructs the UE to use a configuration that it does not support, the UE shall:

- transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC;
- set the cause value in IE "failure cause" to "configuration unacceptable".

When the transmission of the RADIO BEARER RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG and the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers. It shall resume the normal operation as if no radio bearer reconfiguration attempt had occurred and the procedure ends.

8.2.2.7 Physical channel failure

A physical channel failure occurs in case the criteria as defined in 8.5.4 are not fulfilled.

If the UE failed to establish the physical channel(s) indicated in the RADIO BEARER RECONFIGURATION message the UE shall:

- revert to the configuration prior to the reception of the RADIO BEARER RECONFIGURATION message (old configuration);
- transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC;
- set the cause value in IE "failure cause" to "physical channel failure";
- when the transmission of the RADIO BEARER RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers. The procedure ends and the UE resumes the normal operation as if no radio bearer reconfiguration attempt had occurred.

If the UE is unable to revert to the old configuration or if used, the activation time has expired, the UE shall:

- Initiate a RRC connection re-establishment procedure according to subclause 8.1.5.

8.2.2.8 Reception of a RADIO BEARER RECONFIGURATION FAILURE message by the UTRAN

When UTRAN has received the RADIO BEARER RECONFIGURATION FAILURE message, UTRAN may restore the old and delete the new configuration. The procedure ends on the UTRAN side. Upper layers should be notified of the failure.

8.2.2.9 No response from the UE in CELL DCH_state

If no RADIO BEARER RECONFIGURATION COMPLETE message or RADIO BEARER RECONFIGURATION FAILURE message has been received, the UTRAN may delete the old and new configuration. If the UE requests a re-establishment of the RRC connection, before all UE dedicated resources have been cleared, the new configuration may be re-assigned in the re-establishment procedure.

During transition from CELL_DCH to CELL_FACH, the UTRAN may also receive a CELL UPDATE message if the UE cannot use the assigned physical channel.

8.2.2.10 No response from the UE in CELL_FACH state

If no RADIO BEARER RECONFIGURATION COMPLETE message or RADIO BEARER RECONFIGURATION FAILURE message has been received, the UTRAN may delete the old and new configuration. If the UE makes a cell update before all UE dedicated resources have been cleared, the configuration procedure can be restarted.

8.2.2.11 Physical channel failure during transmission from CELL_DCH to CELL_FACH

If the UE fails to select the cell, which was assigned in the RADIO BEARER RECONFIGURATION message initiating transition from CELL_DCH to CELL_FACH, the UE shall perform cell reselection and initiate the cell update procedure.

8.2.2.12 Suspension of signalling bearer

If the RADIO BEARER RECONFIGURATION message includes a request to suspend the signalling link with the IE "RB suspend/resume", the UE shall:

- Revert to the configuration prior to the reception of the RADIO BEARER RECONFIGURATION message (old configuration);
- send a RADIO BEARER RECONFIGURATION FAILURE message to the UTRAN;
- set the cause value in IE "failure cause" to "configuration unacceptable";
- When the transmission of the RADIO BEARER RECONFIGURATION FAILURE message has been confirmed by RLC, the procedure ends and the UE shall resume the normal operation as if no radio bearer reconfiguration attempt had occurred.

8.2.2.12a Subsequently received RADIO BEARER RECONFIGURATION messages

If the variable ORDERED_CONFIG is set because of a RADIO BEARER RECONFIGURATION message previously received, the UE shall

- ignore the subsequently received RADIO BEARER RECONFIGURATION message
- keep the configuration as before the subsequent RADIO BEARER RECONFIGURATION message was received.

8.2.2.13 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set (because of any message other than RADIO BEARER RECONFIGURATION) upon the reception of the RADIO BEARER RECONFIGURATION message, the UE shall:

- keep the old configuration as before the RADIO BEARER RECONFIGURATION message was received;

- transmit ~~an RRC STATUS~~a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC. The UE shall set the IE "failure cause" to "incompatible simultaneous reconfiguration".~~The IE "Protocol error cause" shall be set to "Message not compatible with receiver state"~~. When the transmission of RADIO BEARER RECONFIGURATION FAILURE ~~RRC STATUS~~ message has been confirmed by RLC the procedure ends~~ and the UE shall clear the variable ORDERED_CONFIG and resume normal operation as if no RADIO BEARER RECONFIGURATION message had been received~~.

8.2.2.14 Invalid RADIO BEARER RECONFIGURATION message

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

- Transmit a RADIO BEARER RECONFIGURATION FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error".

- Include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.

- When the transmission of the RADIO BEARER RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid RADIO BEARER RECONFIGURATION message has not been received and the procedure ends.

8.2.3 Radio bearer release

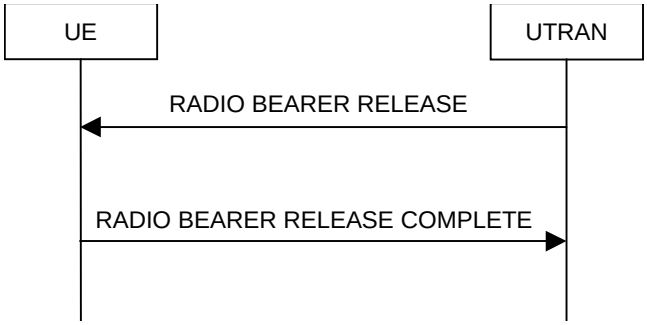

Figure 22: Radio Bearer Release, normal case

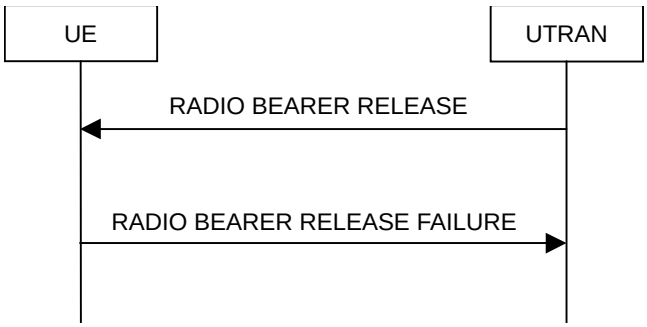

Figure 23: Radio Bearer Release, UE reverts to old configuration

8.2.3.1 General

The purpose of this procedure is to release existing radio bearer(s). While doing so, the procedure may perform a hard handover, see 8.3.5.

8.2.3.2 Initiation

The upper layer in the network may request a release of radio bearer(s).

To initiate the procedure, UTRAN:

- configures new radio links in any new physical channel configuration and start transmission and reception on the new radio links;
- transmits a RADIO BEARER RELEASE message on the downlink DCCH using AM or UM RLC.

If transport channels are added, reconfigured or deleted in uplink and/or downlink, UTRAN shall:

Set TFCS according to the new transport channel(s).

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.

8.2.3.3 Reception of RADIO BEARER RELEASE by the UE

Upon reception of a RADIO BEARER RELEASE message the UE shall perform the following.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

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

The UE shall be able to receive an RADIO BEARER RELEASE message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency.

The UE shall:

For the released radio bearer(s),

- delete all stored multiplexing options;
- indicate release of the RAB subflow stored in the variable ESTABLISHED_RABS to the upper layer entity corresponding to the CN domain identity stored in the variable ESTABLISHED_RABS;
- delete the information about the radio bearer from the variable ESTABLISHED_RABS.

  When all radio bearers belonging to the same radio access bearer have been released, the UE shall:

  - indicate release of the radio access bearer to the upper layer entity using the CN domain identity together with the RAB identity stored in the variable ESTABLISHED_RABS;
  - delete all information about the radio access bearer from the variable ESTABLISHED_RABS.

For all remaining radio bearer(s):

- use the multiplexing option applicable for the transport channels used according to their IE "RB mapping info" or their previously stored multiplexing options;
- configure MAC multiplexing if that is needed in order to use said transport channel(s);
- use MAC logical channel priority when selecting TFC in MAC;
- suspend data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers.

If the IE "New C-RNTI" is included, the UE shall:

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

The UE should turn off the transmitter during the reconfiguration. The UE may first release the current physical channel configuration and shall then establish a new physical channel configuration according to 8.5.7 and the following.

If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor the IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.

- If the RADIO BEARER RELEASE message is used to initiate a state transition to the CELL_FACH state and if an IE primary CCPCH info and C-RNTI to a given cell is included, the UE shall elect the cell indicated by the PCCPCH info IE.

- Use the C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC. If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the RADIO BEARER RELEASE COMPLETE message has been confirmed by RLC the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers and the procedure ends.

If the RADIO BEARER RELEASE message is used to initiate a transition from CELL_DCH to CELL_FACH state, the RADIO BEARER RELEASE COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition.

8.2.3.4 Unsupported configuration in the UE

If UTRAN instructs the UE to use a configuration that it does not support, the UE shall Transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC and set the value of the IE "failure cause" to "configuration unacceptable".

When the transmission of the RADIO BEARER RELEASE FAILURE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG and the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers. The procedure ends.

8.2.3.5 Physical channel failure

If the UE failed to establish the physical channel(s) indicated in the RADIO BEARER RELEASE message the UE shall:

- Revert to the configuration prior to the reception of the RADIO BEARER RELEASE message (old configuration) and transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC

and set the value of the IE "failure cause" to "physical channel failure". When the transmission of the RADIO BEARER RELEASE FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers. The procedure ends and the UE resumes the normal operation as if no radio bearer release attempt had occurred.

A physical channel failure occurs in case the criteria as defined in 8.5.4 are not fulfilled . If the UE is unable to revert to the old configuration or if used, the activation time has expired, the UE shall:

- Initiate a RRC connection re-establishment procedure according to subclause 8.1.5.

8.2.3.6 Reception of the RADIO BEARER RELEASE COMPLETE message by the UTRAN

When UTRAN has received the RADIO BEARER RELEASE COMPLETE message, UTRAN may delete any old configuration, and the procedure ends on the UTRAN side.

If the IE "UL Timing Advance" is included, UTRAN shall evaluate the timing advance value that the UE has to use in the new cell after handover.

8.2.3.7 Reception of the RADIO BEARER RELEASE FAILURE message by the UTRAN

When UTRAN has received the RADIO BEARER RELEASE FAILURE message, UTRAN may restore the old and delete the new configuration and the procedure ends on the UTRAN side. Upper layers should be notified of the failure.

8.2.3.8 Physical channel failure during transition from CELL_DCH to CELL_FACH

During transition from CELL_DCH to CELL_FACH, the UTRAN may also receive a CELL UPDATE message if the UE cannot use the assigned physical channel.

If the UE fails to select the cell, which was assigned in the RADIO BEARER RELEASE message initiating transition from CELL_DCH to CELL_FACH, the UE shall perform cell reselection and initiate the cell update procedure.

8.2.3.8a Subsequently received RADIO BEARER RELEASE messages

If the variable ORDERED_CONFIG is set because of a RADIO BEARER RELEASE message previously received, the UE shall

- ignore the subsequently received RADIO BEARER RELEASE message
- keep the configuration as before the subsequent RADIO BEARER RELEASE message was received.

8.2.3.9 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set (because of any message other than RADIO BEARER RELEASE) upon the reception of the RADIO BEARER RELEASE message, the UE shall:

- keep the old configuration as before the RADIO BEARER RELEASE message was received;
- transmit ~~an RRC STATUS~~a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC. The UE shall set the IE "failure cause" to "incompatible simultaneous reconfiguration". ~~The IE "Protocol error cause" shall be set to "Message not compatible with receiver state".~~ When the transmission of RADIO BEARER RELEASE FAILURE ~~RRC STATUS~~ message has been confirmed by RLC the procedure ends ~~and the UE shall clear the variable ORDERED_CONFIG and resume normal operation as if no RADIO BEARER RELEASE message had been received~~.

8.2.3.10 Invalid RADIO BEARER RELEASE message

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

- Transmit a RADIO BEARER RELEASE FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error".

- Include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.

- When the transmission of the RADIO BEARER RELEASE FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid RADIO BEARER RELEASE message has not been received and the procedure ends.

8.2.4 Transport channel reconfiguration

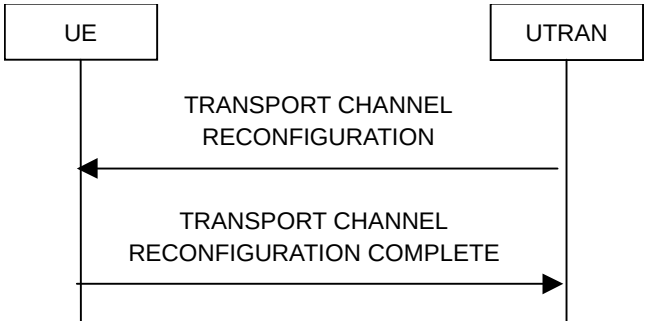

Figure 24: Transport channel reconfiguration, normal flow

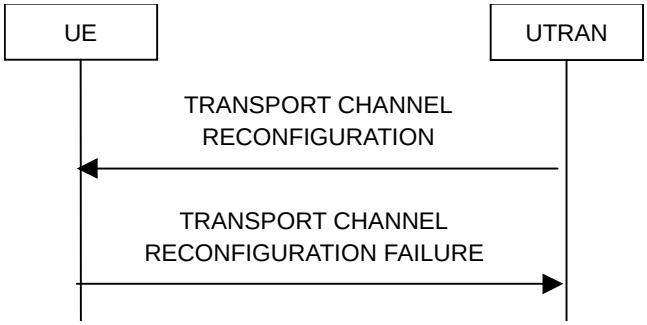

Figure 25: Transport channel reconfiguration, failure case

8.2.4.1 General

The transport channel reconfiguration procedure is used to reconfigure transport channel parameters. While doing so, the procedure may perform a hard handover, see 8.3.5.

8.2.4.2 Initiation

The UTRAN shall:

- Configure new radio links in any new physical channel configuration and start transmission and reception on the new radio links.

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

If transport channels are added, reconfigured or deleted in uplink and/or downlink, the UTRAN shall:

- Set TFCS according to the new transport channel(s).

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.

8.2.4.3 Reception of an TRANSPORT CHANNEL RECONFIGURATION message by the UE in CELL_DCH state

Upon reception of a TRANSPORT CHANNEL RECONFIGURATION message in CELL_DCH state, the UE shall perform the following actions.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

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

The UE shall be able to receive an TRANSPORT CHANNEL RECONFIGURATION message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency.

The UE should turn off the transmitter during the reconfiguration. The UE may first release the current physical channel configuration and shall then establish a new physical channel configuration according to 8.5.7 and the following.

The UE shall suspend data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers.

If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor the IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If the IE "TFS" is neither included nor previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.

If the TRANSPORT CHANNEL RECONFIGURATION message is used to initiate a state transition to the CELL_FACH state and if the IE "Primary CCPCH info" and IE "New C-RNTI" to a given cell is included, the UE shall

- Select the cell indicated by the IE "Primary CCPCH info".
- Use the C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

If the TRANSPORT CHANNEL RECONFIGURATION message is used to initiate a transition from CELL_DCH to CELL_FACH state, the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition. When the transmission of the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall clear the variable

ORDERED_CONFIG, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers and the procedure ends.

8.2.4.4 Reception of an TRANSPORT CHANNEL RECONFIGURATION message by the UE in CELL_FACH state

Upon reception of a TRANSPORT CHANNEL RECONFIGURATION message in CELL_FACH state, the UE shall perform the following.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

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

If the IE "New C-RNTI" is included, the UE shall:

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If neither the IE "PRACH info" nor IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted (there being only one link in the active set).

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If the IE "TFS" is neither included nor previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

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

When UTRAN has received the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message, UTRAN may delete any old configuration and the procedure ends on the UTRAN side.

If the IE "UL Timing Advance" is included, UTRAN shall evaluate the timing advance value that the UE has to use in the new cell after handover.

8.2.4.6 Unsupported configuration in the UE

If the UTRAN instructs the UE to use a configuration that it does not support, the UE shall:

- transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and set the cause value in IE "Failure Cause" to "configuration unacceptable".
- When the transmission of the TRANSPORT CHANNEL RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers and the procedure ends.

8.2.4.7 Physical channel failure

If the UE failed to establish the physical channel(s) indicated in the TRANSPORT CHANNEL RECONFIGURATION message the UE shall:

- Revert to the configuration prior to the reception of the TRANSPORT CHANNEL RECONFIGURATION message (old configuration) and transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and set the cause value in IE "Failure Cause" to "physical channel failure". When the transmission of the TRANSPORT CHANNEL RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers. The procedure ends and the UE resumes the normal operation as if no transport channel reconfiguration attempt had occurred.

A physical channel failure occurs in case the criteria as defined in 8.5.4 are not fulfilled. If the UE is unable to revert to the old configuration or if used, the activation time has expired, the UE shall:

- Initiate a RRC connection re-establishment procedure according to subclause 8.1.5.

8.2.4.8 Reception of the TRANSPORT CHANNEL RECONFIGURATION FAILURE message by the UTRAN

When UTRAN has received the TRANSPORT CHANNELRECONFIGURATION FAILURE message, UTRAN may restore the old and delete the new configuration and the procedure ends on the UTRAN side. Upper layers should be notified of the failure.

8.2.4.9 Non-receipt of TRANSPORT CHANNEL CONFIGURATION COMPLETE message and TRANSPORT CHANNEL RECONFIGURATION FAILURE message in CELL_DCH state

If UTRAN does not receive TRANSPORT CHANNEL RECONFIGURATION COMPLETE message or TRANSPORT CHANNEL RECONFIGURATION FAILURE it may delete the old and new configuration. If the UE requests a re-establishment of the RRC connection, before all UE dedicated resources have been cleared, the new configuration may be re-assigned in the re-establishment procedure.

During transition from CELL_DCH to CELL_FACH, the UTRAN may also receive a CELL UPDATE message if the UE cannot use the assigned physical channel.

8.2.4.10 Non-receipt of TRANSPORT CHANNEL CONFIGURATION COMPLETE message and TRANSPORT CHANNEL RECONFIGURATION FAILURE message in CELL_FACH state

If UTRAN does not receive TRANSPORT CHANNEL RECONFIGURATION COMPLETE message or TRANSPORT CHANNEL RECONFIGURATION FAILURE message it may delete the old and new configuration. If the UE makes a cell update before all UE dedicated resources have been cleared, the configuration procedure can be restarted.

8.2.4.11 Physical channel failure during transition from CELL_DCH to CELL_FACH

If the UE fails to select the cell, which was assigned in the TRANSPORT CHANNEL RECONFIGURATION message initiating transition from CELL_DCH to CELL_FACH, the UE shall perform cell and initiate the cell update procedure.

8.2.4.11a Subsequently received TRANSPORT CHANNEL RECONFIGURATION messages

If the variable ORDERED_CONFIG is set because of a TRANSPORT CHANNEL RECONFIGURATION message previously received, the UE shall

- ignore the subsequently received TRANSPORT CHANNEL RECONFIGURATION message
- keep the configuration as before the subsequent TRANSPORT CHANNEL RECONFIGURATION message was received.

8.2.4.12 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set (because of any message other than TRANSPORT CHANNEL RECONFIGURATION) upon the reception of the TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- keep the old configuration as before the TRANSPORT CHANNEL RECONFIGURATION message was received;
- transmit ~~an RRC STATUS~~ a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC. The UE shall set the IE "failure cause" to "incompatible simultaneous reconfiguration". ~~The IE "Protocol error cause" shall be set to "Message not compatible with receiver state".~~ When the transmission of TRANSPORT CHANNEL RECONFIGURATION FAILURE ~~RRC STATUS~~ message has been confirmed by RLC the procedure ends ~~and the UE shall clear the variable ORDERED_CONFIG and resume normal operation as if no TRANSPORT CHANNEL RECONFIGURATION message had been received~~.

8.2.4.13 Invalid TRANSPORT CHANNEL RECONFIGURATION message

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

- Transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error".
- Include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- When the transmission of the TRANSPORT CHANNEL RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid TRANSPORT CHANNEL RECONFIGURATION message has not been received and the procedure ends.

8.2.5 Transport format combination control

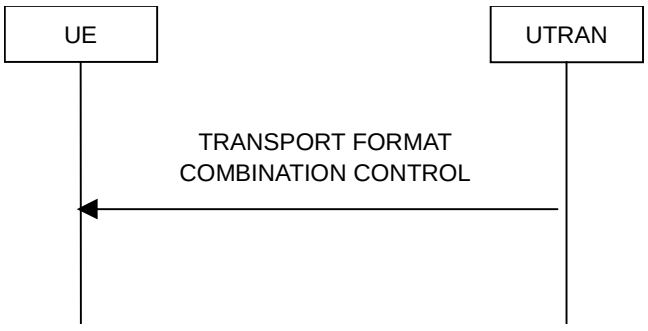

Figure 26: Transport format combination control, normal flow

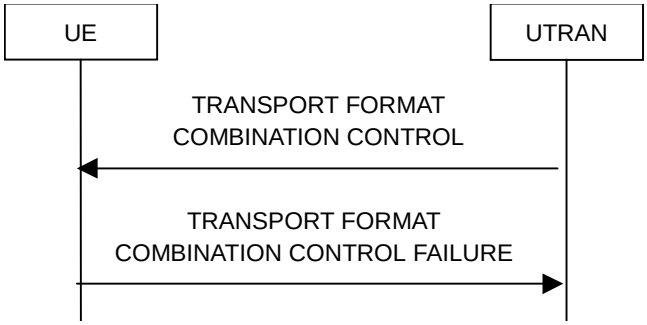

Figure f1: Transport format combination control, failure case

8.2.5.1 General

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

8.2.5.2 Initiation

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

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

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

To change the sub-set of allowed transport format combinations, the UTRAN shall set the allowed TFCs in the IE "TFC subset". The network can optionally specify the duration for which a new TFC sub-set applies. The network shall do this by using the IE "TFC Control duration".

To completely remove the previous restrictions of allowed transport format combinations, the UTRAN shall set the "full transport format combination" in the IE "TFC subset".

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

Upon reception of the TRANSPORT FORMAT COMBINATION CONTROL message, and if the variable ORDERED_CONFIG is not set the UE shall determine whether the IE "TFC Control duration" is included.

If the IE "TFC Control duration" is not included then the UE shall:

- Store the newly specified TFC (sub)set in the variable to be called 'default TFC (sub)set';
- Configure the allowed transport format combinations as defined in subclause 8.5.7.5.3.

If the IE "TFC Control duration" is included in the message then:

- The TFC set or TFC sub-set specified in the message shall be activated at frame *n* + *z* where *n* is the frame (with 10 ms resolution) at which the UE received the message and *z* is specified in TR 25.926 (UE radio access capabilities). The specified TFC set or sub-set shall then be applied for the number of (10 ms) frames specified in the IE "TFC Control duration".

If no further TFC Control messages are received during this interval then:

- At the end of the defined period the UE shall change the TFC (sub)set back to the 'default TFC (sub)set'.

If further TFC Control messages are received during the 'TFC Control duration' period then the UE shall re-configure itself in accordance with the TFC (sub)set defined in the most recently received message.

8.2.5.4 Incompatible simultaneous reconfiguration

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

- keep the TFC subset as before the TRANSPORT FORMAT COMBINATION CONTROL message was received;

- transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC. The UE shall set the IE "failure cause" to "incompatible simultaneous reconfiguration". When the transmission of TRANSPORT FORMAT COMBINATION CONTROL FAILURE message has been confirmed by RLC the procedure ends.

8.2.5.5 Invalid TRANSPORT FORMAT COMBINATION CONTROL message

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

- Transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the uplink DCCH using AM RLC and set the IE "failure cause" the cause value "protocol error".

- Include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.

- When the transmission of the TRANSPORT FORMAT COMBINATION CONTROL FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid TRANSPORT FORMAT COMBINATION CONTROL message has not been received and the procedure ends.

8.2.6 Physical channel reconfiguration

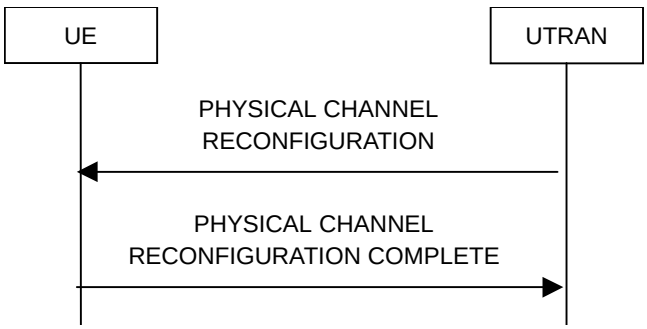

Figure 27: Physical channel reconfiguration, normal flow

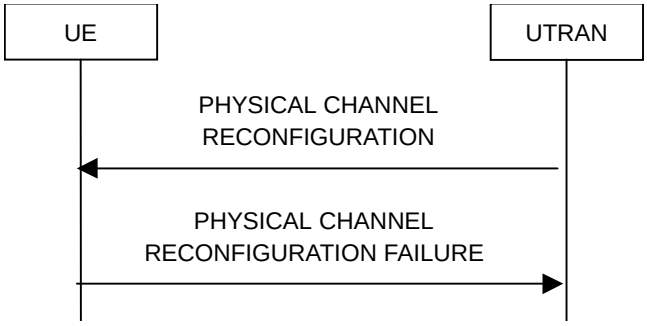

Figure 28: Physical channel reconfiguration, failure case

8.2.6.1 General

The physical channel reconfiguration procedure is used to establish, reconfigure and release physical channels. While doing so, the procedure may perform a hard handover, see 8.3.5.

8.2.6.2 Initiation

To initiate the procedure, the UTRAN should:

- Configure new radio links in any new physical channel configuration and start transmission and reception on the new radio links.
- transmit a PHYSICAL CHANNEL RECONFIGURATION message on the downlink DCCH using AM or UM RLC.

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

If the message is used to initiate a transition from CELL_DCH to CELL_FACH state, the UTRAN may assign a common channel configuration of a given cell and C-RNTI to be used in that cell to the UE.

8.2.6.3 Reception of a PHYSICAL CHANNEL RECONFIGURATION message by the UE in CELL_DCH state

Upon reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall perform the following actions.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

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

The UE shall be able to receive an PHYSICAL CHANNEL RECONFIGURATION message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency.

The UE shall suspend data transmission on RB 2 and upward, if RLC-AM or RLC-UM is used on those radio bearers.

If the IE "New C-RNTI" is included, the UE shall:

- Use that C-RNTI when using common physical channels of type RACH, FACH and CPCH in the current cell.

The UE should turn off the transmitter during the reconfiguration. The UE may first release the current physical channel configuration and shall then establish a new physical channel configuration according to 8.5.7 and the following.

If neither the IE "PRACH info" nor IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the physical channel(s) applicable for the physical channel types that is used. If IE "TFS" is neither included nor previously stored in the UE for that physical channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.

If the PHYSICAL CHANNEL RECONFIGURATION message is used to initiate a state transition to the CELL_FACH state and if an IE "Primary CCPCH info" and IE "New C-RNTI" to a given cell is included, the UE shall:

- Select the cell indicated by the IE "Primary CCPCH info".
- Use the C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers and the procedure ends.

If the PHYSICAL CHANNEL RECONFIGURATION message is used to initiate a transition from CELL_DCH to CELL_FACH state, the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition. The UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

8.2.6.4 Reception of PHYSICAL CHANNEL RECONFIGURATION by the UE in CELL_FACH state

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

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

If the IE "New C-RNTI" is included, the UE shall:

- Use that C-RNTI when using common physical channels of type RACH, FACH and CPCH in the current cell.

If neither the IE "PRACH info" nor IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted (there being only one link in the active set).

The UE shall use the physical channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that physical channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.

The UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall enter a state according to subclause 8.5.8 applied on the PHYSICAL CHANNEL RECONFIGURATION message. If the UE ends up in the CELL_PCH or URA_PCH state, it shall delete its C-RNTI. The UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

8.2.6.5 Reception of a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message by the UTRAN

When UTRAN has received the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message, UTRAN may delete any old configuration and the procedure ends on the UTRAN side.

UTRAN may delete the C-RNTI of the UE if the procedure caused the UE to leave the CELL_FACH state.

If the IE "UL Timing Advance" is included, UTRAN shall evaluate the timing advance value that the UE has to use in the new cell after handover.

8.2.6.6 Unsupported configuration in the UE

If the UE instructs the UE to use a configuration that it does not support, the UE shall

- transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and shall set the cause value in IE "failure cause" to "configuration unacceptable".

When the transmission of the PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG and the procedure ends.

8.2.6.7 Physical channel failure

If the UE failed to establish the physical channel(s) indicated in the PHYSICAL CHANNEL RECONFIGURATION message the UE shall:

- Revert to the configuration prior to the reception of the PHYSICAL CHANNEL RECONFIGURATION message (old configuration) and transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and shall set the cause value in IE "failure cause" to "physical channel failure". The procedure ends and the UE resumes the normal operation as if no physical channel reconfiguration attempt had occurred.

A physical channel failure occurs in case the criteria as defined in 8.5.4 are not fulfilled . If the UE is unable to revert to the old configuration or if used, the activation time has expired, the UE shall:

- Initiate a RRC connection re-establishment procedure according to subclause 8.1.5

8.2.6.8 Reception of the PHYSICAL CHANNEL RECONFIGURATION FAILURE message by the UTRAN

When UTRAN has received the PHYSICAL CHANNEL RECONFIGURATION FAILURE message, UTRAN may delete the new configuration and the procedure ends on the UTRAN side. Upper layers should be notified of the failure.

8.2.6.9 Non-receipt of PHYSICAL CHANNEL RECONFIGURATION COMPLETE message or PHYSICL CHANNEL RECONFIGURATION FAILURE message in CELL_DCH state

If no PHYSICAL CHANNEL RECONFIGURATION COMPLETE message or PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been received, the UTRAN may delete the old and new configuration. If the UE requests a re-establishment of the RRC connection, before all UE dedicated resources have been cleared, the new configuration may be re-assigned in the re-establishment procedure.

During transition from CELL_DCH to CELL_FACH, the UTRAN may also receive a CELL UPDATE message if the UE cannot use the assigned physical channel.

8.2.6.10 Non-receipt of PHYSICAL CHANNEL RECONFIGURATION COMPLETE message or PHYSICL CHANNEL RECONFIGURATION FAILURE message in CELL_FACH state

If no PHYSICAL CHANNEL RECONFIGURATION COMPLETE message or PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been received, the UTRAN may delete the old and new configuration. If the UE makes a cell update before all UE dedicated resources have been cleared, the configuration procedure can be restarted.

8.2.6.11 Physical channel failure during transition from CELL_DCH to CELL_FACH

If the UE fails to select the cell, which was assigned in the PHYSICAL CHANNEL RECONFIGURATION message initiating transition from CELL_DCH to CELL_FACH, the UE shall perform cell and initiate the cell update procedure.

8.2.6.11a Subsequently received PHYSICAL CHANNEL RECONFIGURATION messages

If the variable ORDERED_CONFIG is set because of a PHYSICAL CHANNEL RECONFIGURATION message previously received, the UE shall

- ignore the subsequently received PHYSICAL CHANNEL RECONFIGURATION message
- keep the configuration as before the subsequent PHYSICAL CHANNEL RECONFIGURATION message was received.

8.2.6.12 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set (because of any message other than PHYSICAL CHANNEL RECONFIGURATION) upon the reception of the PHYSICAL CHANNEL RECONFIGURATION message, the UE shall

- keep the old configuration as before the PHYSICAL CHANNEL RECONFIGURATION message was received
- transmit ~~an RRC STATUS~~a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC. The UE shall set the IE "failure cause" to "incompatible simultaneous reconfiguration". ~~The IE "Protocol error cause" shall be set to "Message not compatible with receiver state".~~ When the transmission of PHYSICAL CHANNEL RECONFIGURATION FAILURE ~~RRC STATUS~~ message has been confirmed by RLC the procedure ends ~~and the UE shall clear the variable ORDERED_CONFIG and resume normal operation as if no PHYSICAL CHANNEL RECONFIGURATION message had been received~~.

8.2.6.13 Invalid PHYSICAL CHANNEL RECONFIGURATION message

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

- Transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error".
- Include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- When the transmission of the PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid PHYSICAL CHANNEL RECONFIGURATION message has not been received and the procedure ends.

[…]

8.3.3 RNTI reallocation

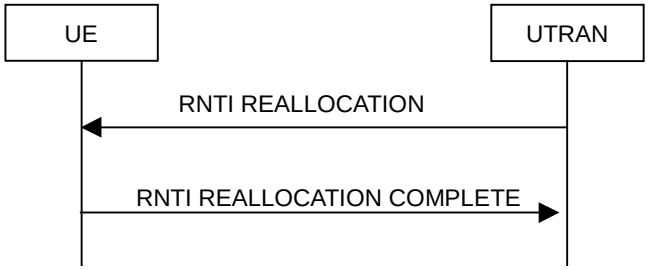

Figure 38: RNTI reallocation procedure, normal flow

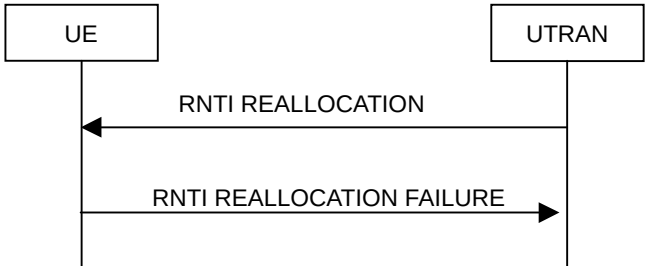

Figure f7: RNTI reallocation procedure, failure case

8.3.3.1 General

The purpose of this procedure is to allocate a new C-RNTI and/or U-RNTI to an UE in connected mode.

8.3.3.2 Initiation

To initiate the procedure UTRAN transmits an RNTI REALLOCATION message to the UE on the downlink DCCH.

8.3.3.3 Reception of RNTI REALLOCATION message by the UE

When the UE receives an RNTI REALLOCATION message, it shall take the following actions and then transmit an RNTI REALLOCATION COMPLETE message on the uplink DCCH. The procedure ends when the transmission of the RNTI REALLOCATION COMPLETE message has been confirmed by RLC.

If the IE "new U-RNTI" is present, the UE shall store and start to use the values of these IEs as the current U-RNTI.

If the IE "new C-RNTI" is present, the UE shall store and start to use the value of this IE.

If the IE "CN domain identity" and the IE "NAS system information" are included, the UE shall forward the content of the IE to the non-access stratum entity of the UE indicated by the IE "CN domain identity".

8.3.3.4 Reception of an RNTI REALLOCATION COMPLETE message by the UTRAN

When the network receives RNTI REALLOCATION COMPLETE message, UTRAN may delete any old C-RNTI and old U-RNTI. The procedure ends.

8.3.3.5 Invalid RNTI REALLOCATION message

If the RNTI REALLOCATION message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- transmit a RNTI REALLOCATION FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- When the transmission of the RNTI REALLOCATION FAILURE message has been confirmed by RLC, the UE shall resume normal operation as if the invalid RNTI REALLOCATION message has not been received and the procedure ends.

8.3.4 Active set update in soft handover

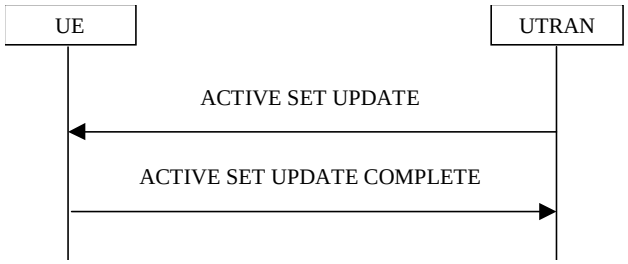

Figure 39: Active Set Update procedure, successful case

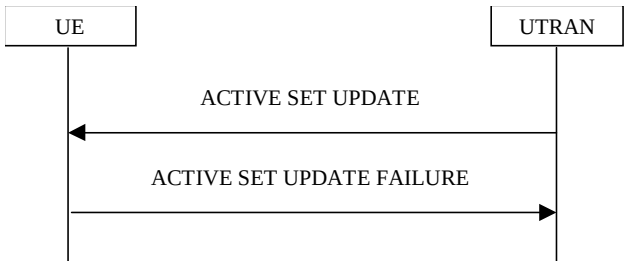

Figure 40: Active Set Update procedure, failure case

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 allocating the new RLs. Also the UE should keep on using the transmitter during the reallocation process.

8.3.4.2 Initiation

The procedure is initiated when UTRAN orders a UE in CELL_DCH state, to make the following modifications of the active set of the connection:

a) Radio link addition;

b) Radio link removal;

c) Combined radio link addition and removal.

In case a) and c), UTRAN should:

- prepare new additional radio link(s) in the UTRAN prior to the command to the UE.

In all cases, UTRAN should:

- send an ACTIVE SET UPDATE message on downlink DCCH using AM or UM RLC.

UTRAN should include the following information:

- IE "Radio Link Addition Information": Downlink DPCH information and other optional parameters relevant for the additional radio links with Primary CCPCH info used for the reference ID to indicate which radio link to add. This IE is need in case a) and c);

- IE "Radio Link Removal Information": Primary CCPCH info used for the reference ID to indicate which radio link to remove. This IE is need in case b) and c).

If SRNC relocation is performed simultaneously during active set update procedure when all radio links are replaced simultaneously, the UTRAN shall include the IE "U-RNTI" and IE "CN domain identity" and IE "NAS system information" in the ACTIVE SET UPDATE messages.

8.3.4.3 Reception of an ACTIVE SET UPDATE message by the UE

- Upon reception of an ACTIVE SET UPDATE message the UE shall s tore the received IE "Radio Link Addition Information" and the IE "Radio Link Removal Information" to the variable ORDERED_ASU.

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

The UE shall:

- at first, add the RLs indicated in the IE "Radio Link Addition Information";

- remove the RLs indicated in the IE "Radio Link Removal Information" . If the UE active set is full or becomes full, an RL, which is indicated to remove, shall be removed before adding RL, which is indicated to add;

- if the ACTIVE SET UPDATE message includes the IE "U-RNTI", update its identity;

- if the ACTIVE SET UPDATE message includes the IE "CN domain identity" and the IE "NAS system information", the UE shall forward the content of the IE to the non-access stratum entity of the UE indicated by the IE "CN domain identity";

- if the ACTIVE SET UPDATE message includes the IE 'TFCI combining indicator' associated with a radio link to be added then the UE should configure Layer 1 to soft combine TFCI (field 2) of this new link with those links already in the TFCI (field 2) combining set;

- transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC;

- if the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable;

- when the transmission of the ACTIVE SET UPDATE COMPLETE message has been confirmed by RLC the contents of the variable ORDERED_ASU shall be cleared, the UE shall clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends on the UE side.

8.3.4.4 Abnormal case: Unsupported configuration in the UE

- If UTRAN instructs the UE to use a configuration that it does not support; or

- If a radio link in the IE "Radio Link Removal Information" in the ACTIVE SET UPDATE message is not part of the active set,

the UE shall:

- keep the active set and the contents of the variable ORDERED_ASU, as it was before the ACTIVE SET UPDATE message was received;
- transmit an ACTIVE SET UPDATE FAILURE message on the DCCH using AM RLC;
- set the IE "failure cause" to "configuration unacceptable";
- when the transmission of the ACTIVE SET UPDATE FAILURE message has been confirmed by RLC the procedure ends on the UE side.

8.3.4.5 Reception of the ACTIVE SET UPDATE COMPLETE message by the UTRAN

When the UTRAN has received the ACTIVE SET UPDATE COMPLETE message,

- the UTRAN may remove radio link(s) that are indicated to remove to the UE in case b) and c); and
- the procedure ends on the UTRAN side.

8.3.4.6 Reception of the ACTIVE SET UPDATE FAILURE message by the UTRAN

When the UTRAN has received the ACTIVE SET UPDATE FAILURE message, the UTRAN may delete radio links that are indicated to add to the UE. The procedure ends on the UTRAN side.

8.3.4.6a Subsequently received ACTIVE SET UPDATE messages

If the variable ORDERED_CONFIG is set because of a ACTIVE SET UPDATE message previously received, the UE shall

- ignore the subsequently received ACTIVE SET UPDATE message
- keep the configuration as before the subsequent ACTIVE SET UPDATE message was received.

8.3.4.7 Incompatible simultaneous reconfiguration

If any of the variables ORDERED_CONFIG or ORDERED_ASU are set because of any message other than ACTIVE SET UPDATE, the UE shall:

- Transmit an ACTIVE SET UPDATE FAILURE ~~an RRC STATUS~~ message on the DCCH using AM RLC. The UE shall set the IE "failure cause" to "incompatible simultaneous reconfiguration". ~~The IE "Protocol error cause" shall be set to "Message not compatible with receiver state"~~.
- When the transmission of the ACTIVE SET UPDATE FAILURE ~~RRC STATUS~~ message has been confirmed by RLC the procedure ends and the UE shall keep the active set and the contents of the variable ORDERED_ASU, as it was before the ACTIVE SET UPDATE message was received.

8.3.4.8 Invalid ACTIVE SET UPDATE message

If none of the variables ORDERED_CONFIG or ORDERED_ASU are set and the ACTIVE SET UPDATE message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- Transmit a ACTIVE SET UPDATE FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error".
- Include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- When the transmission of the ACTIVE SET UPDATE FAILURE message has been confirmed by RLC, the UE shall resume normal operation as if the invalid ACTIVE SET UPDATE message has not been received and the procedure ends.

3GPP TSG-RAN WG2 Meeting #13
Oahu, Hawaii, U.S.A.; May 22-26, 2000

***Document* R2-001066**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.331	CR	380	Current Version:	3.2.0

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

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

for approval [X] for information [ ]

strategic [ ] non-strategic [ ] *(for SMG use only)*

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

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

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

Subject: Corrections on use of ORDERED_CONFIG

Work item:

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

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

Reason for change:

The following item is proposed to be corrected:

- The variable ORDERED_CONFIG is more comprehensive than just “physical channel configuration and activation time”. Clauses 8.1.2.3, 8.2.2.3, 8.2.2.4, 8.2.3.3, 8.2.4.3, 8.2.4.4, 8.2.6.3, 8.2.6.4 have been accordingly corrected.

Clauses affected: 8.1.2.3, 8.2.2.3, 8.2.2.4, 8.2.3.3, 8.2.4.3, 8.2.4.4, 8.2.6.3, 8.2.6.4

Other specs affected:

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

Other comments:


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

8.2.1.3 Reception of a RADIO BEARER SETUP message by the UE

Upon reception of a RADIO BEARER SETUP message the UE shall perform actions as specified below and transmit a RADIO BEARER SETUP COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the RADIO BEARER SETUP COMPLETE message has been confirmed by RLC the UE shall resume data transmission on RB 2 and upwards if RLC-AM or RLC-UM is used on those radio bearers, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

The UE shall store the received ~~physical channel configuration and the activation time~~ UE Information Elements, RB Information Elements, TrCH Information Elements and PhyCH information elements in the variable ORDERED_CONFIG.

[…]

8.2.2.3 Reception of RADIO BEARER RECONFIGURATION by the UE in CELL_DCH state

Upon reception of a RADIO BEARER RECONFIGURATION message in CELL_DCH state, the UE shall perform actions specified below.

The UE shall be able to receive an RADIO BEARER RECONFIGURATION message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency.

The UE shall store the received UE Information Elements, RB Information Elements, TrCH Information Elements and PhyCH information elements ~~physical channel configuration and the activation time~~ in the variable ORDERED_CONFIG.

[…]

8.2.2.4 Reception of an RADIO BEARER RECONFIGURATION message by the UE in CELL_FACH state

Upon reception of a RADIO BEARER RECONFIGURATION message in CELL_FACH state, the UE shall perform actions specified below.

The UE shall store the received UE Information Elements, RB Information Elements, TrCH Information Elements and PhyCH information elements ~~physical channel configuration and the activation time~~ in the variable ORDERED_CONFIG.

[…]

8.2.3.3 Reception of RADIO BEARER RELEASE by the UE

Upon reception of a RADIO BEARER RELEASE message the UE shall perform the following.

The UE shall store the received UE Information Elements, RB Information Elements, TrCH Information Elements and PhyCH information elements ~~physical channel configuration and the activation time~~ in the variable ORDERED_CONFIG.

[…]

8.2.4.3 Reception of an TRANSPORT CHANNEL RECONFIGURATION message by the UE in CELL_DCH state

Upon reception of a TRANSPORT CHANNEL RECONFIGURATION message in CELL_DCH state, the UE shall perform the following actions.

The UE shall store the received UE Information Elements, RB Information Elements, TrCH Information Elements and PhyCH information elements ~~physical channel configuration and the activation time~~ in the variable ORDERED_CONFIG.

[…]

8.2.4.4 Reception of an TRANSPORT CHANNEL RECONFIGURATION message by the UE in CELL_FACH state

Upon reception of a TRANSPORT CHANNEL RECONFIGURATION message in CELL_FACH state, the UE shall perform the following.

The UE shall store the received UE Information Elements, RB Information Elements, TrCH Information Elements and PhyCH information elements ~~physical channel configuration and the activation time~~ in the variable ORDERED_CONFIG.

[…]

8.2.6.3 Reception of a PHYSICAL CHANNEL RECONFIGURATION message by the UE in CELL_DCH state

Upon reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall perform the following actions.

The UE shall store the received UE Information Elements, RB Information Elements, TrCH Information Elements and PhyCH information elements ~~physical channel configuration and the activation time~~ in the variable ORDERED_CONFIG.

[…]

8.2.6.4 Reception of PHYSICAL CHANNEL RECONFIGURATION by the UE in CELL_FACH state

The UE shall store the received UE Information Elements, RB Information Elements, TrCH Information Elements and PhyCH information elements ~~physical channel configuration and the activation time~~ in the variable ORDERED_CONFIG.

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Oahu, Hawaii, U.S.A.; May 22-26, 2000

***Document* R2-001180**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

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25.331	CR	382r1	Current Version:	3.2.0

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

For submission to: TSG-RAN #8 *list expected approval meeting # here ↑*
for approval [X] for information [ ]
strategic [ ] non-strategic [ ] *(for SMG use only)*

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

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

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

Subject: Corrections to Transport Channel and RB Reconfiguration procedures

Work item:

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

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

Release:

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

Reason for change:

The following item is proposed to be corrected:

- In the RB Reconfiguration ~~Transport Channel~~ Reconfiguration procedures (8.2.~~4~~2.2) it has been added the requirement for UTRAN to send RB Mapping Info for the added or deleted transport channels. This is to avoid "floating" logical / transport / physical channels. ~~Similarly for the RB Reconfiguration procedures (8.2.2.2).~~

Clauses affected: 8.2.2.2~~, 8.2.4.2~~

Other specs affected:

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

Other comments:

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8.2.2 Radio bearer reconfiguration

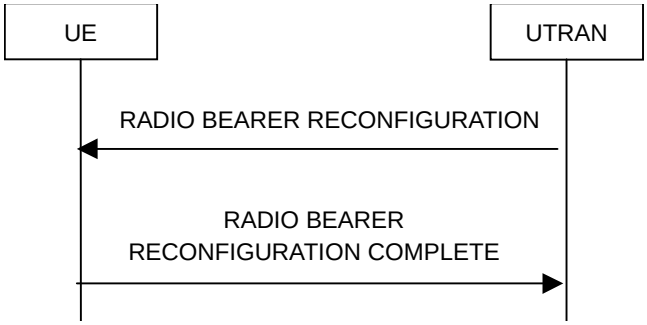

Figure 20: Radio bearer reconfiguration, normal flow

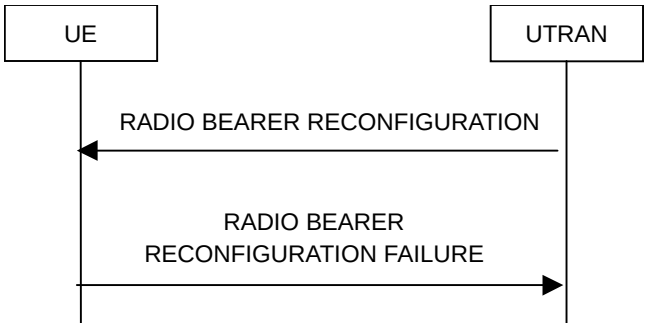

Figure 21: Radio bearer reconfiguration, failure case

8.2.2.1 General

The radio bearer reconfiguration procedure is used to reconfigure parameters for a radio bearer or the signalling link to reflect a change in QoS. While doing so, the procedure may perform a hard handover, see 8.3.5.

8.2.2.2 Initiation

The UTRAN initiates the procedure by:

- configuring new radio links in any new physical channel configuration and start transmission and reception on the new radio links;
- Transmitting a RADIO BEARER RECONFIGURATION message on the downlink DCCH using AM or UM RLC.

If transport channels are added, reconfigured or deleted in uplink and/or downlink, the UTRAN ~~shall~~should:

- Set TFCS according to the new transport channel(s).

If transport channels are added or deleted in uplink and/or downlink, the UTRAN should:

- Send the RB Mapping Info for the new configuration

UTRAN should indicate that uplink transmission shall be suspended on certain bearers. Uplink transmission on a radio bearer used by the RRC signalling should not be suspended.

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

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

If the message is used to initiate a transition from CELL_DCH to CELL_FACH state, the UTRAN may assign a common channel configuration of a given cell and C-RNTI to be used in that cell to the UE.

[…]

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***Document* R2-001181**
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25.331	CR	383r1	Current Version:	3.2.0

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

For submission to: TSG-RAN #8 *list expected approval meeting # here ↑*
for approval [X] for information [ ]
strategic [ ] non-strategic [ ] *(for SMG use only)*

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

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

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

Subject: Corrections to INITIAL DIRECT TRANSFER and UE CAPABILITY INFORMATION CONFIRM procedures

Work item:

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

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

Reason for change:

The following items are proposed to be corrected:

1. INITIAL DIRECT TRANSFER should be sent on RB 2~~ or 3~~. Clause 10.2 has been corrected
2. UE CAPABILITY INFORMATION CONFIRM can also be sent on AM RLC-SAP according to clause 8.1.6.3. Clause 10.2.58 has been corrected.

Clauses affected: 10.2, 10.2.58

Other specs affected:

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

Other comments:

help.doc

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

8.1.6.3 Reception of an UE CAPABILITY INFORMATION message by the UTRAN

Upon reception of a UE CAPABILITY INFORMATION message, the UTRAN should transmit a UE CAPABILITY INFORMATION CONFIRM message on the downlink DCCH using UM or AM RLC. After the UE CAPABILITY INFORMATION CONFIRM message has been sent, the procedure is complete.

[…]

10.2 Radio Resource Control messages

In connected mode, RB 0,1,2 and optionally 3 are available for usage by RRC messages using RLC-UM and RLC-AM on the DCCH. The UE and UTRAN shall select radio bearer for RRC messages using RLC-UM or RLC-AM on the DCCH, according to the following:

- RB 0 shall be used for all messages sent on the DCCH, when using RLC unacknowledged mode (RLC-UM).
- RB 1 shall be used for all messages sent on the DCCH, when using RLC acknowledged mode (RLC-AM), except for the INITIAL DIRECT TRANSFER, DOWNLINK DIRECT TRANSFER and UPLINK DIRECT TRANSFER messages.
- RB 2 or 3 shall be used by the INITIAL DIRECT TRANSFER (RB 2), DOWNLINK DIRECT TRANSFER and UPLINK DIRECT TRANSFER messages sent on the DCCH in RLC acknowledged mode (RLC-AM), as specified in subclauses 8.1.8, 8.1.9 and 8.1.10.

For RRC messages on the DCCH using RLC transparent mode (RLC-TM), the transparent signalling DCCH shall be used.

[…]

10.2.58 UE CAPABILITY INFORMATION CONFIRM

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

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	Integrity check info is included if integrity protection is applied

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***Document* R2-001070**
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25.331	CR	384	Current Version:	3.2.0

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

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

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

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

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

Subject: Corrections to "Transparent mode signalling info" Tabular format and ASN.1

Work item:

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

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

Release:

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

Reason for change:

The following items are proposed to be corrected:

1. "Transport Channel Identity" should be removed from "Transparent mode signalling info" IE since it is already included in all the cases where "Transparent mode signalling info" is included (10.3.5.1 Added or Reconfigured DL TrCH information, 10.3.5.12 Predefined TrCH configuration). Clause 10.3.5.15 has been accordingly corrected.

2. "Message Type" in "Transparent mode signalling info" should be renamed "Type of Message" to avoid ambiguities. Moreover "Type of Message" should apply also to Mode 2 and therefore it should be moved up, before CHOICE. Finally, in order to extend it to future messages, at least 1 spare value is needed with criticality reject. Clause 10.3.5.15 and 11.3.5 have been accordingly corrected.

Clauses affected: 10.3.5.15, 11.3.5

Other specs affected:

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

Other comments:


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10.3.5.1 Added or Reconfigured DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport channel identity	MP		Transport channel identity 10.3.5.16	
TFS	MP		Transport Format Set 10.3.5.20	
CHOICE mode	OP			
>TDD				
>> DL DCH TFCS Identity	OP		Transport Format Combination Set Identity 10.3.5.18	
>FDD				(no data)
DCH quality target	OP		Quality target 10.3.5.13	
Transparent mode signalling info	OP		Transparent mode signalling info 10.3.5.15	This IE is not used in RB RELEASE message nor RB RECONFIGURATION message

[…]

10.3.5.12 Predefined TrCH configuration

This information element concerns a pre- defined configuration of transport channel parameters.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UL Transport channel information common for all transport channels				
Uplink TFCS	OP		Transport formation combination set 10.3.5.17	
CHOICE mode	MP			
>TDD				
>>Uplink TFCS Identity	OP		Transport format combination set identity 10.3.5.18	
Added or Reconfigured TrCH information				
Added or Reconfigured UL TrCH information	OP	1 to <MaxTrCH>		
>Transport channel identity	MP		Transport channel identity 10.3.5.16	
>TFS	MP		Transport format set 10.3.5.20	
DL Transport channel information common for all transport channels				
Downlink TFCS	OP		Transport format combination set 10.3.5.17	
CHOICE mode	MP			
>TDD				
>>Downlink TFCS Identity	OP		Transport format combination set identity 10.3.5.18	
Downlink transport channels				
TrCH information	OP	1 to <MaxTrCH>		
>Transport channel identity	MP		Transport channel identity 10.3.5.16	
>TFS	MP		Transport format set 10.3.5.20	
>Quality target			Quality target 10.3.5.13	
>Transparent mode signalling info			Transparent mode signalling info 10.3.5.15	

Multi Bound	Explanation
MaxTrCH	Maximum number of transport channels

[…]

10.3.5.15 Transparent mode signalling info

This information element points out a transport channel that is used for transparent mode signalling, and which type of message that is sent on the DCCH mapped on that channel.

There are two modes of this transparent mode signaling. Mode 1 controls all transport channels for one UE. Mode 2 only control a subset of the transport channels for one UE.

Information Element	Need	Multi	Type and reference	Semantics description
~~Transport channel identity~~	~~MP~~		~~Transport channel identity 10.3.5.16~~	~~Transport channel used for transparent mode signalling DCCH~~
Type of message	MP		Enumerated (TRANSPORT FORMAT COMBINATION CONTROL)	Indicates which type of message sent on the transparent mode signalling DCCH At least 1 spare value needed Criticality: criticality reject is needed
CHOICE *Transparent signalling mode*	MP			
>Mode 1				(no data)
~~>>Message type~~	~~MP~~		~~Enumerated (TRANSPORT FORMAT COMBINATION CONTROL)~~	~~Indicates which type of message sent on the transparent mode signalling DCCH~~
>Mode 2				
>>Controlled transport channels list	MP	1 to <MaxTrChCount>		The transport channels that are effected by the rate control commands sent on this transparent mode DCCH
>>>Controlled transport channels	MP		Transport channel identity, 10.3.5.16	

[…]

11.3.5 Transport channel information elements

[…]

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

-- **TODO**, extensibility?
typeOfMessageMessType ::=                    ENUMERATED {
                                        transportFormatCombinationControl, spare1 }

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

[…]

```
TimeDurationBeforeRetry ::=         INTEGER (1..256)

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

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

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25.331	CR	385	Current Version:	3.2.0

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

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

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strategic [ ] non-strategic [ ] *(for SMG use only)*

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

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

Source: TSG-RAN WG2 **Date:** May 23, 2000

Subject: Corrections to Soft Handover messages and procedures

Work item:

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

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

Reason for change:

When soft handover is used ~~in asynchronous mode of operation~~, the UE can not always solve the ambiguity in the combination of DPCHs coming from different Node Bs.

It is here proposed to include the offset between the beginning of the P-CCPCH ~~CPICH~~ frame and the beginning of the DPCH frame (called $\tau_{DPCH,n}$ in TS 25.211) in the "Downlink DPCH info for each RL" IE.

Clauses affected: 8.5.7.6.13, 10.3.6.15, 11.3.6

Other specs affected:

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

Other comments:


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8.5.7.6.12 Primary CPICH usage for channel estimation

If the IE "Primary CPICH usage for channel estimation" is included and has the value "Primary CPICH may be used" the UE:

- may use the Primary CPICH for channel estimation;
- may use the pilot bits on DPCCH for channel estimation.

If the IE "Primary CPICH usage for channel estimation" is included and has the value "Primary CPICH shall not be used" the UE:

- shall not use the Primary CPICH for channel estimation;
- may use the pilot bits on DPCCH for channel estimation.

8.5.7.6.13 DPCH frame offset

If the IE “DPCH frame offset” is included the UE shall:

- use its value to determine the beginning of the DPCH frame

[…]

10.3.6.15 Downlink DPCH info for each RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.45	
>>DPCH frame offset	MP		Integer(0..38144 by step of 256)	Offset (in number of chips) between the beginning of the P-CCPCH frame and the beginning of the DPCH frame This is called $\tau_{DPCH,n}$ in TS 25.211
>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.54	
>>DL channelisation code	MP	1 to <maxChancount>		SF of the channelisation code of the data part for each DPCH
>>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.55	Default is the same scrambling code as for the Primary CPICH
>>>Code number	MP		Integer(0..maxCodeNum)	
>>TPC combination index	MP		TPC combination index 10.3.6.62	
>>SSDT Cell Identity	OP		SSDT Cell Identity 10.3.6.56	
>>Closed loop timing adjustment mode	CH TxDiversity Mode		Enumerated(1 slot, 2 slot)	It is present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2".
>TDD				
>>DL CCTrCh List	CV HO list length	1..<maxCCTrCHcount>		
>>>TFCS Identity	CV HO Needed			Identity of this CCTrCh.
>>>Individual Timeslot info list		1 to < max Timeslot count>		The first instance of the parameter Individual Timeslot Info corresponds to the timeslot that shall be used first by the physical layer, the second to the timeslot that shall be used second and so on.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>>>Individual timeslot info	MP		Individual timeslot info 10.3.6.25	
>>>>Channelisation code list	MP	1 to <max Codes Count>		The first instance of the parameter Channelisation code corresponds to the first DPCH in that timeslot that shall be used first by the physical layer, the second to the DPCH in that timeslot that shall be used second and so on.
>>>>>Channelisation code	MP		Enumerated ((16/1)...(16/16))	

Condition	Explanation
HO list length	MaxCCTRCHcount is 8 in case of handover, otherwise it is equal to one.
HO presence	The element is only present in case of handover

Multi Bound	Explanation
MaxChancount	Maximum number of channelisation codes used for DL DPCH
MaxCodeNum	Maximum number of codes for one spreading factor (SF) is equal to SF-1.
MaxTimeslotcount	Maximum number of timeslots used for DPCHs = 14
MaxCodesCount	Maximum number of codes for one timeslots = 16
MaxMidambleShift	Maximum number of Midamble Shifts = 16

[…]

[Changes to section 11.3.6]

```
DL-DPCH-InfoPerRL ::=               CHOICE {
    fdd                                 SEQUENCE {
        pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst       OPTIONAL,
        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-CCTrChList                       DL-CCTrChList
    }
}


[...]


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

DPCH-FrameOffset::=                 INTEGER (0..149)

DPDCH-ChannelisationCode ::=        ENUMERATED {
                                        e4, e8, e16, e32,
                                    e64, e128, e2
```

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25.331	CR	387	Current Version:	3.2.0

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

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

for approval [X] for information [ ]

strategic [ ] non-strategic [ ] *(for SMG use only)*

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

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

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

Subject: Correction to "RRC CONNECTION REJECT" procedures

Work item:

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

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

Release:

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

Reason for change:

The following item is proposed to be corrected:

- Currently the procedures for the reception of RRC CONNECTION REJECT message by the UE do not specify any action for the case in which "wait time" <> '0', "inter-system info" is present and V300 is greater than N300. Clause 8.1.3.7 is here corrected using the same sentence for the case in which "wait time" <> '0', "frequency info" is present and V300 is greater than N300. Note that "frequency info" and "inter-system info" can not be present at the same time.

Clauses affected: 8.1.3.7

Other specs affected:

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

Other comments:

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8.1.3.7 Reception of an RRC CONNECTION REJECT message by the UE

When the UE receives an RRC CONNECTION REJECT message on the downlink CCCH, it shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION REJECT message with the value of the IE "Initial UE identity" in the last RRC CONNECTION REQUEST message sent by the UE:

- if the values are different, the UE shall ignore the rest of the message;
- if the values are identical, the UE shall stop timer T300 and perform the following actions:

If the IE "wait time" <> '0', and

If the IE "frequency info" is present and:

- if V300 is equal to or smaller than N300, the UE shall initiate cell selection on the designated UTRA carrier. After having selected and camped on a cell, the UE shall re-initiate the RRC connection establishment procedure. The UE shall suppress cell reselection to another carrier for at least the time stated in the IE "wait time";
- if a cell selection on the designated carrier fails, the UE shall wait at least the time stated in the IE "wait time", and then transmit a new RRC CONNECTION REQUEST message on the uplink CCCH of the original serving cell, restart timer T300 and increase counter V300. UE shall set the IEs in the RRC CONNECTION REQUEST message according to subclause 8.1.3.2;
- if V300 is greater than N300 the UE shall enter idle mode. The procedure ends and a connection failure may be indicated to the non-access stratum. Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2.

If the IE "inter-system info" is present and:

- If V300 is equal to or smaller than N300, the UE shall perform cell selection in the designated system. After having camped on a cell, the UE shall re-initiate the RRC connection establishment procedure. The UE shall suppress cell reselection to the original system for at least the time stated in the IE " wait time".
- If cell selection in the designated system fails, the UE shall wait at least the time stated in the IE "wait time", and then transmit a new RRC CONNECTION REQUEST message on the uplink CCCH, restart timer T300 and increase counter V300. UE shall set the IEs in the RRC CONNECTION REQUEST message according to subclause 8.1.3.2.
- if V300 is greater than N300 the UE shall enter idle mode. The procedure ends and a connection failure may be indicated to the non-access stratum. Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2.

If neither the IEs "frequency info" nor "inter-system info" are present and:

- If V300 is equal to or smaller than N300, the UE shall wait at least the time stated in the IE "wait time", transmit a new RRC CONNECTION REQUEST message on the uplink CCCH, restart timer T300 and increase counter V300. UE shall set the IEs in the RRC CONNECTION REQUEST message according to subclause 8.1.3.2.
- If V300 is greater than N300 the UE shall enter idle mode. The procedure ends and a connection failure may be indicated to the non-access stratum. Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2

If the IE "wait time" = '0', the UE shall:

- enter idle mode. The procedure ends and a connection failure may be indicated to the non-access stratum. Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2

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25.331	CR	388r1	Current Version:	3.2.0

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

For submission to:	TSG-RAN #8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

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

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

Source: TSG-RAN WG2 **Date:** 29th April 2000

Subject: Transport format combination in TDD and Transport channel ID

Work item:

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

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

Reason for change:

Rules are added how a UE can determine a new allowed TFCS for downlink if the IE "Transport format combination set" is not included.
The case of multiple CCTrCHs is clarified for TDD. TFCI values are independent for different CCTrCHs. The mapping of transport channels to CCTrCHs is given by the corresponding TFCS.

The range for transport channel IDs is reduced to 32. Uplink and downlink transport channels are independent. Therefore they should use an independent address set. The maximum number of uplink and downlink transport channels is 32.

The direction of transport channels is clarified in multiple IEs (UL, DL)

Clauses affected: 8.5.7.5.2, 10.3.4.16, 10.3.5.1, 10.3.5.2, 10.3.5.5, 10.3.5.6, 10.3.5.15, 10.3.5.16, 10.3.5.17, 10.3.5.18, 10.3.5.19, 10.3.5.21, 10.3.7.79, 10.3.7.86, 10.3.7.95, 10.3.7.96, 10.3.7.98, 11.3.4, 11.3.5, 11.3.7

Other specs affected:

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

Other comments:

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8.5.7.5.2 Transport format combination set

If the IE "Transport format combination set" is included, the UE shall:

- start to respect those transport format combinations.

For downlink CCTrCHs if no TFCS is stored in the UE the UE shall consider all possible transport format combinations and calculate the possible TFCI values according to the IE transport format combination set.

For downlink CCTrCHs if a TFCS is stored in the UE and

if the IE “Transport format combination set” is not included and transport channels are deleted in the message, the UE shall:

- remove the affected transport format combinations from the transport format combination set, recalculate the TFCI values and start to respect those transport format combinations

if the IE “Transport format combination set” is not included and transport channels are added in the message, the UE shall:

- consider all possible new combinations to be valid and recalculate the TFCI values and start to respect those transport format combinations. In TDD the new transport format combinations are considered to belong to the TFCS with the ID 1 of DCH type.

if the IE “Transport format combination set” is not included and transport channels are replaced the UE shall:

- consider all possible transport format combinations to be valid and calculate the TFCI values accordingly.

10.3.4.16 RB mapping info

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

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Information for each multiplexing option	MP	1 to <maxMux OptionsCo unt>		
>Number of RLC logical channels	CV-*UL-RLC info*	1 to 2		1 or 2 logical channels per RLC entity or radio bearer RLC [TS 25.322]
>>Uplink transport channel type	MP		Enumerated(DCH,RACH, CPCH,USC H)	CPCH is FDD only USCH is TDD only
>>UL Transport channel identity	OP		Transport channel identity 10.3.5.16	This is the ID of a transport channel that this RB could be mapped onto.
>>Logical channel identity	OP		Integer(1..16)	This parameter is used to distinguish logical channels multiplexed by MAC on a transport channel.
>>MAC logical channel priority	OP		Integer(1..8)	This is priority between a user's different RBs (or logical channels). The different priorities for this user's RBs are mapped (through the MAC's C/T MUX) to the TFC selection algorithm. Priority 1 shall have the highest priority and priority 8 the lowest.
>Number of RLC logical channels	CV-*DL-RLC info*	1 to 2		1 or 2 logical channels per RLC entity or radio bearer RLC [TS 25.322]
>>Downlink transport channel type	MP		Enumerated(DCH,FACH, DSCH)	
>>DL Transport channel identity	OP		Transport channel identity 10.3.5.16	
>>Logical channel identity	OP		Enumerated(1..16)	

Multi Bound	Explanation
MaxMuxOptionsCount	Maximum number of allowed multiplexing options that can be sent is 8

Condition	Explanation
UL-RLC info	If "CHOICE Uplink RLC mode" in IE "RLC info" is present this IE is MP. Otherwise the IE is not needed.
DL-RLC info	If "CHOICE Downlink RLC mode" in IE "RLC info" is present this IE is MP. Otherwise the IE is not needed.

10.3.5 Transport CH Information elements

10.3.5.1 Added or Reconfigured DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Transport channel identity	MP		Transport channel identity 10.3.5.16	
TFS	MP		Transport Format Set 10.3.5.20	
~~CHOICE mode~~	~~OP~~			
~~>TDD~~				
~~>> DL DCH TFCS Identity~~	~~OP~~		~~Transport Format Combination Set Identity 10.3.5.18~~	
~~>FDD~~				~~(no data)~~
DCH quality target	OP		Quality target 10.3.5.13	
Transparent mode signalling info	OP		Transparent mode signalling info 10.3.5.15	This IE is not used in RB RELEASE message nor RB RECONFIGURATION message

10.3.5.2 Added or Reconfigured UL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL Transport channel identity	MP		Transport channel identity 10.3.5.16	
TFS	MP		Transport Format Set 10.3.5.20	
~~CHOICE mode~~	~~OP~~			
~~>TDD~~				
~~>> UL DCH TFCS Identity~~	~~OP~~		~~Transport Format Combination Set Identity 10.3.5.18~~	
~~>FDD~~				~~(no data)~~

10.3.5.5 Deleted DL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Transport channel identity	MP		Transport channel identity 10.3.5.16	
~~CHOICE mode~~	~~OP~~			
~~>TDD~~				
~~>> DL DCH TFCS Identity~~	~~OP~~		~~Transport Format Combination Set Identity 10.3.5.18~~	
~~>FDD~~				~~(no data)~~

10.3.5.6 Deleted UL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL Transport channel identity	MP		Transport channel identity 10.3.5.16	
~~CHOICE mode~~	~~OP~~			
~~>TDD~~				
~~>> UL DCH TFCS Identity~~	~~OP~~		~~Transport Format Combination Set Identity 10.3.5.18~~	
~~>FDD~~				~~(no data)~~

10.3.5.15 Transparent mode signalling info

This information element points out a transport channel that is used for transparent mode signalling, and which type of message that is sent on the DCCH mapped on that channel.

There are two modes of this transparent mode signaling. Mode 1 controls all transport channels for one UE. Mode 2 only control a subset of the transport channels for one UE.

Information Element	Need	Multi	Type and reference	Semantics description
DL Transport channel identity	MP		Transport channel identity 10.3.5.16	Transport channel used for transparent mode signalling DCCH
CHOICE *Transparent signalling mode*	MP			
>Mode 1				
>>Message type	MP		Enumerated (TRANSPORT FORMAT COMBINATION CONTROL)	Indicates which type of message sent on the transparent mode signalling DCCH
>Mode 2				
>>Controlled transport channels list	MP	1 to <MaxTrChCount>		The transport channels that are effected by the rate control commands sent on this transparent mode DCCH
>>>UL Controlled transport channels	MP		Transport channel identity, 10.3.5.16	

10.3.5.16 Transport channel identity

This information element is used to distinguish transport channels (both common and dedicated transport channels).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport channel identity	MP		Enumerated(1..~~64~~32)	

10.3.5.17 Transport Format Combination Set

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

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

Method #1 - TFCI range

The mapping is described in terms of a number of groups, each group corresponding to a given transport format combination (value of CTFC_DSCH). The CTFC_DSCH value specified in the first group applies for all values of TFCI(field 2) between 1 and the specified 'Max TFCI(field2) value'. The CTFC_DSCH value specified in the second group applies for all values of TFCI(field 2) between the 'Max TFCI(field2) value' specified in the last group plus one and the specified 'Max TFCI(field2) value' in the second group. The process continues in the same way for the following groups with the TFCI(field 2) value used by the UE in constructing its mapping table starting at the largest value reached in the previous group plus one.

Method #2 - Explicit

The mapping between TFCI(field 2) value and CTFC_DSCH is spelt out explicitly for each value of TFCI (field2).

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *DSCH*	MP			
>FDD without access to DSCH assigned or TDD				This choice is made if the UE is not assigned any DSCH transport channels
>>CHOICE TFCS representation	MP			
>>>Complete reconfiguration		1 to MaxTFCcount		
>>>>CTFC	MP		Integer(0..MaxCTFC)	The first instance of the parameter *Transport format combination* corresponds to Transport format combination 0, the second to transport format combination 1 and so on. Integer number calculated according to clause 14.
>>>>Gain Factor Information	MP			
>>>>Power offset P p-m	MP		Real (-5..10 by step of 1)	In dB. Power offset between the last transmitted preamble and the control part of the message (added to the preamble power to receive the power of the message control part)
>>>Removal		1 to MaxDelTFCcount		
>>>>TFCI	MP		Integer(0..MaxTFCIValue)	Removal of TFCI. The integer number(s) is a reference to the transport format combinations to be removed.
>>>Addition		1 to MaxAddTFCcount		
>>>>AddCTFC	MP		Integer(0..MaxCTFC)	Addition of TFCI. The integer number(s) is the calculated transport format combination that is added. The new TFC(s) is inserted into the first

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				available position(s) in the TFCI (counting from zero).
>>>>Gain Factor Information	MP			
>>>>Power offset P p-m	MP		Real (-5..10 by step of 1)	In dB. Power offset between the last transmitted preamble and the control part of the message (added to the preamble power to receive the power of the message control part)
>FDD with access to DSCH assigned				This choice is made if the UE is assigned one or more DSCH transport channels
>>Length of TFCI2	MP		Integer (1..9)	This IE indicates the length measured in number of bits of TFCI(field2)
>>Transport format combination_DCH	MP	1 to <MaxTFCI_1_Combs>		The first instance of the parameter *Transport format combination_DCH* corresponds to TFCI (field 1) = 1, the second to TFCI (field 1) = 2 and so on.
>>>CTFC_DCH	MP		Integer(0..MaxCTFC_DCH)	Integer number calculated according to clause 14. The calculation of CTFC ignores any DSCH transport channels which may be assigned
>>Choice *Signalling method*	MP			
>>>TFCI range				
>>>>TFC mapping on DSCH	MP	1 to <MaxNoTFCIGroups>		
>>>>>Max TFCI(field2) value	MP		Integer(1..512)	This is the Maximum value in the range of TFCI(field2) values for which the specified CTFC_DSCH applies
>>>>>>CTFC_DSCH	MP		Integer(0..MaxCTFC_DSCH)	Integer number calculated according to clause 14. The calculation of CTFC ignores any DCH transport channels which may be assigned
>>>Explicit				
>>>>Transport format combination_DSCH	MP	1 to <MaxTFCI_2_Combs>		The first instance of the parameter *Transport format combination_DSCH* corresponds to TFCI (field2) = 1, the second to TFCI (field 2) = 2 and so on.
>>>>>CTFC_DSCH	MP		Integer(0..MaxCTFC_DSCH)	Integer number calculated according to clause 14. The calculation of CTFC ignores any DCH transport channels which may be assigned

Multi Bound	Explanation
MaxCTFC	Maximum value number of the CTFC value is calculated according to the following: $\sum_{i=1}^{I}(L_i - 1)P_i$ with the notation according to clause 14.
MaxTFCCount	Maximum number of Transport Format Combinations.
MaxTFCIValue	The max value of the Transport Format Combinations that currently is defined for this UE.

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

10.3.5.18 Transport Format Combination Set Identity

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCS ID	MD		Enumerated (1...8)	Indicates the identity of every TFCS within a UE. Default value is 1.
Shared Channel Indicator	MP		Boolean	TRUE indicates the use of shared channels. Default is false.

10.3.5.19 Transport Format Combination Subset

Indicates which Transport format combinations in the already defined Transport format combination set are allowed.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE Subset representation	MP			
>Minimum allowed Transport format combination index	MP		Integer(0..MaxTFCValue-1)	The integer number is a reference to the *Transport format combination,* which arrived at that position in the *Transport Format Combination Set.*
>Allowed transport format combination list	MP	1 to <maxTFCcount>		
>>Allowed transport format combination	MP		Integer(0..MaxTFCValue-1)	The integer number is a reference to the *Transport format combination,* which arrived at that position in the *Transport Format Combination Set.*
>Non-allowed transport format combination list	MP	1 to <MaxTFCcount>		
>>Non-allowed transport format combination	MP		Integer(0..MaxTFCValue)	The integer number is a reference to the *Transport format combination,* which arrived at that position in the *Transport Format Combination Set.*
>Restricted TrCH information	MP	1 to <MaxRstTrCHcount>		
>>Restricted UL TrCH identity	MP		Integer(0..MaxTrCHValue)	The integer number(s) is a reference to the transport channel that is restricted.
>>Allowed TFIs	OP	1 to <MaxTFcount>		
>>>Allowed TFI	MP		Integer(0..MaxTFValue)	The integer number is a reference to the transport format that is allowed. If no elements are given, all transport formats or the TrCH with non-zero rate are restricted.

Multi Bound	Explanation
MaxTFCcount	Maximum number of Transport Format Combinations that could be sent as the limited set that the UE is allowed to use is 1023.
MaxTFCValue	The max value of the Transport Format Combinations that currently is defined for this UE.
MaxRstTrCHcount	Maximum number of Transport Channels that could be restricted.
MaxTrCHValue	Maximum value of the Transport Channels that currently is defined for this UE.
MaxTFcount	Maximum number of the Transport Formats that is defined.
MaxTFValue	Maximum value of the Transport Formats that is defined.

10.3.5.21 UL Transport channel information common for all transport channels

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFC subset	MD		Transport Format Combination Subset 10.3.5.19	Default value is the complete existing set of transport format combinations
CHOICE *mode*	OP			
>TDD				
>>Individual UL CCTrCH information	OP	1 to <MaxULCCTrCHCount>		
>>>UL ~~DCH~~ TFCS Identity	MP		Transport format combination set identity 10.3.5.18	
>>>~~D~~UL ~~DCH~~ TFCS	MP		Transport format combination set 10.3.5.17	
>FDD				
>>UL DCH TFCS	MP		Transport formation combination set 10.3.5.17	

Multi Bound	Explanation
MaxULCCTrCHCount	Maximum number of UL CCTrCHs currently supported by this UE.

10.3.7.79 Quality measured results list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
BLER measurement results	OP	1 to <MaxBLER>		
>DL Transport channel identity	MP		Transport channel identity 10.3.5.16	
>DL Transport Channel BLER	OP		Real(0.00 ..5.10, by step of 0.02)	In dB= -Log10(Transport channel BLER)
SIR	OP		Integer(-10..20)	In dB

Multi Bound	Explanation
MaxBLER	Maximum number of transport channels with BLER measurements that can be included in a measurement report

10.3.7.86 Quality reporting quantity

Information Element/Group name	Need	Multi	Type and reference	Semantics description
DL Transport Channel BLER	MP		Boolean	TRUE means report requested
Transport channels for BLER reporting	CV BLER reporting	1 to <MaxBLER>		The default, if no transport channel identities are present, is that the BLER is reported for all downlink transport channels
>DL Transport channel identity	MP		Transport channel identity 10.3.5.16	
SIR	MP		Boolean	TRUE means report requested

Multi Bound	Explanation
MaxBLER	Maximum number of transport channels with BLER measurements that can be included in a measurement report

Condition	Explanation
BLER reporting	This information element is absent if 'DL Transport Channel BLER' is 'No' and optional, if 'DL Transport Channel BLER' is 'Yes'

10.3.7.95 Traffic volume measurement event results

Contains the event result for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UL Transport Channel causing the event	MP		Transport channel identity 10.3.5.16	
Traffic volume event identity	MP		Traffic volume event identity 10.3.7.92	

10.3.7.96 Traffic volume measurement object

Contains the measurement object information for a traffic volume measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement objects	MP	1 to <MaxTrCH count>		
>UL Target Transport Channel ID	MP		Transport channel identity 10.3.5.16	

Multi bound	Explanation
MaxTrCHCount	Maximum number of target Transport channels to be measured

10.3.7.98 Traffic volume measurement reporting criteria

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

Event 4a: RLC buffer payload exceeds an absolute threshold.

Event 4b: RLC buffer payload becomes smaller than an absolute threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH count>		
>UL Transport Channel ID	MP		Transport channel identity 10.3.5.16	
>Parameters required for each Event	OP	1 to 2		
>>Traffic volume event identity	MP		Traffic volume event identity 10.3.7.92	
>>Reporting Threshold	MP		Integer(8,16, 32,64,128,256,512,1024,1536,2048,3072,4096,6144,8192)	Threshold in bytes
Time to trigger	OP		Time to trigger 10.3.7.91	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
Pending time after trigger	OP		Real(0.25, 0.5, 1, 2, 4, 8, 16)	Time in seconds. Indicates the period of time during which it is forbidden to send any new measurement reports with the same measurement ID even if the triggering condition is fulfilled again. Time in seconds
Tx interruption after trigger	OP		Real(0.25, 0.5, 1, 2, 4, 8, 16)	Time in seconds. Indicates whether or not the UE shall block DTCH transmissions on the RACH after a measurement report is triggered.
Amount of reporting	OP		Enumerated(1, 2, 4, 8, 16, 32, 64, Infinity)	Measurement is "released" after the indicated amount of reporting from the UE itself.
Reporting interval	OP		Real(0, 0.25, 0.5, 1, 2, 4, 8, 16)	Interval in seconds. Indicates the interval of periodical report during the event is in the detected state.

Multi Bound	Explanation
MaxTrCHcount	Maximum number of transport channels = 64

11.3.4 Radio bearer information elements

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

.
.
.
UL-LogicalChannelMapping ::=        SEQUENCE {
    ul-TransportChannelType             UL-TransportChannelType,
    ul-transportChannelIdentity         TransportChannelIdentity            OPTIONAL,
    logicalChannelIdentity              LogicalChannelIdentity              OPTIONAL,
    mac-LogicalChannelPriority          MAC-LogicalChannelPriority          OPTIONAL
}
.
.
.

END
```

11.3.5 Transport channel information elements

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

.
.
.
DL-AddReconfTransChInformation ::=  SEQUENCE {
    dl-transportChannelIdentity             TransportChannelIdentity,
    transportFormatSet                  TransportFormatSet,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            dl-DCH-TFCS-Identity                TFCS-Identity               OPTIONAL
        }
    }                                                                       OPTIONAL,
    dch-QualityTarget                   QualityTarget                       OPTIONAL,
    tm-SignallingInfo                   TM-SignallingInfo                   OPTIONAL
}
.
.
.
.
.
.
TM-SignallingInfo   ::=             SEQUENCE {
    dl-transportChannelIdentity         TransportChannelIdentity,
    tm-SignallingMode                   CHOICE {
        mode1                               SEQUENCE {
            messType                            MessType
        },
        mode2                               SEQUENCE {
            ul-controlledTrChList                   UL-ControlledTrChList
        }
    }
}

.
.
.
TransportChannelIdentity ::=        INTEGER (1..6432)

.
```

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

UL-CommonTransChInfo ::=            SEQUENCE {
    tfc-Subset                          TFC-Subset                          OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ul-DCH-TFCS                         TFCS
        },
        tdd                                 SEQUENCE {
            ul-DCH-TFCS-Identity                TFCS-Identity
        }
    }                                                                       OPTIONAL
}
.
.
.
UL-DeletedTransChInformation ::=    SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            individualUL-CCTrCH-InfoList        IndividualUL-CCTrCH-InfoList
                                                                            OPTIONAL
        }
    }                                                                       OPTIONAL
}

.
.
.
END
```

11.3.7 Measurement information elements

```
.
.
.
QualityReportingQuantity ::=        SEQUENCE {
    dl-TransChBLER                      BOOLEAN,
    bler-dl-TransChIdList                   BLER-TransChIdList                  OPTIONAL,
    sir                                 BOOLEAN
}
.
.
.
}

.
.
.
TrafficVolumeEventResults ::=       SEQUENCE {
    ul-transportChannelCausingEvent     TransportChannelIdentity,
    trafficVolumeEventIdentity          EventIDTrafficVolume
}
.
.
.
TrafficVolumeMeasObject ::=         SEQUENCE {
    ul-targetTransportChannelID         TransportChannelIdentity
}
.
.
.

TransChCriteria ::=                 SEQUENCE {
    ul-transportChannelID                   TransportChannelIdentity,
    eventSpecificParameters             SEQUENCE (SIZE (1..2)) OF
                                            TrafficVolumeEventParam         OPTIONAL
}


END
```

3GPP Meeting WG2 #13
Oahu, USA, 22-26 May 2000

Document R2-001203
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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

25.331	CR	389r1	Current Version:	3.2.0

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

For submission to:	TSG-RAN #8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

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

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

Source: TSG-RAN WG2 **Date:** 16th May 2000

Subject: Signalling for dynamic TTI in TDD

Work item:

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

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

Reason for change: During the rewriting of the tables the signalling support for the dynamic TTI in TDD was accidently removed.
The required signalling is reintroduced now. Spare values are introduced for the transmission time intervals for future extensions.

Clauses affected: 10.3.5.20, 11.3.5

Other specs affected:

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

Other comments:

help.doc

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

10.3.5.14 Semi-static Transport Format Information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission time interval	MP		Integer(10, 20, 40, 80, dynamic)	In ms. The value dynamic is only used in TDD mode 3 spare values are needed Criticality reject
Type of channel coding	MP		Enumerated(No coding, Convolutional, Turbo)	
Coding Rate	CV-Coding		Enumerated(1/2, 1/3)	
Rate matching attribute	MP		Integer(1..maxRM)	
CRC size	MP		Integer(0, 8, 12, 16, 24)	in bits

Multi Bound	Explanation
MaxRM	Maximum number that could be set as rate matching attribute for a transport channel is 256.

Condition	Explanation
Coding	This IE is only present if IE "Type of channel coding" is "Convolutional"

10.3.5.20 Transport Format Set

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *Transport channel type*	MP			
>Dedicated transport channels				The transport channel that is configured with this TFS is of type DCH
>>Dynamic Transport Format Information	MP	1 to maxTFcount		The first instance of the parameter *Dynamic transport format information* correspond to Transport format 0 for this transport channel, the second to transport format 1 and so on.
>>>Transmission Time Interval	CV-dynamicTTI		Integer(10,20,40,80)	ms 4 spare values are needed Criticality reject
>>>Number of Transport blocks	MP		Integer(0..4095)	Note
>>>CHOICE *RLC mode*	OP			
>>>> Bit mode RLC size info			Bit mode RLC size info 10.3.5.3	The RLC entity mapped to this transport channels can generate bit specific RLC PDU sizes
>>>> Octet mode RLC size info type1			Octet mode RLC size info type1 10.3.5.10	The RLC entity mapped to this transport channels can only generate octet aligned RLC PDU sizes
>>Semi-static Transport Format Information	MP		Semi-static Transport Format Information 10.3.5.14	
>Common transport channels				The transport channel that is configured with this TFS is of a type not equal to DCH
>>Dynamic Transport Format Information	MP	1 to maxTFcount		The first instance of the parameter *Dynamic transport format information* correspond to Transport format 0 for this transport channel, the second to transport format 1 and so on.
>>>Number of Transport blocks	MP		Integer(0..4095)	Note
>>>CHOICE mode	MP			
>>>>FDD				
>>>>>Octet mode RLC size info type2	OP		Octet mode RLC size info type2 10.3.5.11	
>>>>TDD				
>>>>> Transmission Time Interval	CV-dynamicTTI		Integer(10,20,40,80)	ms 4 spare values needed. Criticality reject
>>>>>CHOICE *RLC mode*	OP			
>>>>>>Bit mode RLC size info			Bit mode RLC size info 10.3.5.3	
>>>>>>Octet mode RLC size info type1			Octet mode RLC size info type1 10.3.5.10	
>>Semi-static Transport Format Information	MP		Semi-static Transport Format	

Information Element/Group name	Need	Multi	Type and reference	Semantics description
			Information 10.3.5.14	

Multi Bound	Explanation
MaxTFcount	Maximum number of different transport formats that can be included in the Transport format set for one transport channel is 32.

Condition	Explanation
dynamicTTI	This IE is included if dynamic TTI usage is indicated in IE Transmission Time Interval in Semi-static Transport Format Information. Otherwise it is not needed.

NOTE: The parameter "rate matching attribute" is in line with the RAN WG1 specifications. However, it is not currently in line with the description in 25.302.

NOTE: For dedicated channels, sizes reflect RLC PDU sizes. In FDD for common channels sizes reflect actual TB size. In TDD for common channels since MAC headers are not octet aligned, to calculate TB size the MAC header bit offset is added to the specified size (similar to the dedicated case). Therefore for TDD DCH TrCHs the 4 bit C/T is added if MAC multiplexing is applied, for FACH the 3 bit TCTF offset is added and for RACH the 2 bit TCTF offset is added.

NOTE: If the number of transport blocks <> 0, and Optional IE "CHOICE RLC mode" or "CHOICE Transport block size is absent, it implies that no RLC PDU data exists but only parity bits exist. If the number of transport blocks = 0, it implies that neither RLC PDU data nor parity bits exist.

11.3.5 Transport channel information elements

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

BEGIN

IMPORTS


CommonDynamicTF-Info ::=            SEQUENCE {
    numberOfTransportBlocks             NumberOfTransportBlocks,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            octetModeRLC-SizeInfoType2          OctetModeRLC-SizeInfoType2
        },
        tdd                                 SEQUENCE {

            commonTDD-Choice                    CHOICE {
                bitModeRLC-SizeInfo                 BitModeRLC-SizeInfo,
                octetModeRLC-SizeInfoType1          OctetModeRLC-SizeInfoType1
            }                                                                   OPTIONAL
        }
    }
}

CommonDynamicTF-Info-DynamicTTI ::=         SEQUENCE {
    numberOfTransportBlocks             NumberOfTransportBlocks,
    transmissionTimeInterval            TransmissionTimeInterval,
    commonTDD-Choice                    CHOICE {
        bitModeRLC-SizeInfo                 BitModeRLC-SizeInfo,
        octetModeRLC-SizeInfoType1          OctetModeRLC-SizeInfoType1
            }                                                               OPTIONAL
}

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

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


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


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

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

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

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

DedicatedTransChTFS ::=             SEQUENCE {
```

```
    tti                             CHOICE {
        tti10                           DedicatedDynamicTF-InfoList,
        tti20                           DedicatedDynamicTF-InfoList,
        tti40                           DedicatedDynamicTF-InfoList,
        tti80                           DedicatedDynamicTF-InfoList,
        dynamic                         DedicatedDynamicTF-InfoList-DynamicTTI },
    dynamicTF-InformationList       DedicatedDynamicTF-InfoList,
    semistaticTF-Information        SemistaticTF-Information
}

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

TransmissionTimeInterval ::=    ENUMERATED {
                                    tti10, tti20, tti40, tti80,
                                    spare1, spare2,spare3, spare4 }
END
```

3GPP Meeting WG2#13
Oahu, USA, 22-26 May 2000

Document R2-001204
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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

25.331	CR	390r1	Current Version:	3.2.0

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

For submission to:	TSG-RAN #8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

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

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

Source: TSG-RAN WG2 **Date:** 16th May 2000

Subject: Usage of DCCH for Shared Channel Allocation message

Work item:

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

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

Reason for change:
In TDD an UE may use shared resources both in CELL_DCH and CELL_FACH state. In CELL_DCH if no Iur is involved in the operation UTRAN may send the Shared Channel Allocation message also on DCCH. Therefore there is no need for the UE to listen to FACH in this case. This relaxes the required physical capabilities of the UE.Therefore it is proposed to allow the Shared Channel Allocation message on DCCH.
Additionally, the presence of the C-RNTI is changed to OPTIONAL in Shared Channel Allocation message and PUSCH Capacity request message because this IE is obsolete if the message is received on a channel that is only decoded by one special UE.

Clauses affected: 8.2.7.2, 8.2.7.3, 8.2.8.2, 9.3.1, 10.2.21, 10.2.22, 11.1,11.2

Other specs affected:

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

Other comments:

help.doc

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

8.2.7 Physical Shared Channel Allocation [TDD only]

Figure 29: Physical Shared Channel Allocation

8.2.7.1 General

The purpose of this procedure is to allocate physical resources to USCH or DSCH transport channels in TDD mode, for temporary usage by a UE.

8.2.7.2 Initiation

The UE is in the CELL_FACH or CELL_DCH state, and at least one RB using USCH or DSCH has been established.

The UTRAN sends the "PHYSICAL SHARED CHANNEL ALLOCATION" message via the SHCCH ~~or DCCH~~, to allocate PUSCH or PDSCH resources to exactly one CCTrCH. The C-RNTI shall be included for UE identification. In CELL_DCH state, the message may also be transmitted on DCCH mapped to DCH transport channel. When transmitted on DCCH, there is no need to include the C-RNTI.

8.2.7.3 Reception of a PHYSICAL SHARED CHANNEL ALLOCATION message by the UE

The UE shall check the C-RNTI to see if the UE is addressed by the message if the C-RNTI is included. If ~~so,~~ the UE is addressed by the message ~~UE~~, i.e using C-RNTI or the message is received on a physical resource that is assigned to only this UE, the UE shall evaluate the message and use the IEs as specified below.

If the IE "PDSCH info" is included, the UE shall:

- decode the IE " Allocation Activation Time" and the IE "Allocation Duration", to determine the time interval for which the allocation shall be valid;
- configure Layer 1 according to the PDSCH information received in allocation message or in BCCH SIB#6 (as default if not specified in allocation message), for the specified time interval received in allocation message;
- start receiving the PDSCH where the TFCI is included;
- receive the PDSCHs, and decode and demultiplex them into the respective DSCH channels according to the TFCI.

If the IE "PUSCH info" is included, the UE shall:

- decode the IE " Allocation Activation Time" and the IE "Allocation Duration", to determine the time interval for which the allocation shall be valid;
- configure Layer 1 according to the PUSCH information received in allocation message or in BCCH SIB#6 (as default if not specified in allocation message), for the specified time interval received in allocation message;
- determine the TFCS subset and hence the TFCI values which are possible given the PUSCH allocation for that CCTrCH;
- configure the MAC-c/sh in the UE with this TFCS restriction if necessary;
- transmit USCH Transport Block Sets as required, within the TFCS limits given by the PUSCH allocation.

In addition, the UE shall evaluate the IE "PUSCH Allocation Pending" parameter: If its value is "pending", the UE starts a timer T311. As long as this timer is running, the UE is not allowed to use the RACH for potential USCH capacity requests. See the USCH CAPACITY REQUEST procedure.

In addition if the message contains an optional IE "Uplink Timing Advance" the UE shall configure the Layer 1 with the new Timing Advance.

NOTE: If UE has just entered a new cell and SIB#6 USCH or DSCH information has not yet been scheduled, USCH/DSCH information is specified in allocation message.

8.2.8 PUSCH capacity request [TDD only]

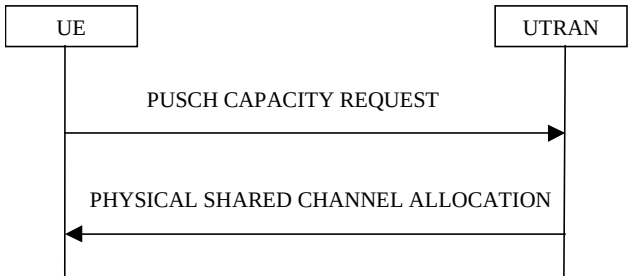

Figure 30: PUSCH Capacity request procedure

8.2.8.1 General

With this procedure, the UE transmits its request for PUSCH resources to the UTRAN. In the normal case, the UTRAN responds with a PHYSICAL SHARED CHANNEL ALLOCATION message, which either allocates the requested PUSCH resources, and/or allocates a PDSCH resource, or may just serve as an acknowledgement, indicating that PUSCH allocation is pending.

With the PUSCH CAPACITY REQUEST message, the UE can request capacity for one or more USCH.

NOTE: Triggering of the capacity request is controlled by the measurement control procedure.

8.2.8.2 Initiation

The UE is in the CELL_FACH or CELL_DCH state, and at least one RB using USCH has been established. The RRC in the UE sees the requirement to request physical resources (PUSCH) for an USCH channel.

The RRC decides to send a PUSCH capacity request on the SHCCH. This is possible if:

- Timer T311 is not running.
- The timer T310 (capacity request repetition timer) is not running.

So the UE sends a PUSCH CAPACITY REQUEST message on the uplink SHCCH, resets counter V310, and starts timer T310.

With one PUSCH CAPACITY REQUEST message, capacity for one or more USCH can be requested. It shall include these information elements:

- C-RNTI to be used as UE identity if the message is send on RACH;
- Radio Bearer ID, for each radio bearer requiring capacity on USCH;
- RLC buffer payload for these radio bearers.

As an option, the message may include "Timeslot ISCP" and "Primary CCPCH RSCP".

The timeslots for which "Timeslot ISCP" may be reported shall have been configured with a previous PHYSICAL SHARED CHANNEL ALLOCATION message.

8.2.8.3 Reception of a PUSCH CAPACITY REQUEST message by the UTRAN

The UTRAN should send a PHYSICAL SHARED CHANNEL ALLOCATION message to the UE, either for allocating PUSCH or PDSCH resources, or just as an acknowledgement, announcing a pending PUSCH allocation.

8.2.8.4 Reception of a PHYSICAL SHARED CHANNEL ALLOCATION message by the UE

Once the UE receives this message with the correct C-RNTI included, it shall stop the timer T310 and shall evaluate the message as described in the Physical Shared Channel Allocation procedure. In particular, it shall take the IE "PUSCH Allocation Pending" into account: If this IE has the value "pending", the UE shall start the timer T311. As long as this timer is running, the UE is prohibited to send PUSCH Capacity Requests on the SHCCH.

If the IE "PUSCH Allocation Pending" indicates "not pending", the UE shall stop the timer T311, and is allowed to send PUSCH Capacity Requests on the SHCCH again.

If the PUSCH capacity allocated in this message is not sufficient for all the USCH transmission requests which the UE may have, the RRC in the UE may decide to issue further PUSCH Capacity Requests - provided timer T311 is not running.

8.2.8.5 T310 time out

Upon expiry of timer T310, the UE shall

- If V310 is equal to or smaller than N310, transmit a new PUSCH CAPACITY REQUEST message on the Uplink SHCCH, restart timer T310 and increase counter V310. The UE shall set the IEs in the PUSCH CAPACITY REQUEST message as specified above.

8.2.8.6 Maximum number of re-attempts exceeded

In this case the UE stops the procedure. It can start another PUSCH capacity request procedure if the UE-RRC sees the need for it.

9 Protocol states

9.3 UTRAN Connected Mode States and Transitions

9.3.1 CELL_DCH state

The CELL_DCH state is characterised by

- A dedicated physical channel is allocated to the UE in uplink and downlink.
- The UE is known on cell level according to its current active set.
- Dedicated transport channels, downlink and uplink (TDD) shared transport channels, and a combination of these transport channels can be used by the UE.

The CELL_DCH-state is entered from the Idle Mode through the setup of an RRC connection, or by establishing a dedicated physical channel from the CELL_FACH state.

A PDSCH may be assigned to the UE in this state, to be used for a DSCH. In TDD a PUSCH may also be assigned to the UE in this state, to be used for a USCH. If PDSCH or PUSCH are used for TDD, a FACH transport channel may be assigned to the UE for reception of physical shared channel allocation messages.

9.3.1.1 Transition from CELL_DCH to Idle Mode

Transition to Idle Mode is realised through the release of the RRC connection.

9.3.1.2 Transition from CELL_DCH to CELL_FACH state

Transition to CELL_FACH state occurs when all dedicated channels have been released, which may be

a) via explicit signalling.

at the end of the time period for which the dedicated channel was allocated (TDD)

9.3.1.3 Radio Resource Allocation tasks (CELL_DCH)

For the DCH, several physical channel allocation strategies may be applied. The allocations can be either permanent (needing a DCH release message) or based on time or amount-of-data.

Resource allocation can be done separately for each packet burst with fast signalling on the DCH

For each radio frame the UE and the network indicate the current data rate (in uplink and downlink respectively) using the transport format combination indicator (TFCI). However, in TDD, DCH and DSCH or USCH may be mapped on different CCTrCHs, their TFCI are totally independent. DCH transmission is not modified by the simultaneous existence of DSCH/USCH. If the configured set of combinations (i.e. transport format set for one transport channel) are found to be insufficient to retain the QoS requirements for a transport channel, the network initiates a reconfiguration of the transport format set (TFS) for that transport channel. This reconfiguration can be done during or in between data transmission. Further, the network can reconfigure the physical channel allowing an increase or decrease of the peak data rate.

For the uplink data transmission, the UE reports the observed traffic volume to the network in order for the network to re-evaluate the current allocation of resources. This report contains e.g. the amount of data to be transmitted or the buffer status in the UE.

For codecs that support variable-rate operation the UE can be allowed by RRC in UTRAN to reduce transmission rate independently without requesting a new codec mode from the NW side within the limits defined by the NW in the current TFS for the impacted radio bearer.

The codec mode adaptation in the UE may be initialised e.g. when the maximum power level has been reached, or it is otherwise preferable from the UE point of view to decrease the power consumption by decreasing the data rate. The new Codec mode selected by the UE is signalled to the NW by means of the TFCI.

9.3.1.4 RRC Connection mobility tasks (CELL_DCH)

Depending on the amount and frequency of data macrodiversity (soft handover) may or may not be applied.

The RRC Connection mobility is handled by measurement reporting, soft handover and hard handover procedures.

9.3.1.5 UE Measurements (CELL_DCH)

The UE shall perform measurements and transmit measurement reports according to the measurement control information.

The UE shall use the connected mode measurement control information received in other states until new measurement control information has been assigned to the UE.

9.3.1.6 Acquisition of system information (CELL_DCH)

FDD UEs with certain capabilities shall read system information broadcast on FACH.

TDD UEs shall read the BCH to acquire valid system information. For each acquisition, the UE may need different combinations of system information broadcast on BCH. The scheduling on the broadcast channel is done in such way that the UE knows when the requested information can be found.

10.2.21 PHYSICAL SHARED CHANNEL ALLOCATION

NOTE: Only for TDD.

This message is used by UTRAN to assign physical resources to USCH/DSCH transport channels in TDD, for temporary usage by the UE.

RLC-SAP: TM or UM on SHCCH, UM on DCCH

Logical channel: SHCCH or DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message type	
Integrity check info	CH		Integrity check info 10.3.3.16	
C-RNTI	~~MP~~OP		C-RNTI 10.3.3.7	
Uplink timing advance	MD		Uplink Timing Advance 10.3.6.69	Default value is the existing value for uplink timing advance
Allocation period info	OP		Allocation period info 10.3.6.4	
PUSCH info	OP		PUSCH info 10.3.6.46	
PDSCH info	OP		PDSCH info 10.3.6.30	
Timeslot list	OP	1 .. 14		
>Timeslot number	MP		Integer(0 .. 14)	Timeslot numbers, for which the UE shall report the timeslot ISCP in PUSCH CAPACITY REQUEST message.

10.2.22 PUSCH CAPACITY REQUEST

NOTE: Only for TDD.

This message is used by the UE for request of PUSCH resources to the UTRAN.

RLC-SAP: TM

Logical channel: SHCCH

Direction: UE → UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
Integrity check info	CH		Integrity check info 10.3.3.16	
C-RNTI	~~MP~~OP		C-RNTI 10.3.3.7	
Traffic Volume	MP		Traffic Volume, measured results list 10.3.7.93	
Timeslot list	OP	1 .. 14		
>Timeslot number	MP		Integer(0 .. 14)	
>Timeslot ISCP	MP			
Primary CCPCH RSCP	OP			

11.1 General message structure

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

BEGIN

IMPORTS

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

.
.
.

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

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

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


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

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

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

PUSCHCapacityRequest ::= SEQUENCE {
    -- User equipment IEs
        c-RNTI                          C-RNTI                          OPTIONAL,
    -- Measurement IEs
        trafficVolumeMeasuredResultsList
                                        TrafficVolumeMeasuredResultsList,
        timeslotListWithISCP            TimeslotListWithISCP            OPTIONAL,
        primaryCCPCH-RSCP               PrimaryCCPCH-RSCP               OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                     OPTIONAL
}
.
.
.

END
```

3GPP Meeting WG2#13
Oahu, USA, 22-26 May 2000

Document R2-001182
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

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25.331	CR	391r1	Current Version:	3.2.0

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

For submission to:	TSG-RAN #8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

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

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

Source: TSG-RAN WG2 **Date:** 16th May 2000

Subject: Correction to physical channel IEs in TDD

Work item:

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

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

Reason for change:

10.3.6.25 Individual timeslot info: Different presentation is used in order to give provision to different Midamble Shift ranges for different Burst Types.
10.3.6.30 PDSCH info: Possibility to signal a list of channelisation codes is introduced to allow efficient shared channel usage.
10.3.6.36 PRACH info: Different presentation to reflect more efficient coding by allowing the possibility to signal a list of channelisation codes for one timeslot.
10.3.6.x PRACH Channelisation Code IE introduced to improve the presentation of the tables.
10.3.6.46 PUSCH info: Possibility to signal two channelisation codes for one timeslot as specified in layer 1 specifications.
10.3.6.52 Secondary CCPCH info: Possibility to signal several channelisation codes for SCCPCH in one timeslot to allow more efficient SCCPCH usage
Present values for Common timeslot info and Timeslot List changed to MD.
New IEs "PUSCH Capacity Allocation info" is introduced. This IE is used in Shared Channel Allocation messages. Mistakes were introduced during restructuring of tables.
New IE SFN Time Info is introduced which is used for shared channel procedures. (lost during restructuring of tables).
TFCS is included in shared channel information that is used on BCH in order to allow similar usage of TFCS as for SCCPCH.

Clauses affected: 10.2.21,10.3.6.25,10.3.6.30,10.3.6.31,10.3.6.36,10.3.6.x,10.3.6.46,10.3.6.46a(new), 10.3.6.48,10.3.6.52,10.3.6.65

Other specs affected:

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

Other comments:

help.doc

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

10.2.21 PHYSICAL SHARED CHANNEL ALLOCATION

NOTE: Only for TDD.

This message is used by UTRAN to assign physical resources to USCH/DSCH transport channels in TDD, for temporary usage by the UE.

RLC-SAP: TM or UM

Logical channel: SHCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message type	
Integrity check info	CH		Integrity check info 10.3.3.16	
C-RNTI	MP		C-RNTI 10.3.3.7	
Uplink timing advance	MD		Uplink Timing Advance 10.3.6.69	Default value is the existing value for uplink timing advance
Allocation period info	OP		Allocation period info 10.3.6.4	
PUSCH capacity allocation info	OP		PUSCH Capacity Allocation info 10.3.6.46a	
PDSCH info	OP		PDSCH info 10.3.6.30	
Timeslot list	OP	1 .. 14		
>Timeslot number	MP		Integer(0 .. 14)	Timeslot numbers, for which the UE shall report the timeslot ISCP in PUSCH CAPACITY REQUEST message.

10.3.6.25 Individual timeslot info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Timeslot number	MP		Integer(0..14)	Timeslot within a frame
TFCI existence	CH		Boolean	TRUE indicates that the TFCI exists. It shall be coded in the first physical channel of this timeslot.
~~Burst Type~~	~~MD~~		~~Enumerated(Type1, Type2)~~	~~Short or long midamble for this timeslot. Default value is "Type1".~~
CHOICE Burst Type	MP			
>Type 1				
>>Midamble Shift	MD		Integer(0..15)	Default value is the midamble shift ~~selected by layer 1.~~as specified in 25.221
>Type 2				
>>Midamble Shift	MD		Integer(0..5)	Default value is the midamble shift as specified in 25.221

10.3.6.30 PDSCH info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFCS Identity	MD		Transport format combination set Identity 10.3.5.18	TFCS to be used. Default ~~value is 1.~~is as specified in 10.3.5.18
SFN Time info	~~M~~OP		SFN Time info 10.3.6.~~61~~x	
Common timeslot info	~~CH~~MD		Common timeslot info 10.3.6.8	Common timeslot info is needed if Common timeslot info needs to be updated.
Timeslot List	~~CH~~MD	1 to <maxTimeslotCount>		Timeslot List is needed if Timeslot List needs to be updated.
>Individual timeslot info	MP		Individual timeslot info 10.3.6.25	The first instance of the parameter Individual Timeslot Info corresponds to the timeslot that shall be used first by the physical layer, the second to the timeslot that shall be used second and so on.
>Channelisation Code List	MP	1 to 16		
>>Channelisation Code	MP		Enumerated((16/1)..(16/16))	

Multi Bound	Explanation
MaxTimeslotcount	Maximum number of timeslots used for PDSCHs = 14

10.3.6.31 PDSCH system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PDSCH information	MP	1 .. <maxPDSCHcount>		
>PDSCH info	MP		PDSCH info 10.3.6.30	
>DSCH TFS	~~O~~MP		Transport format set 10.3.5.20	
>DSCH TFCS	MP		Transport Format Combination Set 10.3.5.17	

Multi Bound	Explanation
MaxPDSCHcount	Maximum number of PDSCHs

10.3.6.36 PRACH info (for RACH)

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Available Signature	MP	1 to <maxSigNum>		
>>>Signature	MP		Enumerated (0,1.2…..15)	
>>Available SF	MP		Enumerated (32,64,128,256)	In chips per symbol Defines the smallest permitted SF (i.e. the maximum rate)
>>Scrambling code number	MP		Integer (0 .. 15)	Identification of scrambling code see TS 25.213
>>Puncturing Limit	MP		Real(0.40..1.00 by step of 0.04)	
>>Available Sub Channel number	MP	1 to < maxSubChNum >		
>>>Sub Channel number	MP		Enumerated (0..11)	
>TDD				
>>Timeslot	MP		Integer (0...14)	
~~>>Channelisation code~~	~~MP~~		~~Enumerated ((8/1)...(8/8), (16/1)...(16/16)~~	~~1:1 mapping between spreading code and midamble shift~~
>>PRACH Channelisation Code	MP		PRACH Channelisation Code 10.3.6.x	
>>PRACH Midamble	OP		Enumerated (Direct, Direct/Inverted)	Direct or direct and inverted midamble to be used

Multi Bound	Explanation
MaxSubChNum	Maximum number of available sub channels = 12
MaxSigNum	Maximum number of available signatures = 16

10.3.6.x PRACH Channelisation Code

This IE is only used in TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE SF	MP			
>SF16				
>>Channelisation Code List	MP	1 to 8		
>>>Channelisation code	MP		Enumerated ((16/1)...(16/16))	1:1 mapping between spreading code and midamble shift
>SF8				
>>Channelisation Code List	MP	1 to 8		
>>>Channelisation Code	MP		Enumerated((8/1)..(8/8))	

10.3.6.46 PUSCH info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
~~CHOICE PUSCH allocation~~	~~MP~~			
~~>PUSCH allocation pending~~			~~Null~~	
~~>PUSCH allocation assignment~~				
~~>>PUSCH power control info~~	~~OP~~		~~PUSCH power control info 10.3.6.47~~	
TFCS Identity	MD		Transport format combination set Identity 10.3.5.18	Default is as specified in 10.3.5.18.
~~>>~~SFN Time info	~~M~~OP		SFN Time info 10.3.6.~~61~~x	
~~>>~~Common timeslot info	~~CH~~MD		Common timeslot info 10.3.6.8	Default is the old Common timeslot info~~Common timeslot info is needed if Common timeslot info needs to be updated.~~
~~>>~~Timeslot List	~~CH~~MD	1 to <maxTimeslotCount>		Default is the old Timeslot List~~Timeslot List is needed if Timeslot List needs to be updated.~~
~~>>~~>Individual timeslot info	MP		Individual timeslot info 10.3.6.25	The first instance of the parameter Individual Timeslot Info corresponds to the timeslot that shall be used first by the physical layer, the second to the timeslot that shall be used second and so on.
>Channelisation Code List	MP	1..2		
>>~~>~~Channelisation Code	MP		Enumerated((1/1),)(2/1),(2/2),(4/1)..(4/4),(8/1)..(8/8),(16/1)..(16/16))	

Multi Bound	Explanation
MaxTimeslotcount	Maximum number of timeslots used for PUSCHs = 14

10.3.6.46a PUSCH Capacity Allocation info

NOTE: Only for TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE PUSCH allocation	MP			
>PUSCH allocation pending			Null	
>PUSCH allocation assignment				
>>PUSCH power control info	OP		PUSCH power control info 10.3.6.47	
>>PUSCH info	MP		PUSCH info 10.3.6.46	

10.3.6.48 PUSCH system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
PUSCH information	MP	1 .. <maxPUSCHcount>		
>PUSCH info	MP		PUSCH info 10.3.6.46	
>USCH TFS	~~O~~MP		Transport format set 10.3.5.20	
>USCH TFCS	MP		Transport Format Combination Set 10.3.5.17	

Multi Bound	Explanation
MaxPUSCHcount	Maximum number of PUSCHs

10.3.6.52 Secondary CCPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Selection Indicator	CV		Enumerated (On, Off)	Needed if send on BCCH.
CHOICE *mode*	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.45	
>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.54	
>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.55	Default is the same scrambling code as for the Primary CPICH
>>STTD indicator	MD		STTD Indicator 10.3.6.58	Default value is "TRUE"
>>Spreading factor	MP		Enumerated(4, 8, 16, 32, 64, 128, 256)	
>>Code number	MP		Integer(0..Spreading factor - 1)	
>>Pilot symbol existence	MD		Boolean	TRUE means the existence. Default value is "TRUE"
>>TFCI existence	MD		Boolean	TRUE means the existence. Default value is "TRUE"
>>Fixed or Flexible Position	MD		Enumerated (Fixed, Flexible)	Default value is "Flexible"
>>Timing Offset	MD		Enumerated(0..38144 by step of 256)	Chip Delay of the Secondary CCPCH relative to the Primary CCPCH. Default value is 0.
>TDD				
>>Offset	MD		Integer (0...Repetition Period -1)	SFN modulo Repetition period = offset. Repetition period is the one indicated in the accompanying Common timeslot info IE
>>Common timeslot info	~~CH~~MP		Common timeslot info 10.3.6.8	~~Common timeslot info is needed if Common timeslot info needs to be updated.~~
>>Individual timeslot info	MP		Individual timeslot info 10.3.6.25	
>>Code List	MP	1.. <maxCodesCount>		
>>>Channelisation Code	MP		Enumerated((16/1)..(16/16))	

10.3.6.xx SFN Time info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Activation time	MD		Integer (0..4094)	System frame number start of the physical channel existence. Default value is "Now"
Duration	MD		Integer(1..4096)	Total number of frames the physical channel will exist. Default value is "infinite".

11.2 PDU definitions

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

PDU-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

IMPORTS

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

    URA-Identity
FROM UTRANMobility-IEs

    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CellUpdateCause,
    CipheringAlgorithm,
    CipheringModeInfo,
    DRX-CycleLengthCoefficient,
    DRX-Indicator,
    EstablishmentCause,
    FailureCauseWithProtErr,
    HyperFrameNumber,
    InitialUE-Capability,
    InitialUE-Identity,
    IntegrityProtActivationInfo,
    IntegrityProtectionModeInfo,
    PagingCause,
    PagingRecordList,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithInfo,
    Re-EstablishmentTimer,
    RedirectionInfo,
    RejectionCause,
    ReleaseCause,
    RLC-ReconfigurationIndicator,
    RRC-MessageTX-Count,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
    URA-UpdateCause,
    WaitTime
FROM UserEquipment-IEs

    PredefinedConfigIdentity,
    RAB-Info,
    RAB-InformationSetupList,
    RB-ActivationTimeInfo,
    RB-ActivationTimeInfoList,
    RB-InformationAffectedList,
    RB-InformationReconfigList,
    RB-InformationReleaseList,
    RB-InformationSetupList,
```

```
    RB-WithPDCP-InfoList,
    SRB-InformationSetupList,
    SRB-InformationSetupList2
FROM RadioBearer-IEs

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

    AllocationPeriodInfo,
    CCTrCH-PowerControlInfo,
    ConstantValue,
    CPCH-SetInfo,
    DL-CommonInformation,
    DL-InfoPerRL-List,
    DL-InformationPerRL,
    DL-InformationPerRL-List,
    DL-DPCH-InfoCommon,
    DL-DPCH-PowerControlInfo,
    DL-OuterLoopControl,
    DL-PDSCH-Information,
    FrequencyInfo,
    IndividualTS-InterferenceList,
    MaxAllowedUL-TX-Power,
    PDSCH-Info,
    PRACH-RACH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-Info,
    RL-AdditionInformationList,
    RL-RemovalInformationList,
    UL-DPCH-InfoShort,
    SSDT-Information,
    TFC-ControlDuration,
    TimeslotList,
    TX-DiversityMode,
    UL-ChannelRequirement,
    UL-DPCH-Info,
    UL-DPCH-InfoHO,
    UL-Interference,
    UL-TimingAdvance
FROM PhysicalChannel-IEs

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

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

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

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

ActiveSetUpdate ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        newU-RNTI                       U-RNTI                              OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        rl-AdditionInformationList      RL-AdditionInformationList          OPTIONAL,
        rl-RemovalInformationList       RL-RemovalInformationList           OPTIONAL,
        tx-DiversityMode                TX-DiversityMode                    OPTIONAL,
        ssdt-Information                SSDT-Information                    OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

ActiveSetUpdateComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

```
CellUpdateConfirm ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        rlc-ReconfIndicatorC-Plane      RLC-ReconfigurationIndicator,
        rlc-ReconfIndicatorU-Plane      RLC-ReconfigurationIndicator,
      -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        prach-RACH-Info                 PRACH-RACH-Info                     OPTIONAL,
        dl-InformationPerRL             DL-InformationPerRL                 OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

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

```
                    fdd                             SEQUENCE {
                        cpch-SetInfo                    CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
                },
                dl-InformationPerRL-List        DL-InformationPerRL-List
            },
            preconfiguration                SEQUENCE {
                predefinedConfigIdentity        PredefinedConfigIdentity,
                ul-DPCH-Info                    UL-DPCH-InfoShort,
                dl-DPCH-InfoCommon              DL-DPCH-InfoCommon,
                dl-InfoPerRL-List               DL-InfoPerRL-List
            }
        },
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             NULL,
            tdd                             SEQUENCE {
                primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power,
                constantValue                   ConstantValue,
                ul-Interference                 UL-Interference,
                cellParametersID                INTEGER (0..127)
            }
        },
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

InitialDirectTransfer ::= SEQUENCE {
    -- Core network IEs
        serviceDescriptor               ServiceDescriptor,
        flowIdentifier                  FlowIdentifier,
        cn-DomainIdentity               CN-DomainIdentity,
        nas-Message                     NAS-Message,
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PhysicalChannelReconfiguration ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        -- TABULAR: UL-ChannelRequirement contains the choice
        -- between UL DPCH info and PRACH info for RACH.
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

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

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

PUSCHCapacityRequest ::= SEQUENCE {
    -- User equipment IEs
        c-RNTI                          C-RNTI,
    -- Measurement IEs
        trafficVolumeMeasuredResultsList
                                        TrafficVolumeMeasuredResultsList,
        timeslotListWithISCP            TimeslotListWithISCP                OPTIONAL,
        primaryCCPCH-RSCP               PrimaryCCPCH-RSCP                   OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

RadioBearerReconfiguration ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReconfigList      RB-InformationReconfigList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   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,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

RadioBearerRelease ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReleaseList       RB-InformationReleaseList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
```

```
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   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,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                         NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

RadioBearerSetup ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
```

```
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   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,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

```
RNTIReallocation ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

RNTIReallocationComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

RRCConnectionReEstablishment ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
        rb-InformationReleaseList       RB-InformationReleaseList           OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList          OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
```

```
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

RRCConnectionReEstablishmentRequest ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        protocolErrorIndicator          ProtocolErrorIndicatorWithInfo,
        -- TABULAR: The IE above is MD in tabular, but making a 2-way choice
        -- optional wastes one bit (using PER) and produces no additional
        -- information.
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism
```

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

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

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

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

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

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

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

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

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

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

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

```
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList2,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

TransportChannelReconfiguration ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
```

```
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                         NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

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

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

TransportFormatCombinationControlFailure ::= SEQUENCE {
    -- User equipment IEs
        failureCause                    FailureCauseWithProtErr,
```

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

URAUpdateConfirm ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

END
```

11.3.6 Physical channel information elements

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

BEGIN

IMPORTS

    maxAddRLcount,
    maxAP-SigNum,
    maxAP-SubCH,
    maxChanCount,
    maxCodeCount,
    maxCodeNum,
    maxCodeNumComp-1,
    maxCombineSet,
    maxCPCH-SetCount,
    maxDelRLcount,
    maxDPDCHcount,
    maxFACH-Count,
    maxMidambleShift-1,
    maxNoCodeGroups,
    maxNoTFCI-Groups,
    maxPCPCHs,
    maxPDSCHcount,
    maxPRACHcount,
    maxPUSCHcount,
    maxReplaceCount,
    maxRLcount,
    maxSCCPCHcount,
    maxSigNum,
    maxSF-Num,
    maxSubChNum,
    maxTFCI-2-Combs,
    maxTFs,
    maxTimeslotCount,
    maxTScount,
    maxUL-CCTrCHcount
FROM Constant-definitions

    ActivationTime
FROM UserEquipment-IEs

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

    SIB-ReferenceListFACH
FROM Other-IEs;

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

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

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

AccessServiceClassIndex ::=         INTEGER (1..8)

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

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

AICH-TransmissionTiming ::=         ENUMERATED {
```

```
                                        e0, e1 }

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

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

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

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

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

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

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

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

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

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

AvailableAP-SignatureList ::=       SEQUENCE (SIZE (1..maxAP-SigNum)) OF
                                        AP-Signature

AvailableAP-SubchannelList ::=      SEQUENCE (SIZE (1..maxAP-SubCH)) OF
                                        AP-Subchannel

AvailableMinimumSF-VCAM ::=         SEQUENCE {
    minimumSpreadingFactor              MinimumSpreadingFactor,
    nf-Max                              NF-Max,
    maxAvailablePCPCH-Number            MaxAvailablePCPCH-Number,
    availableAP-SignatureList           AvailableAP-SignatureList,
    availableAP-SubchannelList          AvailableAP-SubchannelList          OPTIONAL
}

AvailableMinimumSF-ListUCSM ::=     SEQUENCE (SIZE (1..maxSF-Num)) OF
                                        MinimumSpreadingFactor

AvailableMinimumSF-ListVCAM ::=     SEQUENCE (SIZE (1..maxSF-Num)) OF
                                        AvailableMinimumSF-VCAM

AvailableSignatureList ::=          SEQUENCE (SIZE (1..maxSigNum)) OF
                                        Signature

AvailableSubChannelNumber ::=       INTEGER (0..11)

AvailableSubChannelNumberList ::=   SEQUENCE (SIZE (1..maxSubChNum)) OF
                                        AvailableSubChannelNumber

BlockSTTD-Indicator ::=             BOOLEAN

BurstType ::=                       ENUMERATED {
                                        short1, long2 }

BurstType1 ::=                      ENUMERATED { ms4, ms8, ms16 }

BurstType2 ::=                      ENUMERATED { ms3, ms6 }

CCTrCH-PowerControlInfo ::=         SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo
}
```

```
CD-AccessSlotSubchannel ::=         INTEGER (0..11)

CD-AccessSlotSubchannelList ::=     SEQUENCE (SIZE (1..maxSubChNum)) OF
                                        CD-AccessSlotSubchannel

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

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

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

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

CD-SignatureCodeList ::=            SEQUENCE (SIZE (1..maxSigNum)) OF
                                        CD-SignatureCode

CellParametersID ::=                INTEGER (0..127)

CFN ::=                             INTEGER (0..255)

ChannelAssignmentActive ::=         CHOICE {
    notActive                           NULL,
    isActive                            VCAM-Info
}

ChannelisationCode256 ::=           INTEGER (0..255)

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

ChannelReqParamsForUCSM-List ::=    SEQUENCE (SIZE (1..maxSigNum)) OF
                                        ChannelReqParamsForUCSM

ClosedLoopTimingAdjMode ::=         ENUMERATED {
                                        slot1, slot2 }

CodeNumber ::=                      INTEGER (0..maxCodeNum)

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

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

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

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

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

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

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

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

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

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

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

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

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

DL-InformationPerRL-Short ::=       SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                                 NULL
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL                   OPTIONAL
}

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

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

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

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

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

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

DPCH-CompressedModeInfo ::=         SEQUENCE {
    tgl                                 TGL,
    cfn                                 CFN,
    sn                                  Timeslot,
    tgp1                                TGP,
```

```
    tgp2                                TGP                                 OPTIONAL,
    tgd                                 TGD,
    pd                                  PD,
    pcm                                 PCM,
    prm                                 PRM,
    ul-DL-Mode                          UL-DL-Mode,
    compressedModeMethod                CompressedModeMethod,
    -- TABULAR: Scrambling code change is nested inside CompressedModeMethod
    dl-FrameType                        DL-FrameType,
    deltaSIR                            DeltaSIR,
    deltaSIRAfter                       DeltaSIR
}

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

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

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

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

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

DurationTimeInfo ::=                INTEGER (1..4096)

DynamicPersistenceLevel ::=         INTEGER (1..8)

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

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

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

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

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

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

IndividualTimeslotInfo ::=          SEQUENCE {
    timeslotNumber                      Timeslot,
    tfci-Existence                      BOOLEAN,
    -- The IE above is CH, but since it is a boolean it's kept mandatory.
    burstType                           CHOICE {
        type-1                              SEQUENCE {
            midambleShift                       MidambleShiftLong
        },
        type-2                              SEQUENCE {
            midambleShift                       MidambleShiftShort
        }
    }
    burstType                           BurstType,
    midambleShift                       MidambleShift
```

```
}

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

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

IndividualTS-InfoPDSCH ::=          SEQUENCE {
    individualTimeslotInfo              IndividualTimeslotInfo,
    pdsch-ChannelisationCode            DL-TS-ChannelisationCodeListPDSCH-ChannelisationCode
}

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

IndividualTS-InfoPUSCH ::=          SEQUENCE {
    individualTimeslotInfo              IndividualTimeslotInfo,
    puschul-ChannelisationCode          PUSCHUL-TS-ChannelisationCodeList
}

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

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

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

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

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

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

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

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

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

MidambleShiftLong ::=                   INTEGER (0..maxMidambleShift-15)

MidambleShiftShort ::=              INTEGER (0..5)

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

MultiCodeInfo ::=                   INTEGER (1..16)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

-- Here the value 0 represents "infinity" in the tabular notation.
PD ::=                              INTEGER (0..35)

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

PDSCH-CodeInfo ::=                  SEQUENCE {
    spreadingFactor                     SF-PDSCH,
    codeNumber                          CodeNumberDSCH,
    multiCodeInfo                       MultiCodeInfo
}

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

PDSCH-CodeMap ::=                   SEQUENCE {
    spreadingFactor                     SF-PDSCH,
    multiCodeInfo                       MultiCodeInfo
}

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

PDSCH-CodeMapping ::=               SEQUENCE {
    dl-ScramblingCode                   SecondaryScramblingCode,
    signallingMethod                    CHOICE {
        codeRange                           CodeRange,
        tfci-Range                          DSCH-MappingList,
        explicit                            PDSCH-CodeInfoList,
        replace                             ReplacedPDSCH-CodeInfoList
    }
}

PDSCH-Info ::=                      SEQUENCE {
    tfcs-Identity                       TFCS-Identity                   OPTIONAL,
    sfn-timeInfo                            SFN-TimeInfo                OPTIONAL,
    commonTimeslotInfo                  CommonTimeslotInfo              OPTIONAL,
    individualTimeslotInfoList          IndividualTS-InfoPDSCH-List     OPTIONAL
}
```

```
PDSCH-SHO-DCH-Info ::=              SEQUENCE {
    dsch-RadioLinkIdentifier            DSCH-RadioLinkIdentifier,
    tfci-CombiningSet                   TFCI-CombiningSet,
    rl-IdentifierList                   RL-IdentifierList                   OPTIONAL
}

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

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

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

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

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

PICH-Info ::=                       CHOICE {
    fdd                                 SEQUENCE {
        secondaryScramblingCode             SecondaryScramblingCode         OPTIONAL,
        channelisationCode256               ChannelisationCode256,
        pi-CountPerFrame                    PI-CountPerFrame,
        sttd-Indicator                      STTD-Indicator
    },
    tdd                                 SEQUENCE {
        channelisationCode                  TDD-PICH-CCode                  OPTIONAL,
        timeslot                            Timeslot                        OPTIONAL,
        burstType                           BurstType,
        burstType                           CHOICE {
            type-1                              SEQUENCE {
                midambleShift                       MidambleShiftLong
        },
            type-2                              MidambleShiftShort
        }   OPTIONAL,
        midambleShift                       MidambleShift                   OPTIONAL,
        repetitionPeriodLengthOffset        RepPerLengthOffset-PICH         OPTIONAL,
        pagingIndicatorLength               PagingIndicatorLength           OPTIONAL,
        n-GAP                               N-GAP                           OPTIONAL,
        n-PCH                               N-PCH                           OPTIONAL
    }
}

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

PilotBits128 ::=                    ENUMERATED {
                                        pb4, pb8 }

PilotBits256 ::=                    ENUMERATED {
                                        pb2, pb4, pb8 }

PositionFixedOrFlexible ::=         ENUMERATED {
                                        fixed,
                                        flexible }

PowerControlAlgorithm ::=           CHOICE {
    algorithm1                          TPC-StepSize,
    algorithm2                          NULL
}

PowerOffsetP0 ::=                   INTEGER (1..8)

PRACH-Midamble ::=                  ENUMERATED {
                                        direct,
                                        direct-Inverted }

PRACH-Partitioning ::=              SEQUENCE (SIZE (1..8)) OF
                                        AccessServiceClass

PRACH-PowerOffset ::=               SEQUENCE {
    powerOffsetP0                       PowerOffsetP0,
```

```
    preambleRetransMax                  PreambleRetransMax
}

PRACH-RACH-Info ::=                 SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            availableSignatureList              AvailableSignatureList,
            availableSF                         SF-PRACH,
            scramblingCodeWordNumber            ScramblingCodeWordNumber,
            puncturingLimit                     PuncturingLimit,
            availableSubChannelNumberList       AvailableSubChannelNumberList
        },
        tdd                                 SEQUENCE {
            timeslot                            Timeslot,
            channelisationCode                  TDD-PRACH-CCodeList,
            prach-Midamble                      PRACH-Midamble              OPTIONAL
        }
    }
}

PRACH-SystemInformation ::=         SEQUENCE {
    prach-RACH-Info                     PRACH-RACH-Info,
    rach-TransportFormatSet             TransportFormatSet,
    rach-TFCS                           TFCS,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            prach-Partitioning                  PRACH-Partitioning,
            persistenceScalingFactorList        PersistenceScalingFactorList
                                                                            OPTIONAL,
            ac-To-ASC-MappingTable              AC-To-ASC-MappingTable      OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power,
            constantValue                       ConstantValue,
            prach-PowerOffset                   PRACH-PowerOffset,
            rach-TransmissionParameters         RACH-TransmissionParameters,
            aich-Info                           AICH-Info
        },
        tdd                                 SEQUENCE {
            asc-Info                            ASC-Info                    OPTIONAL
        }
    }
}

PRACH-SystemInformationList ::=     SEQUENCE (SIZE (1..maxPRACHcount)) OF
                                        PRACH-SystemInformation

PreambleRetransMax ::=              INTEGER (1..64)

-- **TODO**, tabular definition a little unclear
PreDefPhyChConfiguration ::=        SEQUENCE {
    ul-DPCH-InfoPredef                  UL-DPCH-InfoPredef,
    dl-CommonInformationPredef          DL-CommonInformationPredef
}

PrimaryCCPCH-Info ::=               CHOICE {
    fdd                                 SEQUENCE {
        tx-DiversityIndicator               BOOLEAN
    },
    tdd                                 SEQUENCE {
        timeslot                            Timeslot                    OPTIONAL,
        cellParametersID                    CellParametersID            OPTIONAL,
        syncCase                            SyncCase                    OPTIONAL,
        repetitionPeriodLengthAndOffset     RepetitionPeriodLengthAndOffset
    OPTIONAL,
        blockSTTD-Indicator                 BlockSTTD-Indicator         OPTIONAL
    }
}

PrimaryCCPCH-InfoSI ::=             CHOICE {
    fdd                                 SEQUENCE {
        tx-DiversityIndicator               BOOLEAN
    },
    tdd                                 SEQUENCE {
        repetitionPeriodLengthAndOffset     RepetitionPeriodLengthAndOffset OPTIONAL,
        blockSTTD-Indicator                 BlockSTTD-Indicator         OPTIONAL
    }
}

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

```
PrimaryCPICH-Info ::=               SEQUENCE {
    primaryScramblingCode               PrimaryScramblingCode
}

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

PrimaryScramblingCode ::=           INTEGER (0..511)

PRM ::=                             ENUMERATED {
                                        pr-mode0, pr-mode1 }

PuncturingLimit ::=                 ENUMERATED {
                                        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-AllocationAssignment ::=      SEQUENCE {
    pusch-PowerControlInfo              PUSCH-PowerControlInfo              OPTIONAL,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    timeslotInfoList                    IndividualTS-InfoPUSCH-List         OPTIONAL
}
PUSCH-ChannelisationCode ::=        ENUMERATED {
                                        cc1-1, cc2-1, cc2-2,
                                        cc4-1, cc4-2, cc4-3, cc4-4,
                                        cc8-1, cc8-2, cc8-3, cc8-4,
                                        cc8-5, cc8-6, cc8-7, cc8-8,
                                        cc16-1, cc16-2, cc16-3, cc16-4,
                                        cc16-5, cc16-6, cc16-7, cc16-8,
                                        cc16-9, cc16-10, cc16-11, cc16-12,
                                        cc16-13, cc16-14, cc16-15, cc16-16 }

PUSCH-CapacityAllocationInfo        SEQUENCE {
    pusch-Allocation                    CHOICE {
        pusch-AllocationPending             NULL,
        pusch-AllocationAssignment          SEQUENCE {
            pusch-PowerControlInfo              PUSCH-PowerControlInfo          OPTIONAL,
            pusch-Info                          PUSCH-Info
        }
    }
}

PUSCH-Info ::=                      SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    pusch-Allocation                    CHOICE {
        pusch-AllocationPending             NULL,
    sfn-timeInfo                        SFN-TimeInfo                        OPTIONAL,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    timeslotInfoList                    IndividualTS-InfoPUSCH-List         OPTIONAL
        pusch-AllocationAssignment          PUSCH-AllocationAssignment
    }
}

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

PUSCH-SysInfo ::=                   SEQUENCE {
    pusch-Info                          PUSCH-Info,
    usch-TFS                            TransportFormatSet                  OPTIONAL,
    usch-TFCS                           TFCS
}

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

RACH-TransmissionParameters ::=     SEQUENCE {
    mmax                                INTEGER (1..32),
    nb01Min                             NB01Min,
    nb01Max                             NB01Max
}

ReducedScramblingCodeNumber ::=     INTEGER (0..8191)

RepetitionPeriodAndLength ::=       CHOICE {
    repetitionPeriod1                   NULL,
```

```
    repetitionPeriod2                   INTEGER (1..1),
    -- repetitionPeriod2 could just as well be NULL also.
    repetitionPeriod4                   INTEGER (1..3),
    repetitionPeriod8                   INTEGER (1..7),
    repetitionPeriod16                  INTEGER (1..15),
    repetitionPeriod32                  INTEGER (1..31),
    repetitionPeriod64                  INTEGER (1..63)
}

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

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

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

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

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

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

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

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

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

```
                                        RL-RemovalInformation

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

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

SCCPCH-ChannelisationCodeList ::=       SEQUENCE(SIZE(1..16)) OF
                                            SCCPCH-ChannelisationCode

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

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

ScramblingCodeChange ::=                ENUMERATED {
                                            codeChange, noCodeChange }

ScramblingCodeType ::=                  ENUMERATED {
                                            shortSC,
                                            longSC }

ScramblingCodeWordNumber ::=            INTEGER (0..15)

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

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

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

SecondInterleavingMode ::=              ENUMERATED {
                                            frameRelated, timeslotRelated }

SelectionIndicator ::=                  ENUMERATED {
                                            on, off }

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

```
    sf256                               INTEGER (0..255)
}

SF-DL-DPCH ::=                          CHOICE {
    sfd4                                NULL,
    sfd8                                NULL,
    sfd16                               NULL,
    sfd32                               NULL,
    sfd64                               NULL,
    sfd128                              PilotBits128,
    sfd256                              PilotBits256,
    sfd512                              NULL
}

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

SF-PRACH ::=                            ENUMERATED {
                                        sfpr32, sfpr64, sfpr128, sfpr256 }
SFN-TimeInfo ::=                        SEQUENCE {
    activationTime                      INTEGER (0..4094)               OPTIONAL,
    duration                            DurationTimeInfo                OPTIONAL
}

Signature ::=                           INTEGER (0..15)

SlotFormat ::=                          SEQUENCE {
    pc-PreambleSlotFormat               PC-PreambleSlotFormat,
    ul-DPCCH-SlotFormat                 UL-DPCCH-SlotFormat,
    dl-DPCCH-SlotFormat                 DL-DPCCH-SlotFormat
}

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

SSDT-Information ::=                    SEQUENCE {
    s-Field                             S-Field,
    codeWordSet                         CodeWordSet
}

STTD-Indicator ::=                      BOOLEAN

SyncCase ::=                            ENUMERATED {
                                        sc1, sc2 }

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

TDD-PRACH-CCode8 ::=                    ENUMERATED {
                                        cc8-1, cc8-2, cc8-3, cc8-4,
                                        cc8-5, cc8-6, cc8-7, cc8-8,
                                        cc16-1, cc16-2, cc16-3, cc16-4,
                                        cc16-5, cc16-6, cc16-7, cc16-8,
                                        cc16-9, cc16-10, cc16-11, cc16-12,
                                        cc16-13, cc16-14, cc16-15, cc16-16 }

TDD-PRACH-CCode16 ::=                   ENUMERATED {
                                        cc16-1, cc16-2, cc16-3, cc16-4,
                                        cc16-5, cc16-6, cc16-7, cc16-8,
                                        cc16-9, cc16-10, cc16-11, cc16-12,
                                        cc16-13, cc16-14, cc16-15, cc16-16 }


TDD-PRACH-CCodeList ::=                 CHOICE {
                                        sf8         SEQUENCE(SIZE(1..8)) OF
                                                        TDD-PRACH-CCode8,
                                        sf16        SEQUENCE(SIZE(1..8)) OF
                                                        TDD-PRACH-CCode16
                                        }

TFC-ControlDuration ::=                 ENUMERATED {
                                        tfc-cd1, tfc-cd16, tfc-cd24, tfc-cd32,
```

```
                                    tfc-cd48, tfc-cd64, tfc-cd128,
                                    tfc-cd192, tfc-cd256, tfc-cd512 }

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

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

TGD ::=                             INTEGER (0..35)

TGL ::=                             INTEGER (1..15)

TGP ::=                             INTEGER (1..256)

TimeInfo ::=                        SEQUENCE {
    activationTime                      ActivationTime                      OPTIONAL,
    duration                            DurationTimeInfo                    OPTIONAL
}

Timeslot ::=                        INTEGER (0..14)

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

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

TPC-CombinationIndex ::=            INTEGER (0..5)

TPC-StepSize ::=                    ENUMERATED {
                                    dB1, dB2 }

TX-DiversityMode ::=                ENUMERATED {
                                    noDiversity,
                                    sttd,
                                    closedLoopMode1,
                                    closedLoopMode2 }

UARFCN-Nd ::=                       INTEGER (0..16383)

UARFCN-Nt ::=                       INTEGER (0..16383)

UARFCN-Nu ::=                       INTEGER (0..16383)

UCSM-Info ::=                       SEQUENCE {
    availableMinimumSF-ListUCSM         AvailableMinimumSF-ListUCSM,
    nf-Max                              NF-Max,
    channelReqParamsForUCSM-List        ChannelReqParamsForUCSM-List        OPTIONAL
}
UL-DPCH-InfoHO ::=                  SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoHO          OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            dpdch-ChannelisationCodeList        DPDCH-ChannelisationCodeList,
            tfci-Existence                      BOOLEAN,
            fbi-BitNumber                       FBI-BitNumber,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-CCTrCHList                       UL-CCTrCHList
        }
    }
}

UL-DPCH-InfoPredef ::=              SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power       OPTIONAL,
            pc-Preamble                         PC-Preamble                 OPTIONAL,
            tfci-Existence                      BOOLEAN,
            puncturingLimit                     PuncturingLimit
        },
```

```
        tdd                                 NULL
    }
}

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

UL-DPCH-PowerControlInfo ::=        CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        pc-Preamble                         PC-Preamble,
        powerControlAlgorithm               PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power           OPTIONAL,
        ul-TargetSIR                        UL-TargetSIR,
        handoverGroup                       SEQUENCE {
            individualTS-InterferenceList       IndividualTS-InterferenceList,
            dpch-ConstantValue                  ConstantValue
        }                                                                   OPTIONAL
    }
}

UL-DPCH-PowerControlInfoHO ::=      CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        powerControlAlgorithm               PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power           OPTIONAL,
        ul-TargetSIR                        UL-TargetSIR,
        handoverGroup                       SEQUENCE {
            individualTS-InterferenceList       IndividualTS-InterferenceList,
            dpch-ConstantValue                  ConstantValue
        }
    }
}

UL-DPCH-PowerControlInfoShort ::=   SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dpcch-PowerOffset                   DPCCH-PowerOffset,
            powerControlAlgorithm               PowerControlAlgorithm
        },
        tdd                                 NULL
    }
}

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

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

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

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

UL-TS-ChannelisationCode ::=        ENUMERATED {
                                        cc1-1, cc2-1, cc2-2,
                                        cc4-1, cc4-2, cc4-3, cc4-4,
                                        cc8-1, cc8-2, cc8-3, cc8-4,
                                        cc8-5, cc8-6, cc8-7, cc8-8,
```

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

UL-TS-ChannelisationCodeList ::=    SEQUENCE (SIZE(1..2)) OF
                                        UL-TS-ChannelisationCode

VCAM-Info ::=                       SEQUENCE {
    availableMinimumSF-List             AvailableMinimumSF-ListVCAM
}

END
```

3GPP RAN WG2#13
Oahu, USA, May 22-26, 2000

Document R2-001205
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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

25.331	CR	392r1	Current Version:	3.2.0

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

For submission to:	TSG-RAN #8	for approval	X	strategic		(for SMG use only)
List expected approval meeting # here ↑		for information		non-strategic		

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

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

Source: TSG-RAN WG2 **Date:** 2000-05-25

Subject: TDD preconfiguration for Handover to UTRAN

Work item:

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

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

Reason for change:

This CR includes the changes from CR 327r1 (tdoc R2-001008) and extends the included pre-configuration and post-configuration IEs to include TDD specific elements.

The changes from CR 337r1 (tdoc R2-000951) are merged to the document.

The IE “Maximum allowed UL DPCH TX power” is removed from IE “Uplink DPCH power control info” (TDD case), because it appears in a second place in all messages including “Uplink DPCH power control info”.

Handover to UTRAN message is updated in order to avoid duplication of IEs for TDD.

In the Uplink DPCH info, the possibility is added for TDD to use up to two channelisation codes per timeslot.

Some editorial modifications are done.

The ASN.1 code is changed accordingly.

--

The following changes are proposed for alignment with SMG-2

- Model the RRC information carried within GSM messages as information elements rather than as RRC messages. This implies that the 14.13 subcluases should be restructured/ renamed
- Removal of 14.13.1.1: UE information request, handover to UTRAN (this will be covered by GSM specification)
- Re- arrangement of 14.13.2.1: UE information indication, handover to UTRAN: the UE capability information is seperated from the security information (to be consistent)

The following changes are proposed for alignment within RRC

- Inclusion of re- establishment timers in System Information Block type 16 and Pre-defined configuration information

- Apply same IE- groups within IEs “Predefined RB configuration” and IE “Predefined TrCH configuration” as used within other messages
- The integrity protection HFN is changed to HFN and it status is changed to CH; mandatory only if not provided prior to handover

Furthermore, some other changes are proposed:

- Introduction of a third version for IEs for which preconfiguration is used to facilitate consistency checking

- Several small changes concerning preconfiguration
  - Correction of redundant or missing information
  - Improve consistency concerning need of IEs related to same feature

- Completion of part in ASN.1 marked as “-- **TODO**, tabular definition a little unclear”

- Several editorial corrections

R1: The following changes are proposed in r1 of this CR

- Alignment with changes regarding use of HFN (HFN to be changed into list of START in section 14.13.2.x, UE security information in line with CR 310r2, Tdoc 983)

- Alignment with other agreed CR’s affecting HoTU specific IEs:

  - 10.3.6.14b, Downlink DPCH info common for all RL Pre: align semantics description for speading factor with CR 281r1, Tdoc 905. Tabular + ASN.1

  - 10.3.6.15a, Downlink DPCH info for each RL post: include spreading factor in a similar manner as proposed in CR 281r1, Tdoc 905 for Downlink DPCH info for each RL (no change to ASN.1 required, applies modified definition)

- Correction of small errors:
  - 10.3.6.66a & 10.3.6.68a: removal of condition and multiplcity tables – not applicalbe here
  - ASN.1: PCPICH-UsageForChannelEst in DL-DPCH-InfoPerRL-Post should not be optional
  - ASN.1: Handover to UTRAN, preconfiguration case, DL-DPCH-InfoCommon replaced by DL-CommonInformationPost
  - ASN.1: DL-InfoPerRL-ListPost replaced by DL-InformationPerRL-ListPost
  - 14.12.1.2: Include MP in needed column for re- establishment timer
  - 14.13.2.2: List of predefined configuration status information is optimised

Clauses affected:

10.2.8, 10.2.9, 10.2.18, 10.2.23, 10.2.26, 10.2.29, 10.2.35, 10.2.42, 10.2.51, 10.2.49.4.18, 10.3.4.7, 10.3.4.15, 10.3.4.19, 10.3.5.2, 10.3.5.7, 10.3.5.12, 10.3.5.21, 10.3.6.40, 10.3.6.65, 10.3.6.66, 10.3.6.66a (NEW), 10.3.6.67, 10.3.6.68, 10.3.6.68a (NEW), 10.3.6.14, 10.3.6.14a (NEW), 10.3.6.14b (NEW), 10.3.6.15, 10.3.6.15a (NEW), 10.3.6.15b (NEW), 10.3.6.17, 10.3.6.17a (NEW), 10.3.6.17b (NEW), 10.3.6.18, 10.3.6.19
11.2, 11.3

14.13

Other specs Affected:

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

Other comments:

The Changes proposed in CR 327r1 to 25.331 (R2-001008) are included in this document.
The Changes proposed in CR 337r1 to 25.331 (R2-000951) are included in this

document.

help.doc

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

10.2.8 HANDOVER TO UTRAN COMMAND

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

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

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

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
New U-RNTI	MP		U-RNTI Short 10.3.3.46	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
Ciphering algorithm	OP		Ciphering algorithm 10.3.3.4	
RAB info	MP		RAB info 10.3.4.8	One RAB is established
CHOICE specification mode	MP			
>Complete specification				
UE information elements				
>>Re-establishment timer	MP		Re-establishment timer 10.3.3.31	
RB information elements				
>>Signalling RB information to setup list	MP	1 to <MaxSRBcount>		For each signalling radio bearer established
>>>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
>>RB information to setup list	MP	1 to <MaxSetupRBcount>		
>>>RB information to setup	MP		RB information to setup 10.3.4.15	
Uplink transport channels				
>>UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.21	
>>Added or Reconfigured TrCH information	MP	1 to <MaxReconfAddTrCHCount>		
>>>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	

Information Element	Need	Multi	Type and reference	Semantics description
			10.3.5.7	
>>Added or Reconfigured TrCH information	MP	1 to <MaxReconfAddTrCHCount>		
>>>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
Uplink radio resources				
>>Uplink DPCH info	MP		Uplink DPCH info 10.3.6.65	
Downlink radio resources				
>>CHOICE *mode*	MP			
>>>FDD				
>>>>Downlink information common for all radio links	MP		Downlink information common for all radio links 10.3.6.17	
>>>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
~~>>CHOICE mode~~	~~MP~~			
~~>>>FDD~~				
>>>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>>>TDD				(no data)
>>Downlink information per radio link	MP	1 to <MaxRLcount>		
>>>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	
>Preconfiguration				
>>Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5	
>>Uplink DPCH info	MP		Uplink DPCH info ~~Short~~ Post 10.3.6.66	
Downlink radio resources				
>>CHOICE *mode*				
>>>FDD				
>>>>Downlink information common for all radio links			Downlink information common for all radio links Post 10.3.6.17a	
~~>>>Downlink DPCH info common for all radio links~~	~~MP~~		~~Downlink DPCH info common for all RL 10.3.6.14~~	
>>>TDD				(no data)
>>Downlink information per radio link	MP	1 to <MaxRlcount>		Send downlink information for each radio link to be set-up. In TDD MaxRlcount is 1.
>>>Downlink information for	MP		Downlink	

Information Element	Need	Multi	Type and reference	Semantics description
each radio link			information for each ~~RL~~ radio link ~~short~~Post 10.3.6.19	
~~>>>Downlink DPCH info for each radio link~~	~~MP~~		~~Downlink DPCH info for each RL 10.3.6.15~~	
Frequency info	MP		Frequency info 10.3.6.24	
Maximum allowed UL TX power	MP		Maximum allowed UL TX power 10.3.6.27	
CHOICE mode	MP			
>FDD				(no data)
>TDD				
>>Primary CCPCH Tx Power	MP		Primary CCPCH Tx Power 10.3.6.42	
~~>> Constant Value~~	~~MP~~		~~Constant value 10.3.6.9~~	
~~>>UL Interference~~	~~MP~~		~~UL interference 10.3.6.64~~	
~~>>Cell parameters ID~~	~~MP~~		~~Integer (0...127)~~	~~Description TBI~~

Multi Bound	Explanation
MaxRlcount	Maximum number of radio links
MaxSetupRBcount	The maximum number of RBs to setup.

10.2.9 HANDOVER TO UTRAN COMPLETE

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

RLC-SAP: AM

Logical channel: DCCH

Direction: UE → UTRAN

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
~~Integrity protection h~~Hyper frame number	~~MP~~CH		Hyper frame number 10.3.3.13	The IE is mandatory if it has not been transferred prior to the handover

10.2.18 PHYSICAL CHANNEL RECONFIGURATION

This message is used by UTRAN to assign, replace or release a set of physical channels used by a UE.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.45	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB information elements				
RB with PDCP information list	OP	1 to <MaxRBWithPDCPCount>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>RB with PDCP information	MP		RB with PDCP information 10.3.4.17	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing value of the maximum allowed UL TX power
CHOICE *channel requirement*	OP			At least one criticality=reject spare value needed for future extension
>Uplink DPCH info			Uplink DPCH info	

Information Element	Need	Multi	Type and reference	Semantics description
			10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
CHOICE *mode*	MP			
>FDD				
>>Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
~~CHOICE *mode*~~	~~MP~~			
~~>FDD~~				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
> TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
MaxRBWithPDCPCount	Maximum number of radio bearers which can have PDCP entity configured
MaxRLcount	Maximum number of radio links to be set up

10.2.23 RADIO BEARER RECONFIGURATION

This message is sent from UTRAN to reconfigure parameters related to a change of QoS. This procedure can also change the multiplexing of MAC, reconfigure transport channels and physical channels.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.45	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
CN information elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB information elements				
RB information to reconfigure list	MP	1to <MaxReconRBCount>		
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.13	
RB information to be affected list	OP	1 to <MaxOtherRBcount>		
>RB information to be affected	MP		RB information to be affected 10.3.4.12	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all	OP		UL Transport channel	

Information Element	Need	Multi	Type and reference	Semantics description
transport channels			information common for all transport channels 10.3.5.21	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
> Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE *mode*	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.4	
>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRACReconAddTrCHCount>		
>>>DRAC static information	MP		DRAC static information 10.3.5.8	
>TDD				(no data)
Downlink transport channels				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.7	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE *channel requirement*	OP			At least one spare choice

Information Element	Need	Multi	Type and reference	Semantics description
				(criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
CHOICE *mode*	MP			
>FDD				
>>Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
~~CHOICE *mode*~~	~~MP~~			
~~>FDD~~				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
MaxRLcount	Maximum number of radio links
MaxOtherRBcount	Maximum number of RBs to be affected
MaxReconfRBcount	Maximum number of RBs to be reconfigured
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconAddTrCHCount	Maximum number of transport channels to add and reconfigure
MaxDRACReconAddTrCHCount	Maximum number of transport channels to add and reconfigure for DRAC
MaxSysInfoBlockFACHCount	Maximum number of references to system information blocks on the FACH

10.2.26 RADIO BEARER RELEASE

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

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.45	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB Information Elements				
RB information to release list	MP	1 to <MaxRelRBcount>		
>RB information to release	MP		RB information to release 10.3.4.14	
RB information to be affected list	OP	1 to <MaxOtherRBcount>		
>RB information to be affected	MP		RB information to be affected 10.3.4.12	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport	

Information Element	Need	Multi	Type and reference	Semantics description
			channels 10.3.5.21	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE *mode*	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.4	
>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRACReconAddTrCHCount>		
>>>DRAC static information	MP		DRAC static information 10.3.5.8	
>TDD				(no data)
Downlink transport channels				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.7	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE *channel requirement*	OP			At least one spare choice (criticality = reject) required
>Uplink DPCH info			Uplink DPCH info	

Information Element	Need	Multi	Type and reference	Semantics description
			10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
CHOICE *mode*	MP			
>FDD				
>>Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
~~CHOICE *mode*~~	~~MP~~			
~~>FDD~~				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
MaxRLcount	Maximum number of radio links
MaxRelRBcount	Maximum number of RBs to be released
MaxOtherRBcount	Maximum number of Other RBs (i.e., RBs not being released) affected by the procedure
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxSysInfoBlockFACHCount	Maximum number of references to system information blocks on the FACH
MaxReconfAddTrCHCount	Maximum number of transport channels to add and reconfigure
MaxDRACReconAddTrCHCount	Maximum number of transport channels to add and reconfigure for DRAC

10.2.29 RADIO BEARER SETUP

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

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.45	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB Information Elements				
Signalling RB information to setup list	OP	1 to <MaxSRBcount>		For each signalling radio bearer established
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
RAB information to setup list	MP	1 to <MaxRABcount>		For each RAB established
>RAB information for setup	MP		RAB information to setup 10.3.4.9	
RB information to be affected list	OP	1 to <MaxOtherRBcount>		
>RB information to be affected	MP		RB information to be affected	

Information Element	Need	Multi	Type and reference	Semantics description
			10.3.4.12	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.21	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE *mode*	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.4	
>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRACReconAddTrCHCount>		
>>>DRAC static information	MP		DRAC static information 10.3.5.8	
>TDD				(no data)
Downlink transport channels				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels10.3.5.7	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted DL TrCH information	MP		Deleted DL TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				

Information Element	Need	Multi	Type and reference	Semantics description
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE *channel requirement*	OP			At least one spare choice (criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
CHOICE *mode*	MP			
>FDD				
>>Downlink information common for all radio links	OP		Downlink information common for all radio links10.3.6.17	
>>Downlink PDSCH information	OP		Downlink PDSCH information10.3.6.21	
~~CHOICE *mode*~~	~~MP~~			
~~>FDD~~				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
MaxRLcount	Maximum number of radio links
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconfAddcount	Maximum number of Transport CHannels reconfigured or added
MaxDRACReconfAddcount	Maximum number of Transport CHannels reconfigured or added for DRAC
MaxSRBcount	Maximum number of signalling RBs that could be setup with this message
MaxRABcount	Maximum number of RABs that could be setup with this message
MaxRBcount	Maximum number of RBs pre RAB that could be setup with this message
MaxOtherRBcount	Maximum number of Other RBs (i.e., RBs not being released) affected by the procedure

10.2.35 RRC CONNECTION RE-ESTABLISHMENT

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

RLC-SAP: UM

Logical channel: CCCH, DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
U-RNTI	CV-CCCH		U-RNTI 10.3.3.45	
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.45	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		UTRAN DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB Information Elements				
Signalling RB information to setup list	OP	1 to <MaxSRBcount>		For each signalling radio bearer established
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
RAB information for setup list	OP	1 to <MaxRABcount>		For each RAB established
>RAB information for setup	MP		RAB information for setup 10.3.4.9	
RB information to release list	OP	1 to <MaxRelRBcount>		
>RB information to release	MP		RB information	

Information Element	Need	Multi	Type and reference	Semantics description
			to release 10.3.4.14	
RB information to reconfigure list	OP	1 to <MaxReconRBcount>		
>RB information to reconfigure	MP		RB information to reconfigure 10.3.4.13	
RB information to be affected list	OP	1 to <MaxOtherRBcount>		
>RB information to be affected	MP		RB information to be affected 10.3.4.12	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.21	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted UL TrCH information	MP		Deleted UL TrCH information 10.3.5.6	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
CHOICE *mode*	OP			
>FDD				
>>CPCH set ID	OP		CPCH set ID 10.3.5.4	
>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRACReconAddTrCHCount>		
>>>DRAC static information	MP		DRAC static information 10.3.5.8	
>TDD				(no data)
Downlink transport channels				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.7	
Deleted TrCH information list	OP	1 to <MaxDelTrCHCount>		
>Deleted DL TrCH information	MP		Deleted DL	

Information Element	Need	Multi	Type and reference	Semantics description
			TrCH information 10.3.5.5	
Added or Reconfigured TrCH information list	OP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources			~~Maximum allowed UL TX power 10.3.6.27~~	
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE *channel requirement*	OP		~~Uplink DPCH info 10.3.6.65~~	At least one spare choice (criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65~~PRACH Info (for RACH) 10.3.6.36~~	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
CHOICE *mode*	MP			
>FDD				
>>Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
~~CHOICE *mode*~~	~~MP~~			
~~>FDD~~				
>>CPCH SET Info	OP		CPCH SET Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Condition	Explanation
CCCH	This IE is only sent when CCCH is used

Multi Bound	Explanation
MaxSRBcount	Maximum number of signalling RBs that could be setup with this message
MaxRABcount	Maximum number of RABs that could be setup with this message
MaxSetupRBcount	Maximum number of RBs to be setup
MaxRelRBcount	Maximum number of RBs to be released
MaxReconRBcount	Maximum number of RBs to be reconfigured
MaxOtherRBcount	Maximum number of RBs to be affected.
MaxDelTrCHcount	Maximum number of Transport CHannels to be removed
MaxReconfAddTrCHCount	Maximum number of transport channels to add and reconfigure
MaxDRACReconAddTrCHCount	Maximum number of transport channels to add and reconfigure for DRAC
MaxRLcount	Maximum number of radio links

10.2.42 RRC CONNECTION SETUP

This message is used by the network to accept the establishment of an RRC connection for an UE, including assignment of signalling link information, transport channel information and optionally physical channel information.

RLC-SAP: UM

Logical channel: CCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Initial UE identity	MP		Initial UE identity 10.3.3.15	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	MP		U-RNTI 10.3.3.45	
New C-RNTI	OP		C-RNTI 10.3.3.7	
UTRAN DRX cycle length coefficient	MP		DRX cycle length coefficient 10.3.3.9	
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
Capability update requirement	MD		Capability update requirement 10.3.3.2	Default value is defined in subclause 10.3.3.3
RB Information Elements				
Signalling RB information to setup list	MP	3 to 4		Information for signalling radio bearers, in the order RB 0 up to 3.
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.21	
Added or Reconfigured TrCH information list	MP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
Downlink transport channels				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for	

Information Element	Need	Multi	Type and reference	Semantics description
			all transport channels 10.3.5.7	
Added or Reconfigured TrCH information list	MP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE *channel requirement*	OP			At least one spare choice (criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
CHOICE *mode*	MP			
>FDD				
>>Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
MaxReconfAddTrCHCount	Maximum number of new transport channels to set
MaxRLcount	Maximum number of radio links to be set up

10.2.51 TRANSPORT CHANNEL RECONFIGURATION

This message is used by UTRAN to configure the transport channel of a UE. This also includes a possible reconfiguration of physical channels. The message can also be used to assign a TFC subset and reconfigure physical channel.

RLC-SAP: AM or UM

Logical channel: DCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Integrity check info	CH		Integrity check info 10.3.3.16	
Integrity protection mode info	OP		Integrity protection mode info 10.3.3.19	
Ciphering mode info	OP		Ciphering mode info 10.3.3.5	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	OP		U-RNTI 10.3.3.45	
New C-RNTI	OP		C-RNTI 10.3.3.7	
DRX Indicator	MP		DRX Indicator 10.3.3.10	
UTRAN DRX cycle length coefficient	MD		DRX cycle length coefficient 10.3.3.9	Default value is the existing value of UTRAN DRX cycle length coefficient
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
CN Information Elements				
CN Information info	OP		CN Information info 10.3.1.3	
RB information elements				
RB with PDCP information list	OP	1 to <MaxRBWithPDCPCount>		This IE is needed for each RB having PDCP in the case of lossless SRNS relocation
>RB with PDCP information	MP		RB with PDCP information 10.3.4.17	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.21	
Added or Reconfigured TrCH information list	MP	1 to <MaxReconfAddTrCH		

Information Element	Need	Multi	Type and reference	Semantics description
		Count>		
>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 10.3.5.4	
>> Added or Reconfigured TrCH information for DRAC list	OP	1 to <MaxDRACReconAddTrCHCount>		
>>>DRAC static information	MP		DRAC static information 10.3.5.8	
>TDD				(no data)
Downlink transport channels				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for all transport channels 10.3.5.7	
Added or Reconfigured TrCH information list	MP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE *channel requirement*	OP			At least one spare choice (criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
CHOICE *mode*	MP			
>FDD				
>>Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
>>Downlink PDSCH information	OP		Downlink PDSCH information 10.3.6.21	
~~CHOICE *mode*~~	~~MP~~			
~~>FDD~~				
>>CPCH set Info	OP		CPCH set	

Information Element	Need	Multi	Type and reference	Semantics description
			Info 10.3.6.11	
>TDD				(no data)
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
MaxRBWithPDCPCount	Maximum number of radio bearers which can have PDCP entity configured
MaxRLcount	Maximum number of radio links to be set up
MaxReconAddCount	Maximum number of Transport Channels reconfigured or added
MaxDRACReconAddCount	Maximum number of Transport Channels reconfigured or added for DRAC

10.2.49.4.18 System Information Block type 16

The system information block type 16 contains radio bearer, transport channel and physical channel parameters to be stored by UE in idle and connected mode for use during handover to UTRAN. The block may also contain scheduling information for other system information blocks.

Information Element	Need	Multi	Type and Reference	Semantics description
Other information elements				
References to other system information blocks	OP		References to other system information blocks 10.3.8.10	
RB information elements				
Predefined radio configurations list	MP	1 to <maxPredefConfigCount>		
>Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5	
> Predefined configuration value tag	OP		Predefined configuration value tag 10.3.4.6	
UE information elements				
>Re-establishment timer	MP		Re-establishment timer 10.3.3.31	
RB information elements				
>Predefined RB configuration	MP		Predefined RB configuration 10.3.4.7	
TrCH Information Elements				
>Predefined TrCH configuration	MP		Predefined TrCH configuration 10.3.5.12	
PhyCH Information Elements				
>Predefined PhyCH configuration	MP		Predefined PhyCH configuration 10.3.6.40	

Multi Bound	Explanation
MaxPredefConfigCount	Maximum number of predefined configurations
~~MaxSRBcount~~	~~Maximum number of signalling RBs that could be setup with this message~~
~~MaxRBcount~~	~~Maximum number of RBs~~
~~MaxTrCH~~	~~Maximum number of transport channels~~

10.3.4.5 Predefined configuration identity

This information element identifies a pre- defined radio parameter configuration.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Predefined radio configuration identity	MP		Enumerated (0..15)	

10.3.4.6 Predefined configuration value tag

This information element is used to identify different versions of a radio bearer configuration as may be used within one PLMN e.g. to support different UTRAN implementations.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Predefined configuration value tag	MP		Integer(0..15)	

10.3.4.7 Predefined RB configuration

This information element concerns a pre- defined configuration of radio bearer parameters

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Signalling radio bearer information	~~MP~~	~~1 to <maxSRBcount>~~		~~For each signalling radio bearer~~
Signalling RB information to setup List	MP	1 to <maxSRBcount>		For each signalling radio bearer
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
~~>RB identity~~	~~MP~~		~~RB identity 10.3.4.11~~	
~~>CHOICE RLC info type~~	~~MP~~			~~At least one spare value is needed for future extensions with criticality reject~~
~~>>RLC info~~	~~MP~~		~~RLC info 10.3.4.18~~	~~Allowed when the value of IE "RB identity" is between 0 and 31, inclusive~~
~~>RB mapping info~~	~~MP~~		~~RB mapping info 10.3.4.16~~	
RB information				Only one RAB supported
RB information to setup List	MP	1 to <maxRBcount>		
>RB information to setup	MP		RB information to setup 10.3.4.15	
~~>RB information list~~	~~OP~~	~~1 to <MaxRBcount>~~		~~For each RB belonging to the RAB~~
~~>>RB identity~~	~~MP~~		~~RB identity 10.3.4.11~~	
~~>>PDCP info~~	~~OP~~		~~PDCP info 10.3.4.2~~	
~~>>RLC info~~	~~MP~~		~~RLC info 10.3.4.18~~	
~~>>RB mapping info~~	~~MP~~		~~RB mapping info 10.3.4.16~~	

Multi Bound	Explanation
MaxSRBcount	Maximum number of signalling RBs that could be setup with this message
MaxRBcount	Maximum number of RBs

10.3.4.15 RB information to setup

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		RB identity 10.3.4.11	
PDCP info	OP		PDCP info 10.3.4.2	
RLC info	MP		RLC info 10.3.4.18	
RB mapping info	MP		RB mapping info 10.3.4.16	

Multi Bound	Explanation
MaxSetupRBcount	The maximum number of RBs to setup.

NOTE This information element is included within IE "Predefined RB configuration"

10.3.4.19 Signalling RB information to setup

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MD		RB identity 10.3.4.11	Default value is the smallest value not yet used as default in the message (e.g., 0, then 1, and so on)
CHOICE *RLC info type*	MP			
>RLC info			RLC info 10.3.4.18	
RB mapping info	MP		RB mapping info 10.3.4.16	

NOTE This information element is included within IE "Predefined RB configuration"

10.3.5.2 Added or Reconfigured UL TrCH information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transport channel identity	MP		Transport channel identity 10.3.5.16	
TFS	MP		Transport Format Set 10.3.5.20	
CHOICE mode	OP			
>TDD				
>> UL DCH TFCS Identity	OP		Transport Format Combination Set Identity 10.3.5.18	
>FDD				(no data)

NOTE This information element is included within IE "Predefined TrCh configuration"

10.3.5.7 DL Transport channel information common for all transport channels

Information Element/Group name	Need	Multi	Type and reference	Semantics description
SCCPCH TFCS	OP		Transport Format Combination Set 10.3.5.17	This IE should be absent within IE "Predefined RB configuration"
CHOICE *mode*	OP			
>TDD				
>>Individual DL CCTrCH information	OP	1 to >MaxDLCCTrCHCount>		
>>>DL DCH TFCS Identity	MP		Transport format combination set identity 10.3.5.18	
>>>DL DCH TFCS	MP		Transport format combination set 10.3.5.17	
>FDD				
>>DL DCH TFCS	OP		Transport Format Combination Set 10.3.5.17	

Multi Bound	Explanation
MaxDLCCTrCHCount	Maximum number of DL CCTrCHs currently supported by this UE.

NOTE This information element is included within IE "Predefined TrCh configuration

10.3.5.12 Predefined TrCH configuration

This information element concerns a pre- defined configuration of transport channel parameters.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
UL Transport channel information common for all transport channels	MP		UL Transport channel information common for all transport channels 10.3.5.21	
~~Uplink TFCS~~	~~OP~~		~~Transport formation combination set 10.3.5.17~~	
~~CHOICE mode~~	~~MP~~			
~~>TDD~~				
~~>>Uplink TFCS Identity~~	~~OP~~		~~Transport format combination set identity 10.3.5.18~~	
Added or Reconfigured TrCH information				
Added or Reconfigured UL TrCH information	~~OP~~MP	1 to <MaxTrCH>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
~~>Transport channel identity~~	~~MP~~		~~Transport channel identity 10.3.5.16~~	
~~>TFS~~	~~MP~~		~~Transport format set 10.3.5.20~~	
DL Transport channel information common for all transport channels	MP		DL Transport channel information common for all transport channels 10.3.5.7	
~~Downlink TFCS~~	~~OP~~		~~Transport format combination set 10.3.5.17~~	
~~CHOICE mode~~	~~MP~~			
~~>TDD~~				
~~>>Downlink TFCS Identity~~	~~OP~~		~~Transport format combination set identity 10.3.5.18~~	
Downlink transport channels				
Added or Reconfigured DL TrCH information	~~OP~~MP	1 to <MaxTrCH>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
~~>Transport channel identity~~	~~MP~~		~~Transport channel identity 10.3.5.16~~	
~~>TFS~~	~~MP~~		~~Transport format set~~	

			~~10.3.5.20~~	
~~>Quality target~~			~~Quality target 10.3.5.13~~	
~~>Transparent mode signalling info~~			~~Transparent mode signalling info 10.3.5.15~~	

Multi Bound	Explanation
MaxTrCH	Maximum number of transport channels

10.3.5.21 UL Transport channel information common for all transport channels

Information Element/Group name	Need	Multi	Type and reference	Semantics description
TFC subset	MD		Transport Format Combination Subset 10.3.5.19	Default value is the complete existing set of transport format combinations
CHOICE *mode*	OP			
>TDD				
>>Individual UL CCTrCH information	OP	1 to <MaxULCCTrCHCount>		
>>>UL DCH TFCS Identity	MP		Transport format combination set identity 10.3.5.18	
>>>~~D~~UL DCH TFCS	MP		Transport format combination set 10.3.5.17	
>FDD				
>>UL DCH TFCS	MP		Transport formation combination set 10.3.5.17	

Multi Bound	Explanation
MaxULCCTrCHCount	Maximum number of UL CCTrCHs currently supported by this UE.

NOTE This information element is included within IE “Predefined TrCh configuration”

10.3.6.40 Predefined PhyCH configuration

This information element concerns a pre- defined configuration of physical channel parameters.

Information Element/Group name	Need	Multi	Type and Reference	Semantics description
Uplink radio resources				
Uplink DPCH info	MP		Uplink DPCH info Pre 10.3.6.6566a	
>Uplink DPCH power control info	MP		Uplink DPCH power control info 10.3.6.67	
>>CHOICE mode	MP			
>>>FDD				
>>>>Maximum allowed UL DPCH TX power	CV		Maximum allowed UL DPCH TX power 10.3.6.27	
>>>>PC Preamble	CV		Enumerated(0,8)	
>>>>TFCI existence	MP		Boolean	TRUE means existence
>>>>Puncturing Limit	MP		Real(0.40 ..1 by step of 0.04)	
Downlink radio resources				
CHOICE *mode*				
>FDD				
>>Downlink information common for all radio links			Downlink information common for all radio links Pre 10.3.6.17b	
>TDD				(no data)
>Downlink DPCH info common for all RL	OP		Downlink DPCH info common for all RL 10.3.6.14	
>Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.16	
>Spreading factor			Enumerated(4, 8, 16, 32, 64, 128, 256)	
>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
>TFCI existence	MP		Boolean	TRUE means existence
>Number of bits for Pilot bits	OP		Enumerated (2,4,8)	In bits
>CHOICE mode	MP			
>>FDD				
>>>Default DPCH Offset Value	OP		Default DPCH Offset Value 10.3.6.13	

10.3.6.65 Uplink DPCH info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	OP		Uplink DPCH power control info 10.3.6.67	
CHOICE *mode*	MP			
>FDD				
>>Scrambling code type	MP		Enumerated(short, long)	
>>Scrambling code number			Integer(0..77 7215 by step of 16)	
>>Number of DPDCH	CV-Single	1 to <maxDPD CHcount>		MaxDPDCH is 1 in HANDOVER TO UTRAN COMMAND
>>>DPDCH channelisation code	MP		Enumerated(4, 8, 16, 32, 64, 128, 256)	SF of the channelisation code for data part
>>TFCI existence	MD		Boolean	TRUE means existence. Default value is "TRUE"
>>Number of FBI bits	CH		Integer (1, 2)	In bits. Number of FBI bits is needed if SSDT or FB Mode Transmit Signalling is supported.
>>Puncturing Limit	MP		Real(0.40 ..1 by step of 0.04)	
>TDD				
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.69	
>>UL CCTrCH List	MP~~CH~~	1 to <maxULC CTrCHcou nt>		~~MaxULCCTrCHcount is 1 if not in TDD - TDD handover procedure.~~
>>>TFCS Identity	MD			Default value is 1.
>>>Time info	MP		Time info 10.3.6.61	
>>>Common timeslot info	~~CH~~MD		Common timeslot info 10.3.6.8	~~Common timeslot info is needed if Common timeslot info needs to be updated.~~Default is the current Common timeslot info
>>>Timeslot List	~~CH~~MD	1 to < max Timeslot count>		~~Timeslot List is needed if Timeslot List needs to be updated.~~Default is the current Timeslot List
>>>>Individual timeslot info	MP		Individual timeslot info 10.3.6.25	The first instance of the parameter Individual Timeslot Info corresponds to the timeslot that shall be used first by the physical layer, the second to the timeslot that shall be used second and so on.
>>>>Code List	MP	1..2		
>>>>Channelisation Code	MP		Enumerated((1/1),)(2/1),(2/2),(4/1)..(4/ 4),(8/1)..(8/8) ,(16/1)..(16/1 6))	

Condition	Explanation
Single	This IE is included if IE "Number of DPDCH" is "1"

Multi Bound	Explanation
MaxDPDCHcount	Maximum number of DPDCHs
MaxTimeslotcount	Maximum number of timeslots used for DPCHs
MaxULCCTrCHcount	Maximum number of CCTrCHs configured by the message = 8

10.3.6.66 Uplink DPCH info ~~Short~~Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	MP		Uplink DPCH power control info ~~Short~~ Post 10.3.6.68	
CHOICE *mode*	MP			
>FDD				
>>Scrambling code type	MP		Enumerated(short, long)	
>>Reduced scrambling code number			Integer(0..8191)	Sub-range of values for initial use upon handover to UTRAN.
>>DPDCH channelisation code	MP		Enumerated(4, 8, 16, 32, 64, 128, 256)	SF of the channelisation code for data part There is only one DPDCH for this case
~~>>Number of FBI bits~~	~~CH~~		~~Integer (1, 2)~~	~~In bits. Number of FBI bits is needed if SSDT or FB Mode Transmit Signalling is supported.~~
>TDD				~~(no data)~~
>>Uplink Timing Advance	OP		Uplink Timing Advance 10.3.6.69	
>>Time info	MP		Time Info 10.3.6.61	
>>Common timeslot info	MP		Common Timeslot Info 10.3.6.8	
>>Timeslot List	MP	1 to < MaxTS>		
>>>Individual timeslot info	MP		Individual timeslot info 10.3.6.25	The first instance of the parameter Individual Timeslot Info corresponds to the timeslot that shall be used first by the physical layer, the second to the timeslot that shall be used second and so on.
>>>Code List	MP	1..2		
>>>>Channelisation Code	MP		Enumerated((1/1),)(2/1),(2/2),(4/1)..(4/4),(8/1)..(8/8),(16/1)..(16/16))	

Multi Bound	Explanation
MaxDPDCHcount	Maximum number of DPDCHs

10.3.6.66a Uplink DPCH info Pre

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Uplink DPCH power control info	OP		Uplink DPCH power control info Pre 10.3.6.68a	
CHOICE *mode*	MP			
>FDD				
>>TFCI existence	MP		Boolean	TRUE means existence. Default value is "TRUE"
>>Puncturing Limit	MP		Real(0.40 ..1 by step of 0.04)	
>TDD				(no data)

10.3.6.67 Uplink DPCH power control info

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control in FDD and parameters for uplink open loop power control in TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>DPCCH Power offset	MP		Enumerated(-164,..-6 by step of 2)	In dB
>>PC Preamble	~~CV~~MP		Enumerated (0, 8)	~~PC Preamble is absent in HANDOVER TO UTRAN COMMAND. Otherwise it is present. Number of power control preamble slots~~
>>Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands
>>TPC step size	CV algo		Enumerated (1, 2)	In dB
>TDD				
~~>>Maximum allowed UL DPCH TX power~~	~~MD~~		~~Maximum allowed UL TX power 10.3.6.27~~	~~Default value is according to power class (25.102).~~
>>UL target SIR	MP		Real (-11 .. 20 by step of 0.5dB)	In dB
>>Individual timeslot interference info	~~CH HO case~~OP	1 to...<TS Count>		
>>> Individual timeslot interference	MP		Individual timeslot interference 10.3.6.26	
>>DPCH Constant Value	~~CH HO case~~OP		Constant Value 10.3.6.9	Quality Margin

Condition	Explanation
Algo	The IE is mandatory if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed
~~*HO case*~~	~~This IE shall be present in the case of handover~~

Multi Bound	Explanation
TS Count	Number of uplink timeslots used for this dedicated CCTrCH

10.3.6.68 Uplink DPCH power control info ~~Short~~Post

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
~~>>DPCCH Power offset~~	~~MP~~		~~Enumerated(-164..-6 by step of 2)~~	~~In dB~~
~~>>PC Preamble~~	~~CV~~		~~Enumerated (0, 8)~~	~~PC Preamble is absent in HANDOVER TO UTRAN COMMAND. Otherwise it is present. Number of power control preamble slots~~
>>Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands
>>TPC step size	CV algo		Enumerated (1dB, 2dB)	
>TDD				~~(no data)~~
>>UL target SIR	MP		Real (-11 .. 20 by step of 0.5dB)	In dB
>>UL Timeslot Interference	MP		UL Interference 10.3.6.64	

Condition	Explanation
Algo	The IE is mandatory if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

10.3.6.68a Uplink DPCH power control info Pre

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control in FDD and parameters for uplink open loop power control in TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>DPCCH Power offset	MP		Integer(-164,..-6 by step of 2)	In dB
>>PC Preamble	MP		Enumerated (0, 8)	
>TDD				
>>DPCH Constant Value	MP		Constant Value 10.3.6.9	Quality Margin

Condition	Explanation
Algo	The IE is mandatory if "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

10.3.6.14 Downlink DPCH info common for all RL

NOTE: Only for FDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.16	
Spreading factor	MP		Enumerated(4, 8, 16, 32, 64, 128, 256, 512)	
Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
CHOICE *SF*	MP			
> SF = 256				
>> Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
> SF = 128				
>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
> Otherwise				(no data)

CHOICE *SF*	Condition under which the given *SF* is chosen
SF=128	"Spreading factor" is set to 128
SF=256	"Spreading factor" is set to 256
Otherwise	"Spreading factor" is set to a value distinct from 128 and 256

10.3.6.14a Downlink DPCH info common for all RL Post

NOTE: Only for FDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.16	

10.3.6.14b Downlink DPCH info common for all RL Pre

NOTE: Only for FDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Spreading factor	MP		Enumerated(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-Andpilot with “number of its for pilot bits” in ASN.1
Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)	
TFCI existence	MP		Boolean	TRUE indicates that TFCI exists
CHOICE *SF*	MP			
> SF = 256				
>> Number of bits for Pilot bits	MP		Integer (2,4,8)	In bits
> SF = 128				
>>Number of bits for Pilot bits	MP		Integer(4,8)	In bits
> Otherwise				(no data)

CHOICE *SF*	Condition under which the given *SF* is chosen
SF=128	"Spreading factor" is set to 128
SF=256	"Spreading factor" is set to 256
Otherwise	"Spreading factor" is set to a value distinct from 128 and 256

10.3.6.15 Downlink DPCH info for each RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*	MP			
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.45	
>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.54	
>>DL channelisation code	MP	1 to <maxChan count>		SF of the channelisation code of the data part for each DPCH
>>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.55	Default is the same scrambling code as for the Primary CPICH
>>>CHOICE *Spreading factor*	MP			Defined in CHOICE SF512-AndCodenumber with "code number" in ASN.1
>>>Code number	MP		Integer(0..max CodeNum)	
>>TPC combination index	MP		TPC combination index 10.3.6.62	
>>SSDT Cell Identity	OP		SSDT Cell Identity 10.3.6.56	
>>Closed loop timing adjustment mode	CH TxDiversity Mode		Enumerated(1 slot, 2 slot)	It is present if current TX Diversity Mode in UE is "closed loop mode 1" or "closed loop mode 2".
>TDD				
>>DL CCTrCh List	MP~~CV HO list length~~	1..<maxCC TrCHcount >		
>>>TFCS Identity	MD~~CV HO Needed~~		Transport Format Combination Set Identity 10.3.5.18	Identity of this CCTrCh. Default is specified in 10.3.5.18
>>>Time info	MP		Time Info 10.3.6.61	
>>>Common timeslot info	MD		Common Timeslot Info 10.3.6.8	Default is the current Common timeslot info
>>>Individual Timeslot info list	MD	1 to < max Timeslot count>		~~The first instance of the parameter Individual Timeslot Info corresponds to the timeslot that shall be used first by the physical layer, the second to the timeslot that shall be used second and so on.~~Default is the current Timeslot info list

Information Element/Group name	Need	Multi	Type and reference	Semantics description
>>>>Individual timeslot info	MP		Individual timeslot info 10.3.6.25	
>>>>Channelisation code list	MP	1 to <max Codes Count>		The first instance of the parameter Channelisation code corresponds to the first DPCH in that timeslot that shall be used first by the physical layer, the second to the DPCH in that timeslot that shall be used second and so on.
>>>>>Channelisation code	MP		Enumerated ((16/1)...(16/16))	

Condition	Explanation
HO list length	MaxCCTRCHcount is 8 in case of handover, otherwise it is equal to one.
HO presence	The element is only present in case of handover

Multi Bound	Explanation
MaxChancount	Maximum number of channelisation codes used for DL DPCH
MaxCodeNum	Maximum number of codes for one spreading factor (SF) is equal to SF-1.
MaxTimeslotcount	Maximum number of timeslots used for DPCHs = 14
MaxCodesCount	Maximum number of codes for one timeslots = 16
MaxMidambleShift	Maximum number of Midamble Shifts = 16

10.3.6.15a Downlink DPCH info for each RL Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *mode*				
>FDD				
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.45	
>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.55	Default is the same scrambling code as for the Primary CPICH
>>Code number	MP		Integer(0..max CodeNum)	
>>TPC combination index	MP		TPC combination index 10.3.6.62	
>TDD				
>>Time info	MP		Time Info 10.3.6.61	
>>Common timeslot info	MP		Common Timeslot Info 10.3.6.8	
>>Individual Timeslot info list	MP	1 to < Max TS>		
>>>Individual timeslot info	MP		Individual timeslot info 10.3.6.25	
>>>Channelisation code list	MP	1 to <MaxDPC HcodesPer TS>		The first instance of the parameter Channelisation code corresponds to the first DPCH in that timeslot that shall be used first by the physical layer, the second to the DPCH in that timeslot that shall be used second and so on.
>>>>Channelisation code	MP		Enumerated ((16/1)...(16/16))	

10.3.6.17 Downlink information common for all radio links

NOTE: Only for FDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	OP		Downlink DPCH info common for all RL 10.3.6.9.14	
~~CHOICE *mode*~~	~~MP~~			
~~>FDD~~				
~~>>~~Default DPCH Offset Value	MD		Default DPCH Offset Value, 10.3.6.13	Default value is 0
~~>>~~DPCH compressed mode info	MD		DPCH compressed mode info 10.3.6.22	Default value is the existing value of DPCH compressed mode information
~~>>~~TX Diversity Mode	MD		TX Diversity Mode 10.3.6.63	Default value is the existing value of TX Diversity mode
~~>>~~SSDT information	OP		SSDT information 10.3.6.57	
~~>TDD~~				
~~>>Uplink Timing Advance~~	~~OP~~		~~Uplink Timing Advance 10.3.6.69~~	

10.3.6.17a Downlink information common for all radio links Post

NOTE: Only for FDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	MP		Downlink DPCH info common for all RL Post 10.3.6.9.14a	

10.3.6.17b Downlink information common for all radio links Pre

NOTE: Only for FDD

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Downlink DPCH info common for all RL	MP		Downlink DPCH info common for all RL Pre 10.3.6.14b	
Default DPCH Offset Value	MD		Default DPCH Offset Value, 10.3.6.13	Default value is 0

10.3.6.18 Downlink information for each radio link

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Choice mode	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.43	
>>PDSCH with SHO DCH Info	OP		PDSCH with SHO DCH Info 10.3.6.32	
>>PDSCH code mapping	OP		PDSCH code mapping 10.3.6.29	
>TDD				
>>Primary CCPCH info			Primary CCPCH info 10.3.6.41	
Downlink DPCH info for each RL	OP		Downlink DPCH info for each RL 10.3.6.15	Note 1
Secondary CCPCH info	OP		Secondary CCPCH info 10.3.6.52	
References to system information blocks	OP	1 to <MaxSysInfoBlockFACHCount>		Note 1
>Scheduling information	MP		Scheduling information 10.3.8.11	Note 1

NOTE 1: This IE shall not be set in case of CELL UPDATE CONFIRM message.

Multi Bound	Explanation
MaxSysInfoBlockFACHCount	Maximum number of references to system information blocks on the FACH

10.3.6.19 Downlink information for each radio link ~~short~~Post

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Choice mode	MP			
>FDD				
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.43	
>TDD				
>>Primary CCPCH info	OP		Primary CCPCH info	
Downlink DPCH info for each RL	~~OP~~MP		Downlink DPCH info for each RL Post 10.3.6.15x	

Multi Bound	Explanation
MaxSysInfoBlockFACHCount	Maximum number of references to system information blocks on the FACH

11.2 PDU definitions

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

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

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

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

```
}

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

PhysicalChannelReconfiguration ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        -- TABULAR: UL-ChannelRequirement contains the choice
        -- between UL DPCH info and PRACH info for RACH.
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                dl-CommonInformation            DL-CommonInformation        OPTIONAL,
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL,
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

RadioBearerReconfiguration ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReconfigList      RB-InformationReconfigList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   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,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-CommonInformation            DL-CommonInformation        OPTIONAL,
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL,
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

RadioBearerRelease ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReleaseList       RB-InformationReleaseList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   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,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-CommonInformation            DL-CommonInformation        OPTIONAL,
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL,
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

RadioBearerSetup ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
```

```
        new-U-RNTI                      U-RNTI                                  OPTIONAL,
        new-C-RNTI                      C-RNTI                                  OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient              OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer                   OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                      OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList                OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList,
        rb-InformationAffectedList      RB-InformationAffectedList              OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                    OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList               OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList             OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                      OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList      OPTIONAL
            },
            tdd                             NULL
        }                                                                       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,
        dl-CommonInformation            DL-CommonInformation                    OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                    OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-CommonInformation            DL-CommonInformation            OPTIONAL,
                dl-PDSCH-Information            DL-PDSCH-Information            OPTIONAL,
                cpch-SetInfo                    CPCH-SetInfo                    OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                             OPTIONAL
}

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

RRCConnectionReEstablishment ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo             OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                       OPTIONAL,
        activationTime                  ActivationTime                          OPTIONAL,
        new-U-RNTI                      U-RNTI                                  OPTIONAL,
        new-C-RNTI                      C-RNTI                                  OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient              OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer                   OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                      OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList                OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList                OPTIONAL,
        rb-InformationReleaseList       RB-InformationReleaseList               OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList              OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList              OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                    OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList               OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList             OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                      OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList      OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                    OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList               OPTIONAL,
```

```
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-CommonInformation            DL-CommonInformation        OPTIONAL,
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL,
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

RRCConnectionSetup ::= SEQUENCE {
    -- User equipment IEs
        initialUE-Identity              InitialUE-Identity,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI,
        new-c-RNTI                      C-RNTI                              OPTIONAL,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
        capabilityUpdateRequirement     CapabilityUpdateRequirement         OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList2,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-CommonInformation            DL-CommonInformation                OPTIONAL,
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

TransportChannelReconfiguration ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        modeSpecificTransChInfo         CHOICE {
```

```
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-CommonInformation            DL-CommonInformation        OPTIONAL,
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL,
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                         NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}
```

11.3.4 Radio bearer information elements

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

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

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

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

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

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

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

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

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

11.3.5 Transport channel information elements

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

DL-PreDefTrChInformation ::=        SEQUENCE {
    trasportChannelIdentity             TransportChannelIdentity,
    transportFormatSet                  TransportFormatSet,
```

```
    qualityTarget                       QualityTarget                       OPTIONAL,
    tm-SignallingInfo                   TM-SignallingInfo                   OPTIONAL
}

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

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

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

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

11.3.6 Physical channel information elements

```
DL-CCTrCh ::=                       SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    individualTS-InfoDL-CCTrCHList      IndividualTS-InfoDL-CCTrCHList      OPTIONAL
}

DL-CCTrCh-Post ::=                  SEQUENCE {,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo,
    individualTS-InfoDL-CCTrCHList      IndividualTS-InfoDL-CCTrCHList
}

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

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

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

```
        },
        tdd                                     SEQUENCE {
            ul-TimingAdvance                        UL-TimingAdvance            OPTIONAL
        }
    }
}

DL-CommonInformationPost ::=        SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommonPost              OPTIONAL,
}

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

DL-DPCH-InfoCommon ::=              SEQUENCE {
    dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo,
    spreadingFactorAndPilot             SF512-AndPilot-DL-DPCH,
    -- TABULAR: The number of pilot bits is nested inside the spreading factor.
    positionFixedOrFlexible             PositionFixedOrFlexible,
    tfci-Existence                      BOOLEAN
}

DL-DPCH-InfoCommonPost ::=          SEQUENCE {
    dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo            OPTIONAL
}

DL-DPCH-InfoCommonPredef ::=        SEQUENCE {
    spreadingFactorAndPilot             SF512-AndPilot,
    -- TABULAR: The number of pilot bits is nested inside the spreading factor.
    positionFixedOrFlexible             PositionFixedOrFlexible,
    tfci-Existence                      BOOLEAN
}

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

DL-DPCH-InfoPerRL-Post ::=          CHOICE {
    fdd                                 SEQUENCE {
        pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst       OPTIONAL,
        dl-ChannelisationCode               DL-ChannelisationCode,
        tpc-CombinationIndex                TPC-CombinationIndex
    },
    tdd                                 SEQUENCE {
        dl-CCTrCh-Post                      DL-CCTrCh-Post
    }
}

DL-InfoPerRL ::=                    SEQUENCE {
    dl-InformationPerRL                 DL-InformationPerRL-Short,
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL
}

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

DL-InformationPerRL ::=             SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            pdsch-SHO-DCH-Info                  PDSCH-SHO-DCH-Info          OPTIONAL,
            pdsch-CodeMapping                   PDSCH-CodeMapping           OPTIONAL
        },
        tdd                                 SEQUENCE {
```

```
            primaryCCPCH-Info                   PrimaryCCPCH-Info
        }
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL                   OPTIONAL,
    secondaryCCPCH-Info                 SecondaryCCPCH-Info                 OPTIONAL,
    sib-ReferenceList                   SIB-ReferenceListFACH               OPTIONAL
}

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

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

DL-InformationPerRL-ShortPost ::=       SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                                 NULLSEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info           OPTIONAL
        }
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL-Post              OPTIONAL
}

IndividualTS-InfoUL-CCTrCH ::=      SEQUENCE {
    individualTimeslotInfo              IndividualTimeslotInfo,
    channelisationCodeList              UL-TS-ChannelisationCodeList
}

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

-- **TODO**, tabular definition a little unclear
PreDefPhyChConfiguration ::=        SEQUENCE {
    ul-DPCH-InfoPredef                  UL-DPCH-InfoPredef,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dl-CommonInformationPredef          DL-CommonInformationPredef
        },
        tdd                                 NULL
    }
}

SF512-AndPilot-DL-DPCH ::=                  CHOICE {
    sfd4                                NULL,
    sfd8                                NULL,
    sfd16                               NULL,
    sfd32                               NULL,
    sfd64                               NULL,
    sfd128                              PilotBits128,
    sfd256                              PilotBits256,
    sfd512                              NULL
}

UL-CCTrCH ::=                       SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    timeslotInfoList                    IndividualTS-InfoUL-CCTrCH-List     OPTIONAL
}

UL-CCTrCHList ::=                   SEQUENCE (SIZE (1..maxUL-CCTrCHcount)) OF
                                        UL-CCTrCH

UL-DPCH-Info ::=                    SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo            OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            dpdch-ChannelisationCodeList        DPDCH-ChannelisationCodeList,
            tfci-Existence                      BOOLEAN,
            fbi-BitNumber                       FBI-BitNumber,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvance            OPTIONAL,
            ul-CCTrCHList                       UL-CCTrCHList
        }
```

```
    }
}

UL-DPCH-InfoHO ::=                  SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoHO          OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            dpdch-ChannelisationCodeList        DPDCH-ChannelisationCodeList,
            tfci-Existence                      BOOLEAN,
            fbi-BitNumber                       FBI-BitNumber,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-CCTrCHList                       UL-CCTrCHList
        }
    }
}

UL-DPCH-InfoPredef ::=              SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoPredef,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power       OPTIONAL,
            pc-Preamble                         PC-Preamble                 OPTIONAL,
            tfci-Existence                      BOOLEAN,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 NULL
    }
}

-- To be moved upwards (alfabetical order)
UL-DPCH-InfoShortPost ::=           SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoShortPost,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            reducedScramblingCodeNumber         ReducedScramblingCodeNumber,
            dpdch-ChannelisationCode            DPDCH-ChannelisationCode,
            numberOfFBI-Bits                    NumberOfFBI-Bits
            -- The IE above is CH, which is questionable as such.
            -- There's no point in making a 1-bit integer optional, however.
        },
        tdd                                 NULLSEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvance            OPTIONAL,
            timeInfo                            TimeInfo,
            commonTimeslotInfo                  CommonTimeslotInfo
            timeslotInfoList                    IndividualTS-InfoUL-CCTrCH-List
        }
    }
}

UL-DPCH-PowerControlInfo ::=        CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        pc-Preamble                         PC-Preamble,
        powerControlAlgorithm               PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power       OPTIONAL,
        ul-TargetSIR                        UL-TargetSIR,
        handoverGroup                       SEQUENCE {
            individualTS-InterferenceList       IndividualTS-InterferenceList,
            dpch-ConstantValue                  ConstantValue
        }                                                               OPTIONAL
    }
}

UL-DPCH-PowerControlInfoHO ::=      CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        powerControlAlgorithm               PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power       OPTIONAL,
        ul-TargetSIR                        UL-TargetSIR,
        handoverGroup                       SEQUENCE {
```

```
            individualTS-InterferenceList       IndividualTS-InterferenceList,
            dpch-ConstantValue                  ConstantValue
        }
    }
}

UL-DPCH-PowerControlInfoShortPost ::=   SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dpcch-PowerOffset                   DPCCH-PowerOffset,
            powerControlAlgorithm               PowerControlAlgorithm
            -- TABULAR: TPC step size nested inside PowerControlAlgorithm
        },
        tdd                                 NULLSEQUENCE {
            ul-TargetSIR                        UL-TargetSIR,
            individualTS-InterferenceList       IndividualTS-InterferenceList
        }
    }
}

UL-DPCH-PowerControlInfoPredef ::=      CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        pc-Preamble                         PC-Preamble
    },
    tdd                                 SEQUENCE {
        dpch-ConstantValue                  ConstantValue
    }
}

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
```

11.3.8 Other information elements

```
SysInfoType16 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Radio bearer IEs
        preDefinedRadioConfigurations   PreDefRadioConfigurationList,
    -- Transport channel IEs
        preDefTransChConfiguration      PreDefTransChConfiguration,
    -- Physical channel IEs
        preDefPhyChConfiguration        PreDefPhyChConfiguration,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}
```

14.13 RRC information transferred between UE and other systems

This subclause specifies RRC information that is exchanged between other systems and the UE. This information is transferred via another RAT in accordance with the specifications applicable for those systems. This subclause specifies the UTRAN RRC information applicable for the different information flows.

14.13.1 RRC information, another RAT to UE

~~14.13.1.1 UE information request, handover to UTRAN~~

~~Prior to handover to UTRAN, another system has to provide the target RNC with information regarding the UE's radio capabilities and possibly also security information. Therefore, the other system has to retrieve the UE's radio capabilities and possibly also security information from the UE. This UE information request should include the following RRC information.~~

~~Information Element~~	~~Need~~	~~Multi~~	~~Type and reference~~	~~Semantics description~~
~~UE information elements~~				
~~Capability update requirement~~	~~M~~			
~~Security information requirement~~	~~O~~		~~BOOLEAN~~	~~TRUE: UE shall include security information~~

14.13.1.2 Pre-defined configuration information ~~indication, handover to UTRAN~~

Another system may provide the UE with one or more pre- defined UTRAN configurations, comprising of radio bearer, transport channel and physical channel parameters. The UE shall store the information, and use it upon handover to UTRAN if requested to do so within the HANDOVER TO UTRAN COMMAND message. The pre-defined configuration ~~indication~~ information ~~should~~ includes the following RRC information.

Information Element	Need	Multi	Type and reference	Semantics description
RB information elements				
Predefined radio configurations		1 to <maxPredefConfigCount>		
>Predefined configuration identity	MP		Predefined configuration identity 10.3.4.5	
>Predefined configuration value tag	OP		Predefined configuration value tag 10.3.4.6	
UE information elements				
Re-establishment timer	MP		Re-establishment timer 10.3.3.31	
RB information elements				
>Predefined RB configuration	MP		Predefined RB configuration 10.3.4.7	
TrCH Information Elements				
>Predefined TrCH configuration	MP		Predefined TrCH configuration 10.3.5.12	
PhyCH Information Elements				
>Predefined PhCH configuration	MP		Predefined PhyCH configuration 10.3.6.40	

Multi Bound	Explanation
MaxPredefConfigCount	Maximum number of predefined configurations

14.13.2 RRC information, UE to another RAT

14.13.2.1 UE capability information ~~indication, handover to UTRAN~~

Upon receiving a UE information request from another system, the UE shalll indicate ~~its radio~~the requested ~~and possibly also the security information~~. The~~is~~ UE capability information ~~indication should~~ includes the following RRC information.

Information Element	Need	Multi	Type and reference	Semantics description
UE information elements				
~~Hyper Frame Number~~	~~O~~		~~Hyper Frame Number 10.2.3.6~~	
UE radio access capability	OP		UE radio access capability 10.3.3.41	

14.13.2.x UE security information

Upon receiving a UE information request from another system, the UE shalll indicate the requested security information. The UE security information includes the following RRC information.

Information Element	Need	Multi	Type and reference	Semantics description
UE information elements				
START list	MP	1 to <MaxCNdomains>		START [TS 33.102] values for all CN domains
>CN domain identity	MP		CN domain identity 10.3.1.1	
>START	MP		Hyper frame number 10.3.3.13	START values to be used in this CN domain.

14.13.2.2 Pre-defined configuration status information~~, handover to UTRAN~~

Another system may provide the UE with one or more pre- defined UTRAN configurations, comprising of radio bearer, transport channel and physical channel parameters. If requested, t~~T~~he UE shall indicate the configurations it has stored~~ the information, and use it upon handover to UTRAN if requested to do so within the HANDOVER TO UTRAN COMMAND message~~. The pre- defined configuration ~~indication~~ status information should include the following RRC information.

Information Element	Need	Multi	Type and reference	Semantics description
RB information elements				
Predefined configurations		1 to <maxPredefConfigCount>		The list is in order of preconfiguration identity
~~>Predefined configuration identity~~	~~MP~~		~~Predefined configuration identity 10.2.4.2~~	
>Predefined configuration value tag	OP		Predefined configuration value tag ~~14.X.3.1~~10.3.4.6	The UE shall include the value tag if it has stored the concerned configuration

Multi Bound	Explanation
MaxPredefConfigCount	Maximum number of predefined configurations

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CHANGE REQUEST

25.331 **CR** **393** Current Version: 3.2.0

For submission to: TSG-RAN #8 | for approval [X] | for information [ ] | strategic [ ] | non-strategic [ ]

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

Source: TSG-RAN WG2 **Date:** 22.5.2000

Subject: Corrections to measurement control descriptions and messages

Work item:

Category:

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

Release:

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

Reason for change:

- The contents of the unlisted set are clarified and the set is renamed to detected set.
- It is clarified that a measurement sequence is no longer valid after the UE has changed cell in CELL_FACH state.
- The "amount of reporting" in "periodical reporting criteria" is changed from OP to MD and default value infinity is specified.
- The "reporting interval" in "periodical reporting criteria" is changed from OP to MP.
- The interpretation of "reference time difference to cell" on BCH and on DCH is clarified.
- The "transport channel identity" is changed from MP to OP in "traffic volume measurement reporting criteria". If the transport channel identity is not included, the measurement reporting criteria are applied to all transport channels.
- The "reporting interval" is removed from traffic volume reporting criteria, because its functionality is the same as "pending time after trigger".
- The "traffic volume reporting criteria" is added to "traffic volume measurement system information"
- It is added that event 1A may be also be used for triggering a report of detected set cells.
- Event identifiers are added to TDD measurement event titles is section 14.

Clauses affected: 8.4, 8.4.1.8, 10.3.7.36, 10.3.7.41, 10.3.7.78, 10.3.7.87, 10.3.7.98, 10.3.7.99, 11.3.7, 14.1.2.1, 14.1.3.1, 14.1.3.2, 14.1.3.3, 14.1.3.4

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

Other comments:	

8.4 Measurement procedures

The UE measurements are grouped into 6 different categories, according to what the UE should measure.

The different types of measurements are:

- **Intra-frequency measurements**: measurements on downlink physical channels at the same frequency as the active set. Detailed description is found in subclause 14.1.
- **Inter-frequency measurements**: measurements on downlink physical channels at frequencies that differ from the frequency of the active set.
- **Inter-system measurements**: measurements on downlink physical channels belonging to another radio access system than UTRAN, e.g. PDC or GSM.
- **Traffic volume measurements**: measurements on uplink traffic volume. Detailed description is found in subclause 14.2.
- **Quality measurements**: Measurements of quality parameters, e.g. downlink transport block error rate.
- **Internal measurements**: Measurements of UE transmission power and UE received signal level. Detailed description is found in subclause 14.3.

The same type of measurements may be used as input to different functions in UTRAN. However, the UE shall support a number of measurements running in parallel. The UE shall also support that each measurement is controlled and reported independently of every other measurement.

Cells that the UE is monitoring (e.g. for handover measurements) are grouped in the UE into three different categories:

1. Cells, which belong to the **active set.** User information is sent from all these cells and they are simultaneously demodulated and coherently combined. In FDD, these cells are involved in soft handover. In TDD the active set always comprises of one cell only.
2. Cells, which are not included in the active set, but are monitored according to a neighbour list assigned by the UTRAN belong to the **monitored set.**
3. Cells, which are not included in the active set, and are detected by the UE without receiving a neighbour list from the UTRAN belong to the **~~unlisted~~ detected set.** Intra-frequency measurements of the unlisted set is required only from UEs in CELL_DCH state. NOTE: the cells of the monitored set are not excluded from the detected set.

UTRAN may start a measurement in the UE by transmitting a MEASUREMENT CONTROL message. This message includes the following measurement control information:

1. **Measurement type**: One of the types listed above describing what the UE shall measure.
2. **Measurement identity number**: A reference number that should be used by the UTRAN when modifying or releasing the measurement and by the UE in the measurement report.
3. **Measurement command**: One out of three different measurement commands.
   - Setup: Setup a new measurement.
   - Modify: Modify a previously defined measurement, e.g. to change the reporting criteria.
   - Release: Stop a measurement and clear all information in the UE that are related to that measurement.
4. **Measurement objects:** The objects the UE shall measure on, and corresponding object information.
5. **Measurement quantity:** The quantity the UE shall measure. This also includes the filtering of the measurements.
6. **Reporting quantities:** The quantities the UE shall include in the report in addition to the quantities that are mandatory to report for the specific event.

7. **Measurement reporting criteria**: The triggering of the measurement report, e.g. periodical or event-triggered reporting. The events are described for each measurement type in clause 14.

8. **Reporting mode**: This specifies whether the UE shall transmit the measurement report using acknowledged or unacknowledged data transfer of RLC.

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

When the reporting criteria are fulfilled, i.e. a specified event occurred or the time since last report indicated for periodical reporting has elapsed, the UE shall send a MEASUREMENT REPORT message to UTRAN.

In idle mode, the UE shall perform measurements according to the measurement control information included in System Information Block Type 11, which is transmitted on the BCCH.

In CELL_FACH, CELL_PCH or URA_PCH state, the UE shall perform measurements according to the measurement control information included in System Information Block Type 12, which is transmitted on the BCCH. If the UE has not received System Information Block Type 12, it shall perform measurements according to the measurement control information included in System Information Block Type 11, which is transmitted on the BCCH.

In CELL_DCH state, the UE shall report radio link related measurements to the UTRAN with a MEASUREMENT REPORT message. The UE may also be requested by the UTRAN to report unlisted cells, which it has detected. The triggering event for the UE to send a MEASUREMENT REPORT message is that a detected cell exceeds an absolute threshold.

In order to receive information for the establishment of immediate macrodiversity (FDD) or to support the DCA algorithm (TDD), the UTRAN may also request the UE to append radio link related measurement reports to the following messages sent on the RACH:

- RRC CONNECTION REQUEST message sent to establish an RRC connection;
- RRC CONNECTION RE-ESTABLISHMENT REQUEST message sent to re-establish an RRC connection;
- DIRECT TRANSFER message sent uplink to establish a signalling connection;
- CELL UPDATE message sent to respond to a UTRAN originated page;
- MEASUREMENT REPORT message sent to report uplink traffic volume;
- CAPACITY REQUEST message sent to request PUSCH capacity (TDD only).

NOTE: Whether or not measured results can be appended to other messages and in other scenarios is FFS.

8.4.1.8 Measurements after transition from CELL_FACH to CELL_DCH state

The UE shall obey the follow rules for different measurement types after transiting from CELL_FACH to CELL_DCH state:

Intra-frequency measurement

If the UE has previously in CELL_DCH state stored an intra-frequency measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE state for reporting" has been assigned to value "CELL_DCH", the UE shall resume this measurement and associated reporting. If the UE has performed cell reselection whilst out of CELL_DCH state, the UE shall not resume the measurement.

If the UE has no previously assigned measurement, it shall continue monitoring the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). If the "intra-frequency measurement reporting criteria" IE was included in "System Information Block 12" (or "System Information Block 11"), the UE shall send the MEASUREMENT REPORT message when reporting criteria are fulfilled. When the UE receives a MEASUREMENT CONTROL message including an intra-frequency measurement type assignment, the UE shall stop monitoring and measurement reporting for the list of neighbouring cells assigned in the "intra-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). It shall also delete the measurement reporting criteria received in "System Information Block 12" (or "System Information Block 11").

Inter-frequency measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency cell info" IE in "System Information Block 12" (or "System Information Block 11"). If the UE has previously stored an inter-frequency measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE state for reporting" has been assigned to value "CELL_DCH", the UE shall resume this measurement and associated reporting.

Inter-system measurement

The UE shall stop monitoring the list of neighbouring cells assigned in the "inter-frequency system info" IE in "System Information Block 12" (or "System Information Block 11"). If the UE has previously stored an inter-system measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE state for reporting" has been assigned to value "CELL_DCH", the UE shall resume this measurement and associated reporting.

Traffic volume measurement

The UE shall stop or continue traffic volume type measurement reporting assigned in a MEASUREMENT CONTROL message sent on the FACH according to the following rules:

- If the IE "measurement validity" for this measurement has been assigned to value "release", the UE shall delete the measurement associated with the variable MEASUREMENT IDENTITY.

- If the IE "measurement validity" for the measurement has been assigned to value "resume", and the IE "UE state for reporting" has been assigned to value "CELL_FACH", the UE shall stop measurement reporting and save the measurement associated with the variable MEASUREMENT IDENTITY to be used after the next transition to CELL_FACH state.

- If the IE "measurement validity" for the measurement has been assigned to value "resume", and the IE "UE state for reporting" has been assigned to value "all states", the UE shall continue measurement reporting.

If the UE has previously stored a measurement, for which the IE "measurement validity" has been assigned to value "resume" and for which the IE "UE state for reporting" has been assigned to value "CELL_DCH", the UE shall resume this measurement and associated reporting.

If no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message when transiting to CELL_DCH state, the UE shall continue an ongoing traffic volume type measurement, which was assigned in "System Information Block 12" (or "System Information Block 11")

Traffic volume type measurement control parameters assigned in a MEASUREMENT CONTROL message shall always supersede parameters conveyed in "System Information Block 12" (or "System Information Block 11").If the UE receives a MEASUREMENT CONTROL message including an traffic volume measurement type assignment, the UE shall delete the traffic volume measurement control information received in "System Information Block 12" (or "System Information Block 11").

10.3.7.36 Intra-frequency measurement

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Intra-frequency cell info list	OP		Intra-frequency cell info list 10.3.7.33	Measurement object Not included for measurement of ~~unlisted~~ detected set.
Intra-frequency measurement quantity	OP		Intra-frequency measurement quantity 10.3.7.38	
Intra-frequency reporting quantity	OP		Intra-frequency reporting quantity 10.3.7.41	
Reporting cell status	OP		Reporting cell status 10.3.7.88	
Measurement validity	OP		Measurement validity 10.3.7.76	
CHOICE report criteria	MP			
>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>Periodical reporting criteria			Periodical reporting criteria 10.3.7.78	
>No reporting				(no data) Chosen when this measurement only is used as additional measurement to another measurement

10.3.7.41 Intra-frequency reporting quantity

Contains the reporting quantity information for an intra-frequency measurement.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Reporting quantities for active set cells	MP		Cell reporting quantities 10.3.7.5	
Reporting quantities for monitored set cells	MP		Cell reporting quantities 10.3.7.5	
Reporting quantities for ~~unlisted~~ detected set cells	OP		Cell reporting quantities 10.3.7.5	

10.3.7.78 Periodical reporting criteria

Contains the periodical reporting criteria information. It is necessary only in the periodical reporting mode.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Amount of reporting	~~OP~~MD		Enumerated(1, 2, 4, 8, 16, 32, 64, Infinity)	Measurement is "released" after the indicated amount of reporting from the UE itself. The default value is infinity.
Reporting interval	MP~~OP~~		Real(0.25, 0.5, 1, 2, 3, 4, 6, 8, 12, 16, 20, 24, 28, 32, 64)	Indicates the interval of periodical report. Interval in seconds

10.3.7.87 Reference time difference to cell

In the System Information message, ~~T~~the reference time difference to cell indicates the SFN-SFN time difference between the primary CCPCH of the current cell and the primary CCPCH of a neighbouring cell. ~~It is notified to UE by System Information or Measurement Control message.~~

In the Measurement Control message, the the reference time difference to cell indicates the CFN-SFN time difference between UE uplink transmission timing and the primary CCPCH of a neighbouring cell. ~~In case of macro diversity the reference is the primary CCPCH of one the cells used in the active set.~~

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *accuracy*	MP			
>40 chips				
>>Reference time difference	MP		Integer(0..38400 by step of 40)	In chips
>256 chips				
>>Reference time difference	MP		Integer(0.. 38400 by step of 256)	In chips
>2560 chips				
>>Reference time difference	MP		Enumerated(0.. 38400 by step of 2560)	In chips

~~NOTE: Exactly how the reference cell is pointed out in this case in the messages is FFS.~~

10.3.7.98 Traffic volume measurement reporting criteria

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

Event 4a: RLC buffer payload exceeds an absolute threshold.

Event 4b: RLC buffer payload becomes smaller than an absolute threshold.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Parameters sent for each transport channel	OP	1 to <maxTrCH count>		
>Transport Channel ID	~~MP~~OP		Transport channel identity 10.3.5.16	If the transport channel identity is not included, the measurement reporting criteria are applied to all transport channels.
>Parameters required for each Event	OP	1 to 2		
>>Traffic volume event identity	MP		Traffic volume event identity 10.3.7.92	
>>Reporting Threshold	MP		Integer(8,16, 32,64,128,256,512,1024,1536,2048,3072,4096,6144,8192)	Threshold in bytes
Time to trigger	OP		Time to trigger 10.3.7.91	Indicates the period of time between the timing of event detection and the timing of sending Measurement Report. Time in ms
Pending time after trigger	OP		Real(0.25, 0.5, 1, 2, 4, 8, 16)	Time in seconds. Indicates the period of time during which it is forbidden to send any new measurement reports with the same measurement ID even if the triggering condition is fulfilled again. Time in seconds
Tx interruption after trigger	OP		Real(0.25, 0.5, 1, 2, 4, 8, 16)	Time in seconds. Indicates whether or not the UE shall block DTCH transmissions on the RACH after a measurement report is triggered.
Amount of reporting	OP		Enumerated(1, 2, 4, 8, 16, 32, 64, Infinity)	Measurement is "released" after the indicated amount of reporting from the UE itself.
~~Reporting interval~~	~~OP~~		~~Real(0, 0.25, 0.5, 1, 2, 4, 8, 16)~~	~~Interval in seconds. Indicates the interval of periodical report during the event is in the detected state.~~

Multi Bound	Explanation
MaxTrCHcount	Maximum number of transport channels = 64

10.3.7.99 Traffic volume measurement system information

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Traffic volume measurement identity number	MD		Measurement identity number 10.3.7.73	The traffic volume measurement identity number has default value 4.
Traffic volume measurement objects	OP		Traffic volume measurement objects 10.3.7.96	
Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.97	
Traffic volume reporting quantity	OP		Traffic volume reporting quantity 10.3.7.100	~~Note 2~~
Traffic volume measurement reporting criteria	OP		Traffic volume reporting criteria 10.3.7.98	

~~NOTE 2: The reporting of traffic volume measurements is activated in state CELL_FACH only.~~

11.3.7 Measurement information elements

```
IntraFreqReportingQuantity ::=      SEQUENCE {
    activeSetReportingQuantities        CellReportingQuantities,
    monitoredSetReportingQuantities     CellReportingQuantities,
    unlisteddetectedSetReportingQuantities      CellReportingQuantities             OPTIONAL
}

PeriodicalReportingCriteria ::=     SEQUENCE {
    reportingAmount                     ReportingAmount                 DEFAULT ra-Infinity
    OPTIONAL,
    reportingInterval                   ReportingIntervalLong                   OPTIONAL
}

TrafficVolumeMeasSysInfo ::=        SEQUENCE {
    trafficVolumeMeasurementID          MeasurementIdentityNumber           OPTIONAL,
    trafficVolumeMeasObjectList         TrafficVolumeMeasObjectList         OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL,
    trafficVolumeMeasRepCriteria        TrafficVolumeReportingCriteria      OPTIONAL
}

TrafficVolumeReportingCriteria ::= SEQUENCE {
    transChCriteriaList                 TransChCriteriaList                 OPTIONAL,
    timeToTrigger                       TimeToTrigger                       OPTIONAL,
    pendingTimeAfterTrigger             PendingTimeAfterTrigger             OPTIONAL,
    tx-InterruptionAfterTrigger         TX-InterruptionAfterTrigger         OPTIONAL,
    reportingAmount                     ReportingAmount                     OPTIONAL,
    reportingInterval                   ReportingInterval                   OPTIONAL
}

TransChCriteria ::=                 SEQUENCE {
    transportChannelID                  TransportChannelIdentity            OPTIONAL,
    eventSpecificParameters             SEQUENCE (SIZE (1..2)) OF
                                            TrafficVolumeEventParam         OPTIONAL
}
```

14.1.2.1 Reporting event 1A: A Primary CPICH enters the reporting range

When event 1A is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when a primary CPICH enters the reporting range as defined by the following formula:

$$10 \cdot LogM_{New} \geq W \cdot 10 \cdot Log\left(\sum_{i=1}^{N_A} M_i\right) + (1-W) \cdot 10 \cdot LogM_{Best} - (R + H_{1a}),$$

The variables in the formula are defined as follows:

$\boldsymbol{M_{New}}$ is the measurement result of the cell entering the reporting range.

$\boldsymbol{M_i}$ is a measurement result of a cell in the active set.

$\boldsymbol{N_A}$ is the number of cells in the current active set.

$\boldsymbol{M_{Best}}$ is the measurement result of the strongest cell in the active set.

$\boldsymbol{W}$ is a parameter sent from UTRAN to UE.

$\boldsymbol{R}$ is the reporting range

$\boldsymbol{H_{1a}}$ is the hysteresis parameter for the event 1a.

The addition window of cells in event 1A is configured with the **reporting range** parameter ($\boldsymbol{R}$) common to many reporting events and an optional **hysteresis** parameter ($\boldsymbol{H_{1a}}$), which can be used to distinguish the addition window from reporting windows related to other measurement events.

The occurrence of event 1A is conditional on a **report deactivation threshold** parameter. This parameter indicates the maximum number of cells allowed in the active set for measurement reports to be triggered by event 1A to be transmitted.

Event 1A may be enhanced with an addition timer, which is configured with the **time-to-trigger** parameter (see subclause 14.1.4.2). If a time-to-trigger value is used, a cell must continuously stay within the reporting range for the given time period, before the UE shall send a measurement report.

Event 1A may be used for triggering a measurement report, which includes unlisted cells, which the UE has detected.

14.1.3.1 Reporting event 1G: Change of best cell (TDD)

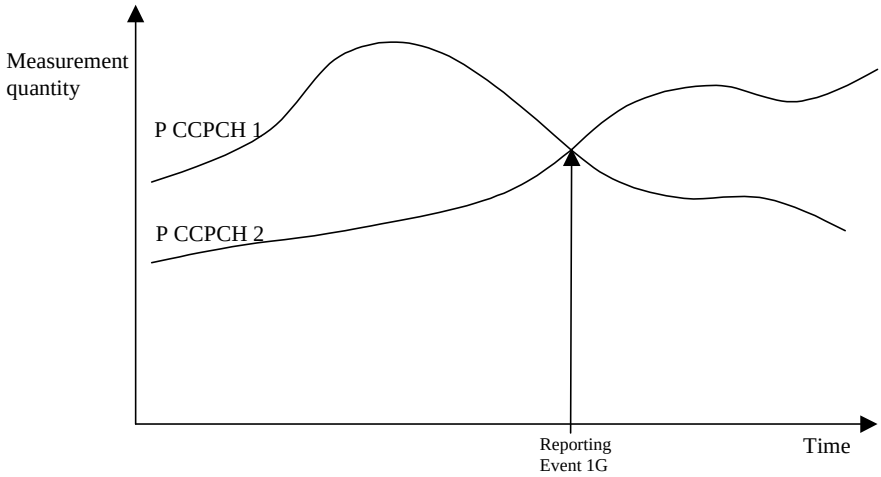

Figure 52: A primary CCPCH becomes better than the previous best primary CCPCH

If any of the primary CCPCHs becomes better than the previously best primary CCPCH, and event 1G has been ordered by UTRAN then this event shall trigger a report to be sent from the UE. The corresponding report contains (at least) the new best primary CCPCH.

14.1.3.2 Reporting event 1H: DL CCTrCH below a certain threshold (TDD)

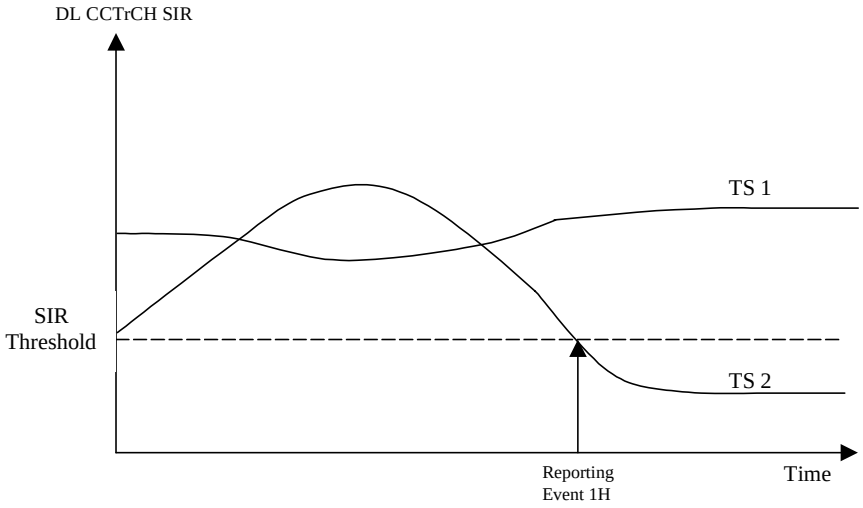

Figure 53: A SIR value of a timeslot becomes worse than an absolute threshold

14.1.3.3 Reporting event 1I: Timeslot ISCP below a certain threshold (TDD)

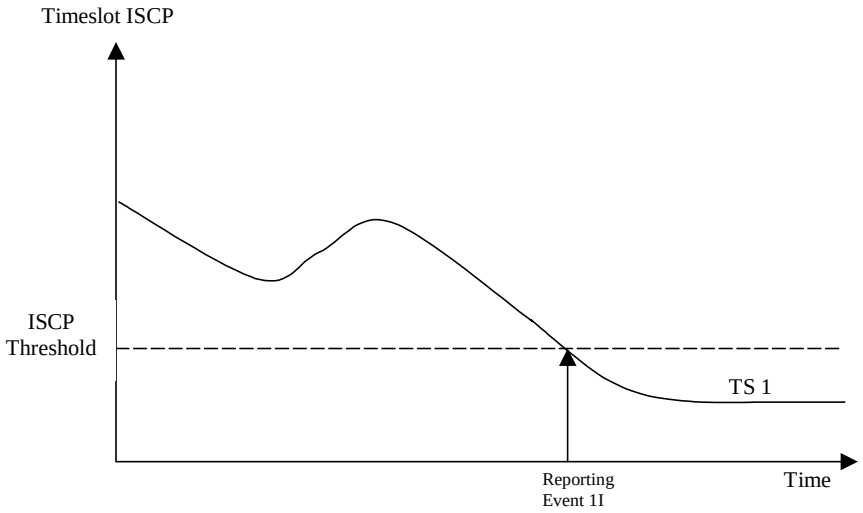

Figure 54: An ISCP value of a timeslot becomes worse than an absolute threshold

14.1.3.4 Reporting event 1J: Timeslot ISCP above a certain threshold (TDD)

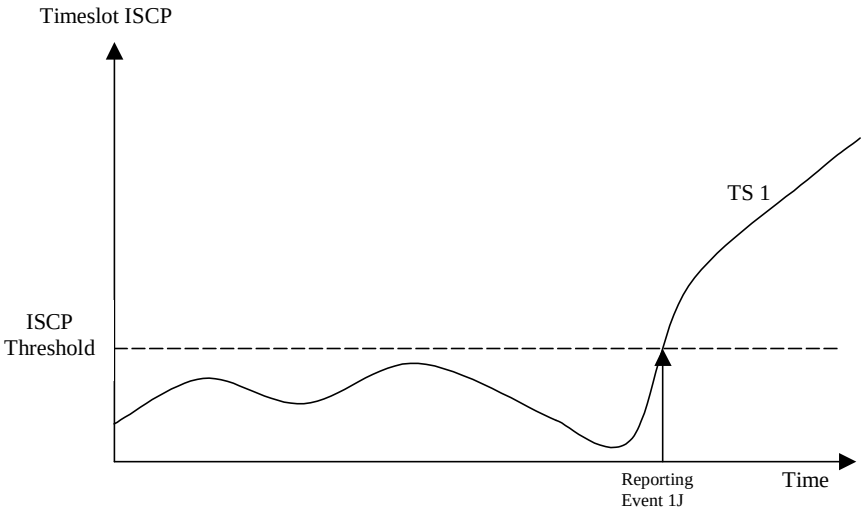

Figure 55: An ISCP value of a timeslot becomes better than a certain threshold

3GPP TSG RAN WG2 #13
Oahu, HI, US, 22nd – 26th May, 2000

Document R2-001206
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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

25.331	CR	394r1	Current Version:	3.2.0

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

For submission to:	TSG-RAN #8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

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

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

Source:	TSG-RAN WG2	**Date:**	24.05.2000

Subject:	Corrections on ASN.1 definitions

Work item:	

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

Reason for change:

Changes include:

- Physical channel IEs, TimeInfo: choice element "duration" has been renamed due to SDL interoperability
- Missing value tags have been included in SIB-TypeAndTag in Other information elements
- LCS-related information element definitions from 09.31 and 23.032 added
- IEs which map directly to BOOLEAN have been removed and the references to them have been replaced with BOOLEAN
- If a boolean type or an enumerated type with two elements has MD for Need, the possible OPTIONAL has been removed from the ASN.1 definition.
- FDD/TDD choices have been optimised in cases where the FDD part is NULL and the TDD part consists of one optional information element (or vice versa)
- Similar information elements with slightly different names have been combined (UARFCN)
- Sequences with only one mandatory component have been removed if they aren't referenced in more than one or two places
- Spare value definitions have been updated, some (if not all) of them may already be covered by other CRs
- Default values have been included
- Compared to the original version the following changes have been made:
  - UL-TimingAdvance is now marked as TDD only in all cases, previously some occurrences were marked FDD only
  - In RRCConnectionSetup the comment regarding the use of default value for CapabilityUpdateRequirement has been rewritten
  - The use of spare values regarding MaxPhysCHPerFrame has been clarified

Clauses affected:	11

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other GSM core		→ List of CRs:	

specifications			
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

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

11 Message and Information element abstract syntax (with ASN.1)

This clause contains definitions for RRC PDUs and IEs using a subset of ASN.1 as specified in TR 25.921. PDU and IE definitions are grouped into separate ASN.1 modules.

NOTE: The proposal is to keep both clause 10 and 11 (at least until all messages and information elements are fully discussed and agreed by 3GPP RAN WG2). Clause 10 is intended to give an abstract description (in English) of the messages and information elements whereas clause 11 should contain the exact normative definitions with all necessary details.

11.1 General message structure

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

BEGIN

IMPORTS

    ActiveSetUpdate,
    ActiveSetUpdateComplete,
    ActiveSetUpdateFailure,
    CellUpdate,
    CellUpdateConfirm,
    DownlinkDirectTransfer,
    DownlinkOuterLoopControl,
    HandoverToUTRANCommand,
    HandoverToUTRANComplete,
    InitialDirectTransfer,
    InterSystemHandoverCommand,
    InterSystemHandoverFailure,
    MeasurementControl,
    MeasurementControlFailure,
    MeasurementReport,
    PagingType1,
    PagingType2,
    PhysicalChannelReconfiguration,
    PhysicalChannelReconfigurationComplete,
    PhysicalChannelReconfigurationFailure,
    PhysicalSharedChannelAllocation,
    PUSCHCapacityRequest,
    RadioBearerReconfiguration,
    RadioBearerReconfigurationComplete,
    RadioBearerReconfigurationFailure,
    RadioBearerRelease,
    RadioBearerReleaseComplete,
    RadioBearerReleaseFailure,
    RadioBearerSetup,
    RadioBearerSetupComplete,
    RadioBearerSetupFailure,
    RNTIReallocation,
    RNTIReallocationComplete,
    RNTIReallocationFailure,
    RRCConnectionReEstablishment,
    RRCConnectionReEstablishment-CCCH,
    RRCConnectionReEstablishmentComplete,
    RRCConnectionReEstablishmentRequest,
    RRCConnectionReject,
    RRCConnectionRelease,
    RRCConnectionReleaseComplete,
    RRCConnectionRequest,
    RRCConnectionSetup,
    RRCConnectionSetupComplete,
    RRCStatus,
    SecurityModeCommand,
    SecurityModeComplete,
    SecurityModeFailure,
    SignallingConnectionRelease,
    SystemInformation-BCH,
    SystemInformation-FACH,
```

```
    SystemInformationChangeIndication,
    TransportChannelReconfiguration,
    TransportChannelReconfigurationComplete,
    TransportChannelReconfigurationFailure,
    TransportFormatCombinationControl,
    TransportFormatCombinationControlFailure,
    UECapabilityEnquiry,
    UECapabilityInformation,
    UECapabilityInformationConfirm,
    UplinkDirectTransfer,
    UplinkPhysicalChannelControl,
    URAUpdate,
    URAUpdateConfirm,
    URAUpdateConfirm-CCCH
FROM PDU-definitions

    IntegrityCheckInfo
FROM UserEquipment-IEs;

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

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

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

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

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

UL-DCCH-MessageType ::= CHOICE {
    activeSetUpdateComplete             ActiveSetUpdateComplete,
    activeSetUpdateFailure              ActiveSetUpdateFailure,
    handoverToUTRANComplete             HandoverToUTRANComplete,
    initialDirectTransfer               InitialDirectTransfer,
    interSystemHandoverFailure          InterSystemHandoverFailure,
    measurementReport                   MeasurementReport,
    physicalChannelReconfigurationComplete
                                        PhysicalChannelReconfigurationComplete,
    physicalChannelReconfigurationFailure
                                        PhysicalChannelReconfigurationFailure,
```

```
    radioBearerReconfigurationComplete  RadioBearerReconfigurationComplete,
    radioBearerReconfigurationFailure   RadioBearerReconfigurationFailure,
    radioBearerReleaseComplete          RadioBearerReleaseComplete,
    radioBearerReleaseFailure           RadioBearerReleaseFailure,
    radioBearerSetupComplete            RadioBearerSetupComplete,
    radioBearerSetupFailure             RadioBearerSetupFailure,
    rntiReallocationComplete            RNTIReallocationComplete,
    rntiReallocationFailure             RNTIReallocationFailure,
    rrcConnectionReEstablishmentComplete
                                        RRCConnectionReEstablishmentComplete,
    rrcConnectionReleaseComplete        RRCConnectionReleaseComplete,
    rrcConnectionSetupComplete          RRCConnectionSetupComplete,
    rrcStatus                           RRCStatus,
    securityModeComplete                SecurityModeComplete,
    securityModeFailure                 SecurityModeFailure,
    transportChannelReconfigurationComplete
                                        TransportChannelReconfigurationComplete,
    transportChannelReconfigurationFailure
                                        TransportChannelReconfigurationFailure,
    transportFormatCombinationControlFailure
                                        TransportFormatCombinationControlFailure,
    ueCapabilityInformation             UECapabilityInformation,
    uplinkDirectTransfer                UplinkDirectTransfer,
    extension                           NULL
}

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

--**************************************************************
--
-- Handover to UTRAN command
--
--**************************************************************

HO-ToUTRAN-CommandMessage ::= SEQUENCE {
    message                 HandoverToUTRANCommand
}

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

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

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

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

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

END
```

11.2 PDU definitions

```
--**************************************************************
--
-- TABULAR: The message type and integrity check info are not
-- visible in this module as they are defined in the class module.
```

```
-- Also, all FDD/TDD specific choices have the FDD option first
-- and TDD second, just for consistency.
--
--**************************************************************

PDU-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

IMPORTS

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

    URA-Identity
FROM UTRANMobility-IEs

    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CellUpdateCause,
    CipheringAlgorithm,
    CipheringModeInfo,
    DRX-CycleLengthCoefficient,
    DRX-Indicator,
    EstablishmentCause,
    FailureCauseWithProtErr,
    HyperFrameNumber,
    InitialUE-Capability,
    InitialUE-Identity,
    IntegrityProtActivationInfo,
    IntegrityProtectionModeInfo,
    MaximumAM-EntityNumber,
    PagingCause,
    PagingRecordList,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithInfo,
    Re-EstablishmentTimer,
    RedirectionInfo,
    RejectionCause,
    ReleaseCause,
    RLC-ReconfigurationIndicator,
    RRC-MessageTX-Count,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
    URA-UpdateCause,
    WaitTime
FROM UserEquipment-IEs

    PredefinedConfigIdentity,
    RAB-Info,
    RAB-InformationSetupList,
    RB-ActivationTimeInfo,
    RB-ActivationTimeInfoList,
    RB-InformationAffectedList,
    RB-InformationReconfigList,
    RB-InformationReleaseList,
    RB-InformationSetupList,
    RB-WithPDCP-InfoList,
    SRB-InformationSetupList,
    SRB-InformationSetupList2
FROM RadioBearer-IEs

    CPCH-SetID,
    DL-AddReconfTransChInfo2List,
```

```
    DL-AddReconfTransChInfoList,
    DL-CommonTransChInfo,
    DL-DeletedTransChInfoList,
    DRAC-StaticInformationList,
    TFC-Subset,
    UL-AddReconfTransChInfoList,
    UL-CommonTransChInfo,
    UL-DeletedTransChInfoList
FROM TransportChannel-IEs

    AllocationPeriodInfo,
    CCTrCH-PowerControlInfo,
    ConstantValue,
    CPCH-SetInfo,
    DL-CommonInformation,
    DL-InfoPerRL-List,
    DL-InformationPerRL,
    DL-InformationPerRL-List,
    DL-DPCH-InfoCommon,
    DL-DPCH-PowerControlInfo,
    DL-OuterLoopControl,
    DL-PDSCH-Information,
    FrequencyInfo,
    IndividualTS-InterferenceList,
    MaxAllowedUL-TX-Power,
    PDSCH-Info,
    PRACH-RACH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-Info,
    RL-AdditionInformationList,
    RL-RemovalInformationList,
    UL-DPCH-InfoShort,
    SSDT-Information,
    TFC-ControlDuration,
    TimeslotList,
    TX-DiversityMode,
    UL-ChannelRequirement,
    UL-DPCH-Info,
    UL-DPCH-InfoHO,
    UL-DPCH-InfoShort,
    UL-Interference,
    UL-TimingAdvance
FROM PhysicalChannel-IEs

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

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

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

ActiveSetUpdate ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
```

```
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        newU-RNTI                       U-RNTI                              OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        rl-AdditionInformationList      RL-AdditionInformationList          OPTIONAL,
        rl-RemovalInformationList       RL-RemovalInformationList           OPTIONAL,
        tx-DiversityMode                TX-DiversityMode                    OPTIONAL,
        ssdt-Information                SSDT-Information                    OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

ActiveSetUpdateComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

CellUpdateConfirm ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
```

```
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        rlc-ReconfIndicatorC-Plane      BOOLEANRLC-ReconfigurationIndicator,
        rlc-ReconfIndicatorU-Plane      BOOLEANRLC-ReconfigurationIndicator,
      -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        prach-RACH-Info                 PRACH-RACH-Info                     OPTIONAL,
        dl-InformationPerRL             DL-InformationPerRL                 OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

HandoverToUTRANCommand ::= SEQUENCE {
    -- User equipment IEs
        new-U-RNTI                      U-RNTI-Short,
        activationTime                  ActivationTime                      OPTIONAL,
        cipheringAlgorithm              CipheringAlgorithm                  OPTIONAL,
    -- Radio bearer IEs
        rab-Info                        RAB-Info,
    -- Specification mode information
        specificationMode               CHOICE {
            complete                        SEQUENCE {
                srb-InformationSetupList        SRB-InformationSetupList,
                rb-InformationSetupList         RB-InformationSetupList,
                ul-CommonTransChInfo            UL-CommonTransChInfo,
                ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
                dl-CommonTransChInfo            DL-CommonTransChInfo,
                dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
                ul-DPCH-Info                    UL-DPCH-InfoHO,
                dl-CommonInformation            DL-CommonInformation,
                dl-PDSCH-Information            DL-PDSCH-Information        OPTIONAL,
                -- TABULAR: CPHC-SetInfo is applicable for FDD mode only.
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL,
                modeSpecificInfo                CHOICE {
                    fdd                             SEQUENCE {
                        cpch-SetInfo                    CPCH-SetInfo        OPTIONAL
                    },
                    tdd                             NULL
```

```
                },
                dl-InformationPerRL-List        DL-InformationPerRL-List
            },
            preconfiguration                SEQUENCE {
                predefinedConfigIdentity        PredefinedConfigIdentity,
                ul-DPCH-Info                    UL-DPCH-InfoShort,
                dl-DPCH-InfoCommon              DL-DPCH-InfoCommon,
                dl-InfoPerRL-List               DL-InfoPerRL-List
            }
        },
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             NULL,
            tdd                             SEQUENCE {
                primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power,
                constantValue                   ConstantValue,
                ul-Interference                 UL-Interference,
                cellParametersID                INTEGER (0..127)
            }
        },
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

InitialDirectTransfer ::= SEQUENCE {
    -- Core network IEs
        serviceDescriptor               ServiceDescriptor,
        flowIdentifier                  FlowIdentifier,
        cn-DomainIdentity               CN-DomainIdentity,
        nas-Message                     NAS-Message,
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PagingType2 ::= SEQUENCE {
    -- User equipment IEs
```

```
        pagingCause                     PagingCause,
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,
        pagingRecordTypeID              PagingRecordTypeID,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

PhysicalChannelReconfiguration ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        -- TABULAR: UL-ChannelRequirement contains the choice
        -- between UL DPCH info and PRACH info for RACH.
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        -- TABULAR: CPHC-SetInfo is applicable for FDD mode only.
        cpch-SetInfo                    CPCH-SetInfo                        OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

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

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

PUSCHCapacityRequest ::= SEQUENCE {
    -- User equipment IEs
        c-RNTI                          C-RNTI,
    -- Measurement IEs
        trafficVolumeMeasuredResultsList
                                        TrafficVolumeMeasuredResultsList,
        timeslotListWithISCP            TimeslotListWithISCP                OPTIONAL,
        primaryCCPCH-RSCP               PrimaryCCPCH-RSCP                   OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

RadioBearerReconfiguration ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReconfigList      RB-InformationReconfigList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   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,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        -- TABULAR: CPCH-SetInfo is applicable for FDD mode only.
        cpch-SetInfo                    CPCH-SetInfo                        OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

RadioBearerReconfigurationComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             NULL,
            tdd                             SEQUENCE {
                ul-TimingAdvance                UL-TimingAdvance            OPTIONAL
            }
        },
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

RadioBearerRelease ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReleaseList       RB-InformationReleaseList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
```

```
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   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,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        -- TABULAR: CPCH-SetInfo is applicable for FDD mode only.
        cpch-SetInfo                    CPCH-SetInfo                        OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

RadioBearerReleaseComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TFDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             NULL,
            tdd                             SEQUENCE {
                ul-TimingAdvance                UL-TimingAdvance            OPTIONAL
            }
        },
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

RadioBearerSetup ::= SEQUENCE {
    -- User equipment IEs
```

```
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   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,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        -- TABULAR: CPCH-SetInfo is applicable for FDD mode only.
        cpch-SetInfo                    CPCH-SetInfo                        OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

RadioBearerSetupFailure ::= SEQUENCE {
```

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

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

RNTIReallocation ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

RNTIReallocationComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

RRCConnectionReEstablishment ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
```

```
        rb-InformationReleaseList       RB-InformationReleaseList           OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList          OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        -- TABULAR: CPCH-SetInfo is applicable for FDD mode only.
        cpch-SetInfo                    CPCH-SetInfo                        OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

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

RRCConnectionReEstablishmentRequest ::= SEQUENCE {
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        protocolErrorIndicator          ProtocolErrorIndicatorWithInfo,
        -- TABULAR: The IE above is MD in tabular, but making a 2-way choice
        -- optional wastes one bit (using PER) and produces no additional
        -- information.
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

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

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

RRCConnectionRequest ::= SEQUENCE {
    -- User equipment IEs
        initialUE-Identity              InitialUE-Identity,
        initialUE-Capability            MaximumAM-EntityNumber~~InitialUE-Capability~~,
        establishmentCause              EstablishmentCause,
        protocolErrorIndicator          ProtocolErrorIndicator,
        -- The IE above is MD, but for compactness reasons no default value
        -- has been assigned to it.
    -- Measurement IEs
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
```

```
}

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

RRCConnectionSetup ::= SEQUENCE {
    -- User equipment IEs
        initialUE-Identity              InitialUE-Identity,
        activationTime                  ActivationTime                  OPTIONAL,
        new-U-RNTI                      U-RNTI,
        new-c-RNTI                      C-RNTI                          OPTIONAL,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient,
        re-EstablishmentTimer           Re-EstablishmentTimer           OPTIONAL,
        capabilityUpdateRequirement     CapabilityUpdateRequirement     OPTIONAL,
        -- TABULAR: If the IE is not present, the default value defined in 10.3.3.2 shall
        -- be used.No default value has been attached to the IE above, since
        -- it is a sequence.
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList2,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo            OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        dl-CommonTransChInfo            DL-CommonTransChInfo            OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                   OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power           OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement           OPTIONAL,
        dl-CommonInformation            DL-CommonInformation            OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List        OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                     OPTIONAL
}

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

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

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

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

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

SecurityModeCommand ::= SEQUENCE {
    -- User equipment IEs
        cipheringAlgorithm              CipheringAlgorithm,
        cipheringModeInfo               CipheringModeInfo               OPTIONAL,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo     OPTIONAL,
    -- Core network IEs
        cn-DomainIdentity               CN-DomainIdentity,
```

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

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

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

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

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

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

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

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

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

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

SystemInformation-FACH ::= SEQUENCE {
```

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

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

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

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

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

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

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

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

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

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

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

TransportChannelReconfiguration ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
```

```
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient          OPTIONAL,
        re-EstablishmentTimer           Re-EstablishmentTimer               OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
        dl-CommonInformation            DL-CommonInformation                OPTIONAL,
        dl-PDSCH-Information            DL-PDSCH-Information                OPTIONAL,
        -- TABULAR: CPCH-SetInfo is applicable for FDD mode only.
        cpch-SetInfo                    CPCH-SetInfo                        OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                cpch-SetInfo                    CPCH-SetInfo                OPTIONAL
            },
            tdd                             NULL
        },
        dl-InformationPerRL-List        DL-InformationPerRL-List            OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

TransportChannelReconfigurationComplete ::= SEQUENCE {
    -- User equipment IEs
        ul-IntegProtActivationInfo      IntegrityProtActivationInfo         OPTIONAL,
        -- TABULAR: UL-TimingAdvance is applicable for TFDD mode only.
        ul-TimingAdvance                UL-TimingAdvance                    OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             NULL,
            tdd                             SEQUENCE {
                ul-TimingAdvance                UL-TimingAdvance            OPTIONAL
            }
        },
    -- Radio bearer IEs
        rb-UL-CiphActivationTimeInfo    RB-ActivationTimeInfo               OPTIONAL,
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

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

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

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

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

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

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

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

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

UplinkDirectTransfer ::= SEQUENCE {
    -- Core network IEs
        flowIdentifier                  FlowIdentifier,
        nas-Message                     NAS-Message,
    -- Measurement IEs
```

```
        measuredResultsOnRACH           MeasuredResultsOnRACH               OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

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

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

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

URAUpdateConfirm ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        drx-Indicator                   DRX-Indicator,
        utran-DRX-CycleLengthCoeff      DRX-CycleLengthCoefficient,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        rb-WithPDCP-InfoList            RB-WithPDCP-InfoList                OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

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

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

END
```

11.3 Information element definitions

11.3.1 Core network information elements

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

BEGIN

IMPORTS

    DRX-CycleLengthCoefficient
FROM UserEquipment-IEs

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

    maxCNdomains,
    maxFlowID,
    maxNoCNdomains
FROM Constant-definitions;

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

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

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

CN-DomainSysInfo ::=                SEQUENCE {
    cn-DomainIdentity                   CN-DomainIdentity,
    cn-Type                             CHOICE {
        gsm-MAP                             NAS-SystemInformationGSM-MAP,
        ansi-41                             NAS-SystemInformationANSI-41
    },
    cn-DRX-CycleLengthCoeff             DRX-CycleLengthCoefficient
}

CN-DomainSysInfoList ::=            SEQUENCE (SIZE (1..maxCNdomains)) OF
                                        CN-DomainSysInfo

CN-InformationInfo ::=              SEQUENCE {
    plmn-Identity                       PLMN-Identity                       OPTIONAL,
    cn-CommonGSM-MAP-NAS-SysInfo        NAS-SystemInformationGSM-MAP        OPTIONAL,
    cn-DomainInformationList            CN-DomainInformationList            OPTIONAL
}

Digit ::=                           INTEGER (0..9)

FlowIdentifier ::=                  INTEGER (0..15)

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

IMSI-GSM-MAP ::=                    SEQUENCE (SIZE (6..15)) OF
                                        Digit

LAI ::=                             SEQUENCE {
    plmn-Identity                       PLMN-Identity,
    lac                                 BIT STRING (SIZE (16))
}

MCC ::=                             SEQUENCE (SIZE (3)) OF
                                        Digit

MNC ::=                             SEQUENCE (SIZE (2..3)) OF
```

```
                                        Digit

NAS-Message ::=                         OCTET STRING (SIZE (1..4095))

NAS-SystemInformationGSM-MAP ::=        OCTET STRING (SIZE (1..8))

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

PagingRecordTypeID ::=                  ENUMERATED {
                                            imsi-GSM-MAP,
                                            tmsi-GSM-MAP-P-TMSI,
                                            imsi-DS-41,
                                            tmsi-DS-41 }

PLMN-Identity ::=                       SEQUENCE {
    mcc                                     MCC,
    mnc                                     MNC
}

PLMN-Type ::=                           CHOICE {
    gsm-MAP                                 SEQUENCE {
        plmn-Identity                           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                               NULLSEQUENCE {}
}

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))

ServiceDescriptor ::=                   CHOICE {
    gsm-MAP                                 BIT STRING (SIZE (4)),
    ansi-41                                 BIT STRING (SIZE (4))
}

SignallingFlowInfo ::=                  SEQUENCE {
    flowIdentifier                          FlowIdentifier
}

SignallingFlowInfoList ::=              SEQUENCE (SIZE (1..maxFlowID)) OF
                                            FlowIdentifierSignallingFlowInfo

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

END
```

11.3.2 UTRAN mobility information elements

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

BEGIN

IMPORTS

    maxIntervals,
    maxRAT,
    maxURAcount
```

```
FROM Constant-definitions;

AccessClassBarred ::=               ENUMERATED {
                                        barred, notBarred }

AccessClassBarredList ::=           SEQUENCE (SIZE (16)) OF
                                        AccessClassBarred

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

CellBarred ::=                      CHOICE {
    barred                              T-Barred,
    notBarred                           NULL
}

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

CellSelectQualityMeasure ::=        ENUMERATED {
                                        cpich-Ec-N0, cpich-SIR }

CellSelectReselectInfo ::=          SEQUENCE {
    mappingInfo                         MappingInfo,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            cellSelectQualityMeasure            CellSelectQualityMeasure,
            s-Intrasearch                       S-SearchFDD                 OPTIONAL,
            s-Intersearch                       S-SearchFDD                 OPTIONAL,
            s-SearchHCS                         S-SearchFDD                 OPTIONAL,
            rat-List                            RAT-FDD-InfoList            OPTIONAL
        },
        tdd                                 SEQUENCE {
            s-Intrasearch                       S-SearchTDD                 OPTIONAL,
            s-Intersearch                       S-SearchTDD                 OPTIONAL,
            s-SearchHCS                         S-SearchTDD                 OPTIONAL,
            rat-List                            RAT-TDD-InfoList            OPTIONAL
        }
    },
    q-Hyst-S                            Q-Hyst-S,
    t-Reselection-S                     T-Reselection-S,
    hcs-ServingCellInformation          HCS-ServingCellInformation          OPTIONAL,
    cellSelectReselectParams            CellSelectReselectParams            OPTIONAL
}

CellSelectReselectParams ::=        SEQUENCE {
    decodingRange                       DecodingRange                       OPTIONAL,
    q-Offset                            Q-Offset                            OPTIONAL
}

-- **TODO**, not defined
DecodingRange ::=                   SEQUENCE {
}

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

MapParameter1 ::=                   INTEGER (0..15)

MapParameter2 ::=                   INTEGER (0..15)

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

MappingFunctionParameter ::=        SEQUENCE {
    functionType                        MappingFunctionType,
    mapParameter1                       MapParameter1,
    mapParameter2                       MapParameter2,
    upperLimit                          UpperLimit
}

MappingFunctionParameterList ::=    SEQUENCE (SIZE (1..maxIntervals)) OF
```

```
                                        MappingFunctionParameter

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

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

SEQUENCE {
    mappingList                         MappingList
}

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

-- **TODO**, not defined
OffsetExp ::=                       SEQUENCE {
}

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

Q-Offset ::=                        SEQUENCE {
    q-Offset-S                          Q-Offset-S,
    offsetExp                           OffsetExp
}

-- **TODO**, not defined
Q-Offset-S ::=                      SEQUENCE {}

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

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

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

RAT-Identifier ::=                  ENUMERATED {
                                        gsm, cdma2000,
                                        spare1, spare2 }

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

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

ReservedIndicator ::=               ENUMERATED {
                                        reserved,
                                        notReserved }

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

-- Actual value = IE value * 5
S-SearchTDD ::=                     INTEGER (-24..18)

T-Barred ::=                        INTEGER (0..63)

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

UpperLimit ::=                      INTEGER (0..15)

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

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

END
```

11.3.3 User equipment information elements

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

BEGIN

IMPORTS

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

    RB-ActivationTimeInfoList
FROM RadioBearer-IEs

    FrequencyInfo
FROM PhysicalChannel-IEs

    InterSystemInfo
FROM Measurement-IEs

    ProtocolErrorInformation
FROM Other-IEs

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

ActivationTime ::=                  INTEGER (0..255)

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

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

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

CellUpdateCause ::=                 ENUMERATED {
                                        cellReselection,
                                        periodicCellUpdate,
                                        ul-DataTransmission,
                                        pagingResponse,
                                        rb-ControlResponse,
                                        spare1, spare2, spare3 }

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

CipheringAlgorithm ::=              ENUMERATED {
                                        standardUEA1,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7, spare8,
                                        spare9, spare10, spare11, spare12,
```

```
                                    spare13, spare14, spare15 }

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

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

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

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

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

CPCH-Parameters ::=                 SEQUENCE {
    initialPriorityDelayList            InitialPriorityDelayList            OPTIONAL,
    backoffControlParams                BackoffControlParams
}

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

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

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

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

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

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

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

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

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

FailureCauseWithProtErr ::=         CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    incompatibleSimultaneousReconfiguration
                                        NULL,
    protocolError                       ProtocolErrorInformation,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL
}

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

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

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

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

InitialPriorityDelayList ::=        SEQUENCE (SIZE (8)) OF
                                        NS-IP

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

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

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

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

IntegrityProtectionAlgorithm ::=    ENUMERATED {
                                        standardUIA1,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7, spare8,
                                        spare9, spare10, spare11, spare12,
                                        spare13, spare14, spare15 }

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

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

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

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

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

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

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

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

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

MaxNoPhysChBitsReceived ::=         ENUMERATED {
                                        b300, b600, b1200, b2400, b4800,
                                        b9600, b19200, b28800, b38400,
                                        b48000, b57600, b67200,
                                        spare1, spare2, spare3, spare4 }

MaxNoSCCPCH-RL ::=                  ENUMERATED {
                                        rl1, spare1, spare2, spare3,
```

```
                                        spare4, spare5, spare6, spare7 }

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

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

MaxNumberOfTFC-InTFCS-UL ::=        ENUMERATED {
                                        tfc4, tfc8, tfc16, tfc32, tfc48, tfc64,
                                        tfc96, tfc128, tfc256, tfc512, tfc1024,
                                        spare1, spare2, spare3, spare4,
                                        spare5 }

-- TABULAR: Used range in Release99 is 1..224, values 225-256 are spare values
MaxPhysChPerFrame ::=               INTEGER (1..25624)

MaxPhysChPerTimeslot ::=            ENUMERATED {
                                        ts1, ts2 }

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

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

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

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

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

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

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

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

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

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

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

MultiRAT-Capability ::=             ENUMERATED {
                                        gsm, multicarrier,
                                        spare1, spare2 }

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

N-300 ::=                           INTEGER (1..8)

N-302 ::=                           INTEGER (1..8)
```

```
N-303 ::=                           INTEGER (1..8)

N-304 ::=                           INTEGER (1..8)

N-310 ::=                           INTEGER (1..8)

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

N-313 ::=                           ENUMERATED {
                                        s1, s50, s100, s200, s400,
                                        s600, s800, s1000 }

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

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

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

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

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

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

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

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

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

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

PagingCause ::=                     ENUMERATED {
                                        terminatingSpeechCall,
                                        terminatingCS-DataCall,
                                        terminatingPS-DataCall,
                                        sms,
                                        unspecified,
                                        spare1, spare2, spare3 }

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

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

PDCP-Capability ::=                 SEQUENCE {
    losslessSRNS-RelocationSupport      BOOLEAN,
    supportedHC-AlgoTypeList            SupportedHC-AlgoTypeList
}

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

```
            uplinkPhysChCapability              UL-PhysChCapabilityTDD
        }
    }
}

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

ProtocolErrorIndicator ::=          ENUMERATED {
                                        noError, errorOccurred }

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

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

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

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

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

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

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

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

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

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

RLC-ReconfigurationIndicator ::=    BOOLEAN
```

```
RRC-MessageSequenceNumberList ::=   SEQUENCE (SIZE (2..3)) OF
                                        RRC-MessageSequenceNumber

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

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

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

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

SecurityCapability ::=              SEQUENCE {
    cipheringAlgorithm                  CipheringAlgorithm,
    integrityProtectionAlgorithm        IntegrityProtectionAlgorithm
}

SimultaneousSCCPCH-DPCH-Reception ::= CHOICE {
    notSupported                        NULL,
    supported                           MaxNoSCCPCH-RL
}

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

SupportedHC-AlgoType ::=            CHOICE {
    rfc2507                             RFC2507,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL
}

SupportedHC-AlgoTypeList ::=        SEQUENCE (SIZE (1..maxAlgoTypeCount)) OF
                                        SupportedHC-AlgoType

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

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

T-300 ::=                           INTEGER (1..8)

T-301 ::=                           INTEGER (1..8)

T-302 ::=                           INTEGER (1..8)

T-303 ::=                           INTEGER (1..8)

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

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

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

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

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

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

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

T-311 ::=                           ENUMERATED {
```

```
                                        ms250, ms500, ms750, ms1000,
                                        ms1250, ms1500, ms1750, ms2000 }

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

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

T-314 ::=                               ENUMERATED {
                                            s0, s10, s20, s30, s60,
                                            s180, s600, s1200, s1800 }

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

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

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

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

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

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

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

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

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

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

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

UE-ConnTimersAndConstants ::=           SEQUENCE {
    t-301                                   T-301,
    t-302                                   T-302,
    n-302                                   N-302,
    t-303                                   T-303,
    n-303                                   N-303,
    t-304                                   T-304,
    n-304                                   N-304,
    t-305                                   T-305,
    t-306                                   T-306,
    t-307                                   T-307,
    t-308                                   T-308,
    t-309                                   T-309,
    t-310                                   T-310,
    n-310                                   N-310,
    t-311                                   T-311,
    t-312                                   T-312,
    n-312                                   N-312,
    t-313                                   T-313,
    n-313                                   N-313,
    t-314                                   T-314,
```

```
    t-315                               T-315,
    n-315                               N-315
}

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

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

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

UE-RadioAccessCapability ::=        SEQUENCE {
    conformanceTestCompliance           ConformanceTestCompliance,
    pdcp-Capability                     PDCP-Capability,
    rlc-Capability                      RLC-Capability,
    transportChannelCapability          TransportChannelCapability,
    rf-Capability                       RF-Capability,
    physicalChannelCapability           PhysicalChannelCapability,
    ue-MultiModeRAT-Capability          UE-MultiModeRAT-Capability,
    securityCapability                  SecurityCapability,
    lcs-Capability                      LCS-Capability,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            measurementCapability               MeasurementCapability
        },
        tdd                                 NULL
    }
}

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

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

UL-TransChCapability ::=            SEQUENCE {
    maxNoBitsTransmitted                MaxNoBits,
    maxConvCodeBitsTransmitted          MaxNoBits,
    turboDecodingSupport                TurboSupport,
    maxSimultaneousTransChs             MaxSimultaneousTransChsUL,
    maxTransmittedBlocks                MaxTransportBlocksUL,
    maxNumberOfTFC-InTFCS               MaxNumberOfTFC-InTFCS-UL,
    maxNumberOfTF                       MaxNumberOfTF
}

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

WaitTime ::=                        INTEGER (0..15)

END
```

11.3.4 Radio bearer information elements

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

BEGIN

IMPORTS
```

```
    CN-DomainIdentity,
    RAB-Identity
FROM CoreNetwork-IEs

    TransportChannelIdentity
FROM TransportChannel-IEs

    algorithmCount,
    maxMuxOptionsCount,
    maxOtherRBcount,
    maxPredefConfigCount,
    maxRABcount,
    maxRB-WithPDCPcount,
    maxRBcount,
    maxReconRBcount,
    maxReconRBs,
    maxRelRBcount,
    maxSetupRBcount,
    maxSRBcount
FROM Constant-definitions;

AlgorithmSpecificInfo ::=           CHOICE {
    rfc2507-Info                        RFC2507-Info,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL,
    spare4                              NULL,
    spare5                              NULL,
    spare6                              NULL,
    spare7                              NULL,
}

DL-AM-RLC-Mode ::=                  SEQUENCE {
    inSequenceDelivery                  BOOLEAN,
    receptionRLC-DiscardTimer           ReceptionRLC-DiscardTimer           OPTIONAL,
    -- TABULAR: The CV in the specification is unclear - which IE does
-- it refer to?
    dl-RLC-StatusInfo                   DL-RLC-StatusInfo
}

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

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

DL-RLC-Mode ::=                     CHOICE {
    dl-AM-RLC-Mode                      DL-AM-RLC-Mode,
    dl-UM-RLC-Mode                      DL-UM-RLC-Mode,
    dl-TM-RLC-Mode                      DL-TM-RLC-Mode,
    spare1                              NULL
}

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

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

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

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

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

```
}

ExpectReordering ::=                ENUMERATED {
                                        reorderingNotExpected,
                                        reorderingExpected }

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

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

LogicalChannelIdentity ::=          INTEGER (1..16)

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

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

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

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

NoExplicitDiscard ::=               ENUMERATED {
                                        dt0-1, dt0-25, dt0-5, dt0-75, dt1,
                                        dt1-25, dt1-5, dt1-75, dt2, dt2-5,
                                        dt3, dt3-5, dt4, dt4-5, dt5, dt7-5 }

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

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

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

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

Poll-PU ::=                         ENUMERATED {
                                        pu1, pu2, pu4, pu8, pu16,
                                        pu32, pu64, pu128,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7, spare8 }

Poll-SDU ::=                        ENUMERATED {
                                        sdu1, sdu4, sdu16, sdu64,
                                        spare1, spare2, spare3, spare4 }

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

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

PredefinedConfigIdentity ::=        INTEGER (0..15)

PredefinedConfigValueTag ::=        INTEGER (0..15)

PreDefRadioConfiguration ::=        SEQUENCE {
    predefinedConfigIdentity            PredefinedConfigIdentity,
    predefinedConfigValueTag            PredefinedConfigValueTag,
    predefinedRB-Configuration          PredefinedRB-Configuration
}

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

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

RAB-Info ::=                        SEQUENCE {
    rab-Identity                        RAB-Identity,
    cn-DomainIdentity                   CN-DomainIdentity
}

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

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

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

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

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


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

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

RB-InformationList ::=              SEQUENCE (SIZE (1..maxRBcount)) OF
                                        RB-InformationSetup

RB-InformationReconfig ::=          SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-InfoReconfig                   OPTIONAL,
    rlc-InfoChoice                      RLC-InfoChoice                      OPTIONAL,
    rb-MappingInfo                      RB-MappingInfo                      OPTIONAL,
    rb-SuspendResume                    RB-SuspendResume                    OPTIONAL
}

RB-InformationReconfigList ::=      SEQUENCE (SIZE (1..maxReconRBcount)) OF
                                        RB-InformationReconfig

RB-InformationRelease ::=           SEQUENCE {
    rb-Identity                         RB-Identity
}

RB-InformationReleaseList ::=       SEQUENCE (SIZE (1..maxRelRBcount)) OF
                                        RB-IdentityformationRelease
```

```
RB-InformationSetup ::=             SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-Info                           PDCP-Info                           OPTIONAL,
    rlc-Info                            RLC-Info,
    rb-MappingInfo                      RB-MappingInfo
}

RB-InformationSetupList ::=         SEQUENCE (SIZE (1..maxSetupRBcount)) OF
                                        RB-InformationSetup

RB-MappingInfo ::=                  SEQUENCE (SIZE (1..maxMuxOptionsCount)) OF
                                        RB-MappingOption

RB-MappingOption ::=                SEQUENCE {
    ul-LogicalChannelMappingList        UL-LogicalChannelMappingList        OPTIONAL,
    dl-LogicalChannelMappingList        DL-LogicalChannelMappingList        OPTIONAL
}

RB-SuspendResume ::=                ENUMERATED {
                                        suspend, resume }

RB-WithPDCP-Info ::=                SEQUENCE {
    rb-Identity                         RB-Identity,
    pdcp-SN-Info                        PDCP-SN-Info
}

RB-WithPDCP-InfoList ::=            SEQUENCE (SIZE (1..maxRB-WithPDCPcount)) OF
                                        RB-WithPDCP-Info

ReceivingWindowSize ::=             ENUMERATED {
                                        rw1, rw8, rw16, rw32, rw128, rw256,
                                        rw512, rw768, rw1024, rw1536, rw2048,
                                        rw2560, rw3072, rw3584, rw4096, spare1 }

ReceptionRLC-DiscardTimer ::=       ENUMERATED {
                                        dt100, dt250, dt500, dt750, dt1000,
                                        dt1250, dt1500, dt1750, dt2000, dt2500,
                                        dt3000, dt3500, dt4000, dt4500,
                                        dt5000, dt7500 }

RFC2507-Info ::=                    SEQUENCE {
    f-MAX-PERIOD                        INTEGER (1..655355)                 DEFAULT 256OPTIONAL,
    f-MAX-TIME                          INTEGER (1..255)                    DEFAULT 5OPTIONAL,
    max-HEADER                          INTEGER (60..65535)                 DEFAULT 168OPTIONAL,
    tcp-SPACE                           INTEGER (3..255)                    DEFAULT 15OPTIONAL,
    non-TCP-SPACE                       INTEGER (3..65535)                  DEFAULT 15OPTIONAL,
    expectReordering                    ExpectReordering
    -- TABULAR: The IE above has only two possible values, so using Optional
    -- would be wasteful
}

RLC-Info ::=                        SEQUENCE {
    ul-RLC-Mode                         UL-RLC-Mode                         OPTIONAL,
    dl-RLC-Mode                         DL-RLC-Mode                         OPTIONAL
}

RLC-InfoChoice ::=                  CHOICE {
    rlc-Info                            RLC-Info,
    spare                               NULL
}

RLC-SequenceNumber ::=              INTEGER (0..4095)

SRB-InformationList ::=             SEQUENCE (SIZE (1..maxSRBcount)) OF
                                        SRB-InformationSetup

SRB-InformationSetup ::=            SEQUENCE {
    rb-Identity                         RB-Identity,
    rlc-InfoChoice                      RLC-InfoChoice,
    rb-MappingInfo                      RB-MappingInfo
}

SRB-InformationSetupList2 ::=       SEQUENCE (SIZE (3..4)) OF
                                        SRB-InformationSetup

SRB-InformationSetupList ::=        SEQUENCE (SIZE (1..maxSRBcount)) OF
                                        SRB-InformationSetup
```

```
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, te100, te150, te200, te250,
                                        te300, te350, te400, te450, te500,
                                        te550, te600, te700, te800,
                                        te900, te1000, spare1, spare2,
                                        spare3, spare4, spare5, spare6,
                                        spare7, spare8, spare9, spare10,
                                        spare11, spare12, spare13,
                                        spare14, spare15, spare16 }

TimerDiscard ::=                    ENUMERATED {
                                        td0-1, td0-25, td0-5, td0-75,
                                        td1, td1-25, td1-5, td1-75,
                                        td2, td2-5, td3, td3-5, td4,
                                        td4-5, td5, td7-5 }

TimerMRW ::=                        ENUMERATED {
                                        tm50, tm100, tm150, tm200, tm250,
                                        tm300, tm350, tm400, tm450, tm500,
                                        tm550, tm600, tm700, tm800, tm900, tm1000,
                                        spare1, spare2, spare3, spare4, spare5,
                                        spare6, spare7, spare8, spare9, spare10,
                                        spare11, spare12, spare13, spare14,
                                        spare15, spare16 }

TimerPoll ::=                       ENUMERATED {
                                        tp50, tp100, tp150, tp200, tp250,
                                        tp300, tp350, tp400, tp450, tp500,
                                        tp550, tp600, tp700, tp800,
                                        tp900, tp1000,
                                        spare1, spare2, spare3, spare4, spare5,
                                        spare6, spare7, spare8, spare9, spare10,
                                        spare11, spare12, spare13, spare14,
                                        spare15, spare16 }

TimerPollPeriodic ::=               ENUMERATED {
                                        tper100, tper200, tper300, tper400,
                                        tper500, tper750, tper1000, tper2000,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7, spare8 }

TimerPollProhibit ::=               ENUMERATED {
                                        tpp50, tpp100, tpp150, tpp200, tpp250,
                                        tpp300, tpp350, tpp400, tpp450, tpp500,
                                        tpp550, tpp600, tpp700, tpp800,
                                        tpp900, tpp1000,
                                        spare1, spare2, spare3, spare4, spare5,
                                        spare6, spare7, spare8, spare9, spare10,
                                        spare11, spare12, spare13, spare14,
                                        spare15, spare16 }

TimerRST ::=                        ENUMERATED {
                                        tr50, tr100, tr150, tr200, tr250, tr300,
                                        tr350, tr400, tr450, tr500, tr550,
                                        tr600, tr700, tr800, tr900, tr1000,
                                        spare1, spare2, spare3, spare4, spare5,
                                        spare6, spare7, spare8, spare9, spare10,
                                        spare11, spare12, spare13, spare14,
                                        spare15, spare16 }

TimerStatusPeriodic ::=             ENUMERATED {
                                        tsp50, tsp100, tsp150, tsp200, tsp250,
                                        tsp300, tsp350, tsp400, tsp450, tsp500,
                                        tsp550, tsp600, tsp700, tsp800,
                                        tsp900, tsp1000,
                                        spare1, spare2, spare3, spare4, spare5,
                                        spare6, spare7, spare8, spare9, spare10,
                                        spare11, spare12, spare13, spare14,
                                        spare15, spare16 }

TimerStatusProhibit ::=             ENUMERATED {
```

```
                                    tsp160, tsp320, tsp640, tsp1280 }

TransmissionRLC-Discard ::=         CHOICE {
    timerBasedExplicit                  ExplicitDiscard,
    timerBasedNoExplicit                NoExplicitDiscard,
    maxDAT-Retransmission               MaxDAT,
    noDiscard                           NULL
}

TransmissionWindowSize ::=          ENUMERATED {
                                        tw1, tw8, tw16, tw32, tw128, tw256,
                                        tw512, tw768, tw1024, tw1536, tw2048,
                                        tw2560, tw3072, tw3584, tw4096, spare1 }

UL-AM-RLC-Mode ::=                  SEQUENCE {
    transmissioRLC-Discard              TransmissionRLC-Discard,
    transmissionWindowSize              TransmissionWindowSize,
    timerRST                            TimerRST,
    max-RST                             MaxRST,
    pollingInfo                         PollingInfo                         OPTIONAL
}

UL-LogicalChannelMapping ::=        SEQUENCE {
    ul-TransportChannelType             UL-TransportChannelType,
    transportChannelIdentity            TransportChannelIdentity            OPTIONAL,
    logicalChannelIdentity              LogicalChannelIdentity              OPTIONAL,
    mac-LogicalChannelPriority          MAC-LogicalChannelPriority          OPTIONAL
}

UL-LogicalChannelMappingList ::=    SEQUENCE (SIZE (1..2)) OF
                                        UL-LogicalChannelMapping

UL-RLC-Mode ::=                     CHOICE {
    ul-AM-RLC-Mode                      UL-AM-RLC-Mode,
    ul-UM-RLC-Mode                      UL-UM-RLC-Mode,
    ul-TM-RLC-Mode                      NULL,
    spare                               NULL
}

UL-TransportChannelType ::=         ENUMERATED {
                                        dch, rach, cpch, usch }

UL-UM-RLC-Mode ::=                  SEQUENCE {
    transmissionRLC-Discard             TransmissionRLC-Discard             OPTIONAL
}

END
```

11.3.5 Transport channel information elements

```
TransportChannel-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    maxAddTFC-Count,
    maxCPCHsetcount,
    maxCTFC,
    maxCTFC-DCH,
    maxCTFC-DSCH,
    maxDelTFC-Count,
    maxDelTrCHcount,
    maxDL-CCTrCHcount,
    maxDRAC-Classes,
    maxDRACReconAddTrCHcount,
    maxFACHcount,
    maxNoTFCI-Groups,
    maxReconAddTrCHcount,
    maxRM,
    maxRstTrCH-Count,
    maxTF-Count,
    maxTF-Value,
    maxTFC-Count,
    maxTFC-Value,
    maxTFC-Value-1,
    maxTFCI-1-Combs,
    maxTFCI-2-Combs,
```

```
    maxTFCI-Value,
    maxTFcount,
    maxTrCH,
    maxTrChCount,
    maxTrChValue,
    maxUL-CCTrCHcount
FROM Constant-definitions;

AddCTFC-List ::=                    SEQUENCE (SIZE (1..maxAddTFC-Count)) OF
                                        CTFC

Addition ::=                        SEQUENCE {
    ctfc                                CTFC,
    gainFactorInformation               GainFactorInformation,
    powerOffsetPp-m                     PowerOffsetPp-m
}

AdditionList ::=                    SEQUENCE (SIZE (1..maxAddTFC-Count)) OF
                                        Addition

AllowedTFI-List ::=                 SEQUENCE (SIZE (1..maxTF-Count)) OF
                                        INTEGER (0..maxTF-Value)

AllowedTFC-List ::=                 SEQUENCE (SIZE (1..maxTFC-Count)) OF
                                        TFC-Value

BitModeRLC-SizeInfo ::=             CHOICE {
    sizeType1                           INTEGER (1..127),
    sizeType2                           SEQUENCE {
        part1                               INTEGER (0..15),
        part2                               INTEGER (1..7)                  OPTIONAL
        -- Actual size = (part1 * 8) + 128 + part2
    },
    sizeType3                           SEQUENCE {
        part1                               INTEGER (0..47),
        part2                               INTEGER (1..15)                 OPTIONAL
        -- Actual size = (part1 * 16) + 256 + part2
    },
    sizeType4                           SEQUENCE {
        part1                               INTEGER (0..62),
        part2                               INTEGER (1..63)                 OPTIONAL
        -- Actual size = (part1 * 64) + 1024 + part2
    }
}

BLER-QualityValue ::=               INTEGER (0..63)

ChannelCodingType ::=               CHOICE {
    noCoding                            NULL,
    convolutional                       CodingRate,
    turbo                               NULL
}

CodingRate ::=                      ENUMERATED {
                                        half,
                                        third }

CommonDynamicTF-Info ::=            SEQUENCE {
    numberOfTransportBlocks             NumberOfTransportBlocks,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            octetModeRLC-SizeInfoType2          OctetModeRLC-SizeInfoType2
        },
        tdd                                 SEQUENCE {
            commonTDD-Choice                    CHOICE {
                bitModeRLC-SizeInfo                 BitModeRLC-SizeInfo,
                octetModeRLC-SizeInfoType1          OctetModeRLC-SizeInfoType1
            }                                                               OPTIONAL
        }
    }
}

CommonDynamicTF-InfoList ::=        SEQUENCE (SIZE (1..maxTFcount)) OF
                                        CommonDynamicTF-Info

CommonTransChTFS ::=                SEQUENCE {
    dynamicTF-InformationList           CommonDynamicTF-InfoList,
    semistaticTF-Information            SemistaticTF-Information
```

```
}

CompleteReconf ::=                  SEQUENCE {
    ctfc                                CTFC,
    gainFactorInformation               GainFactorInformation,
    powerOffsetPp-m                     PowerOffsetPp-m
}

CompleteReconfList ::=              SEQUENCE (SIZE (1..maxTFC-Count)) OF
                                        CompleteReconf

ComputedGainFactors ::=             SEQUENCE {
    referenceTFC-Number                 ReferenceTFC-Number
}

ControlledTrChList ::=              SEQUENCE (SIZE (1..maxTrChCount)) OF
                                        TransportChannelIdentity

CPCH-SetID ::=                      INTEGER (1..maxCPCHsetcount)

CRC-Size ::=                        ENUMERATED {
                                        crc0, crc8, crc12, crc16, crc24 }

CTFC-DCH ::=                        INTEGER (0..maxCTFC-DCH)

CTFC-DSCH ::=                       INTEGER (0..maxCTFC-DSCH)

CTFC ::=                            INTEGER (0..maxCTFC)

DedicatedDynamicTF-Info ::=         SEQUENCE {
    numberOfTransportBlocks             NumberOfTransportBlocks,
    rlcMode                             CHOICE {
        bitMode                             BitModeRLC-SizeInfo,
        octetModeType1                      OctetModeRLC-SizeInfoType1
    }                                                               OPTIONAL
}

DedicatedDynamicTF-InfoList ::=     SEQUENCE (SIZE (1..maxTFcount)) OF
                                        DedicatedDynamicTF-Info

DedicatedTransChTFS ::=             SEQUENCE {
    dynamicTF-InformationList           DedicatedDynamicTF-InfoList,
    semistaticTF-Information            SemistaticTF-Information
}

DeletedUL-TransChInformation ::=    SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity
}

DL-AddReconfTransChInfo2List ::=    SEQUENCE (SIZE (1..maxReconAddTrCHcount)) OF
                                        DL-AddReconfTransChInformation2

DL-AddReconfTransChInfoList ::=     SEQUENCE (SIZE (1..maxReconAddTrCHcount)) OF
                                        DL-AddReconfTransChInformation

DL-AddReconfTransChInformation ::=  SEQUENCE {
    trasportChannelIdentity             TransportChannelIdentity,
    transportFormatSet                  TransportFormatSet,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            dl-DCH-TFCS-Identity                TFCS-Identity           OPTIONAL
        }
    }                                                                   OPTIONAL,
    dch-QualityTarget                   QualityTarget                   OPTIONAL,
    tm-SignallingInfo                   TM-SignallingInfo               OPTIONAL
}

DL-AddReconfTransChInformation2 ::= SEQUENCE {
    trasportChannelIdentity             TransportChannelIdentity,
    transportFormatSet                  TransportFormatSet,
    qualityTarget                       QualityTarget
}

DL-CommonTransChInfo ::=            SEQUENCE {
    sccpch-TFCS                         TFCS                            OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
```

```
            dl-DCH-TFCS                         TFCS                        OPTIONAL
        },
        tdd                                 SEQUENCE {
            individualDL-CCTrCH-InfoList        IndividualDL-CCTrCH-InfoList
                                                                            OPTIONAL
        }
    }
}

DL-DeletedTransChInfoList ::=       SEQUENCE (SIZE (1..maxDelTrCHcount)) OF
                                        DL-DeletedTransChInformation

DL-DeletedTransChInformation ::=    SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            dl-DCH-TFCS-Identity                TFCS-Identity               OPTIONAL
        }
    }                                                                       OPTIONAL
}

DL-PreDefTrChInfoList ::=           SEQUENCE (SIZE (1..maxTrCH)) OF
                                        DL-PreDefTrChInformation

DL-PreDefTrChInformation ::=        SEQUENCE {
    trasportChannelIdentity             TransportChannelIdentity,
    transportFormatSet                  TransportFormatSet,
    qualityTarget                       QualityTarget                       OPTIONAL,
    tm-SignallingInfo                   TM-SignallingInfo                   OPTIONAL
}

DRAC-ClassIdentity ::=              INTEGER (1..maxDRAC-Classes)

DRAC-StaticInformation ::=          SEQUENCE {
    transmissionTimeValidity            TransmissionTimeValidity,
    timeDurationBeforeRetry             TimeDurationBeforeRetry,
    drac-ClassIdentity                  DRAC-ClassIdentity
}

DRAC-StaticInformationList ::=      SEQUENCE (SIZE (1..maxDRACReconAddTrCHcount)) OF
                                        DRAC-StaticInformation

FACH-PCH-Information ::=            SEQUENCE {
    transportFormatSet                  TransportFormatSet,
    ctch-Indicator                      BOOLEAN
}

FACH-PCH-InformationList ::=        SEQUENCE (SIZE (1..maxFACHcount)) OF
                                        FACH-PCH-Information

GainFactor ::=                      INTEGER (0..15)

GainFactorInformation ::=           CHOICE {
    signalledGainFactors                SignalledGainFactors,
    computedGainFactors                 ReferenceTFC-NumberComputedGainFactors
}

IndividualDL-CCTrCH-Info ::=        SEQUENCE {
    dl-DCH-TFCS-Identity                TFCS-Identity,
    dl-DCH-TFCS                         TFCS
}

IndividualUL-CCTrCH-InfoList ::=    SEQUENCE (SIZE (1..maxUL-CCTrCHcount)) OF
                                        IndividualUL-CCTrCH-Info

IndividualUL-CCTrCH-Info ::=        SEQUENCE {
    ul-DCH-TFCS-Identity                TFCS-Identity,
    ul-DCH-TFCS                         TFCS
}

IndividualDL-CCTrCH-InfoList ::=    SEQUENCE (SIZE (1..maxDL-CCTrCHcount)) OF
                                        IndividualDL-CCTrCH-Info

-- **TODO**, extensibility?
MessType ::=                        ENUMERATED {
                                        transportFormatCombinationControl }
```

```
Non-allowedTFC-List ::=             SEQUENCE (SIZE (1..maxTFC-Count)) OF
                                        INTEGER (0..maxTFC-Value)

NumberOfTransportBlocks ::=         INTEGER (0..4095)

OctetModeRLC-SizeInfoType1 ::=      CHOICE {
    sizeType1                           INTEGER (0..31),
    -- Actual size = (8 * sizeType1) + 16
    sizeType2                           SEQUENCE {
        part1                               INTEGER (0..23),
        part2                               INTEGER (1..3)                  OPTIONAL
        -- Actual size = (32 * part1) + 272 + (part2 * 8)
    },
    sizeType3                           SEQUENCE {
        part1                               INTEGER (0..61),
        part2                               INTEGER (1..7)                  OPTIONAL
        -- Actual size = (64 * part1) + 1040 + (part2 * 8)
    }
}

OctetModeRLC-SizeInfoType2 ::=      SEQUENCE {
    sizeType1                           INTEGER (0..31),
    -- Actual size = (sizeType1 * 8) + 48
    sizeType2                           INTEGER (0..63),
    -- Actual size = (sizeType2 * 16) + 312
    sizeType3                           INTEGER (0..56)
    -- Actual size = (sizeType3 *64) + 1384
}

PowerOffsetPp-m ::=                 INTEGER (-5..10)

PreDefTransChConfiguration ::=      SEQUENCE {
    ul-TFCS                             TFCS                                OPTIONAL,
    ul-AddReconfTrChInfoList            UL-PreDefTrChInfoList               OPTIONAL,
    dl-TFCS                             TFCS                                OPTIONAL,
    dl-TrChInfoList                     DL-PreDefTrChInfoList               OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            ul-DCH-TFCS-Identity                TFCS-Identity,
            dl-DCH-TFCS-Identity                TFCS-Identity
        }
        -- TABULAR: The two separate choices in tabular have been
        -- combined here.
    }
}

QualityTarget ::=                   SEQUENCE {
    bler-QualityValue                   BLER-QualityValue
}

RateMatchingAttribute ::=           INTEGER (1..maxRM)

ReferenceTFC-Number ::=             INTEGER (0..15)

Removal ::=                         SEQUENCE {
    tfci                                TFCI
}

RemovalList ::=                     SEQUENCE (SIZE (1..maxDelTFC-Count)) OF
                                        TFCIRemoval

RestrictedTrChIdentity ::=          INTEGER (0..maxTrChValue)

RestrictedTrChInfo ::=              SEQUENCE {
    restrictedTrChIdentity              RestrictedTrChIdentity,
    allowedTFI-List                     AllowedTFI-List                     OPTIONAL
}

RestrictedTrChInfoList ::=          SEQUENCE (SIZE (1..maxRstTrCH-Count)) OF
                                        RestrictedTrChInfo

SemistaticTF-Information ::=        SEQUENCE {
    transmissionTimeInterval            TransmissionTimeInterval,
    channelCodingType                   ChannelCodingType,
    rateMatchingAttribute               RateMatchingAttribute,
    crc-Size                            CRC-Size
}
```

```
SignalledGainFactors ::=            SEQUENCE {
    gainFactorBetaC                     GainFactor,
    gainFactorBetaD                     GainFactor,
    referenceTFC-Number                 ReferenceTFC-Number
}

TFC-DCH-List ::=                    SEQUENCE (SIZE (1..maxTFCI-1-Combs)) OF
                                        CTFC-DCH

TFC-DSCH-List ::=                   SEQUENCE (SIZE (1..maxTFCI-2-Combs)) OF
                                        CTFC-DSCH

TFC-MappingOnDSCH ::=               SEQUENCE {
    maxTFCI-Field2Value                 INTEGER (1..512),
    ctfc-DSCH                           CTFC-DSCH
}

TFC-MappingOnDSCH-List ::=          SEQUENCE (SIZE (1..maxNoTFCI-Groups)) OF
                                        TFC-MappingOnDSCH

TFC-Subset ::=                      CHOICE {
    minimumAllowedTFC-Number            TFC-Value,
    allowedTFC-List                     AllowedTFC-List,
    non-allowedTFC-List                 Non-allowedTFC-List,
    restrictedTrChInfoList              RestrictedTrChInfoList
}

TFC-Value ::=                       INTEGER (0..maxTFC-Value-1)

TFCI ::=                            INTEGER (0..maxTFCI-Value)

TFCI2-Length ::=                    INTEGER (1..9)

TFCS ::=                            CHOICE {
    fddWithoutAccessOrTDD               SEQUENCE {
        tfcsRepresentation                  CHOICE {
            completeReconfList                  CompleteReconfList,
            removalList                         RemovalList,
            additionList                        AdditionList
        }
    },
    fddWithAccess                       SEQUENCE {
        tfci2-Length                        TFCI2-Length,
        tfc-DCH-List                        TFC-DCH-List,
        signallingMethod                    CHOICE  {
            tfci-Range                          SEQUENCE {
                tfc-MappingOnDSCH-List              TFC-MappingOnDSCH-List
            },
            explicit                            SEQUENCE {
                tfc-DSCH-List                       TFC-DSCH-List
            }
        }
    }
}

TFCS-Identity ::=                   SEQUENCE {
    tfcs-ID                             INTEGER (1..8)                  DEFAULT 1,
    sharedChannelIndicator              BOOLEAN
}

TimeDurationBeforeRetry ::=         INTEGER (1..256)

TM-SignallingInfo   ::=             SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    tm-SignallingMode                   CHOICE {
        mode1                               SEQUENCE {
            messType                            MessType
        },
        mode2                               SEQUENCE {
            controlledTrChList                  ControlledTrChList
        }
    }
}

TransmissionTimeInterval ::=        ENUMERATED {
                                        tti10, tti20, tti40, tti80 }
```

```
TransmissionTimeValidity ::=        INTEGER (1..256)

TransportChannelIdentity ::=        INTEGER (1..64)

TransportFormatSet ::=              CHOICE {
    dedicatedTransChTFS                 DedicatedTransChTFS,
    commonTransChTFS                    CommonTransChTFS
}

UL-AddReconfTransChInfoList ::=     SEQUENCE (SIZE (1..maxReconAddTrCHcount)) OF
                                        UL-AddReconfTransChInformation

UL-AddReconfTransChInformation ::= SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    transportFormatSet                  TransportFormatSet,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            ul-DCH-TFCS-Identity                TFCS-Identity               OPTIONAL
        }
    }                                                                       OPTIONAL
}

UL-CommonTransChInfo ::=            SEQUENCE {
    tfc-Subset                          TFC-Subset                          OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ul-DCH-TFCS                         TFCS
        },
        tdd                                 SEQUENCE {
            ul-DCH-TFCS-Identity                TFCS-Identity
        }
    }                                                                       OPTIONAL
}

UL-DeletedTransChInfoList ::=       SEQUENCE (SIZE (1..maxDelTrCHcount)) OF
                                        TransportChannelIdentityDeletedUL-TransChInformation

UL-DeletedTransChInformation ::=    SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    modeSpecificInfo                    CHOICE {
        fdd                                 NULL,
        tdd                                 SEQUENCE {
            individualUL-CCTrCH-InfoList        IndividualUL-CCTrCH-InfoList
                                                                            OPTIONAL
        }
    }                                                                       OPTIONAL
}

UL-PreDefTrChInfoList ::=           SEQUENCE (SIZE (1..maxTrCH)) OF
                                        UL-PreDefTrChInformation

UL-PreDefTrChInformation ::=        SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    transportFormatSet                  TransportFormatSet
}

END
```

11.3.6 Physical channel information elements

```
PhysicalChannel-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    maxAddRLcount,
    maxAP-SigNum,
    maxAP-SubCH,
    maxChanCount,
    maxCodeCount,
    maxCodeNum,
    maxCodeNumComp-1,
    maxCombineSet,
    maxCPCH-SetCount,
    maxDelRLcount,
    maxDPDCHcount,
```

```
    maxFACH-Count,
    maxMidambleShift-1,
    maxNoCodeGroups,
    maxNoTFCI-Groups,
    maxPCPCHs,
    maxPDSCHcount,
    maxPRACHcount,
    maxPUSCHcount,
    maxReplaceCount,
    maxRLcount,
    maxSCCPCHcount,
    maxSigNum,
    maxSF-Num,
    maxSubChNum,
    maxTFCI-2-Combs,
    maxTFs,
    maxTimeslotCount,
    maxTScount,
    maxUL-CCTrCHcount
FROM Constant-definitions

    ActivationTime
FROM UserEquipment-IEs

    CPCH-SetID,
    FACH-PCH-InformationList,
    TFCS,
    TFCS-Identity,
    TransportFormatSet
FROM TransportChannel-IEs

    SIB-ReferenceListFACH
FROM Other-IEs;

AC-To-ASC-Mapping ::=               INTEGER (0..7)

AC-To-ASC-MappingTable ::=          SEQUENCE (SIZE (7)) OF
                                        AC-To-ASC-Mapping

AccessServiceClass ::=              SEQUENCE {
    availableSignatureStartIndex        INTEGER (0..15),
    availableSignatureEndIndex          INTEGER (0..15),
    availableSubChannelStartIndex       INTEGER (0..11),
    availableSubChannelEndIndex         INTEGER (0..11)
}

AccessServiceClassIndex ::=         INTEGER (1..8)

AICH-Info ::=                       SEQUENCE {
    secondaryScramblingCode             SecondaryScramblingCode             OPTIONAL,
    channelisationCode256               ChannelisationCode256,
    sttd-Indicator                      BOOLEAN~~STTD-Indicator~~,
    aich-TransmissionTiming             AICH-TransmissionTiming
}

AICH-PowerOffset ::=                INTEGER (-10..5)

AICH-TransmissionTiming ::=         ENUMERATED {
                                        e0, e1 }

AllocationPeriodInfo ::=            SEQUENCE {
    allocationActivationTime            INTEGER (1..256),
    allocationDuration                  INTEGER (1..256)
}

AP-AICH-ChannelisationCode ::=      INTEGER (0..255)

AP-AICH-ScramblingCode ::=          INTEGER (0..255)

AP-PreambleScramblingCode ::=       INTEGER (0..255)

AP-Signature ::=                    INTEGER (0..15)

AP-Subchannel ::=                   INTEGER (0..11)

ASC ::=                             SEQUENCE {
    accessServiceClass                  AccessServiceClass,
    repetitionPeriodAndOffset           ASC-RepetitionPeriodAndOffset       OPTIONAL
```

```
    -- TABULAR: The offset is nested in the repetition period
}

ASC-Info ::=                        SEQUENCE {
    asc-List                            ASC-List
}

ASC-List ::=                        SEQUENCE (SIZE (1..8)) OF
                                        ASC

ASC-RepetitionPeriodAndOffset ::=   CHOICE {
    rp1                                 NULL,
    rp2                                 INTEGER (0..1),
    rp4                                 INTEGER (0..3),
    rp8                                 INTEGER (0..7)
}

AvailableAP-SignatureList ::=       SEQUENCE (SIZE (1..maxAP-SigNum)) OF
                                        AP-Signature

AvailableAP-SubchannelList ::=      SEQUENCE (SIZE (1..maxAP-SubCH)) OF
                                        AP-Subchannel

AvailableMinimumSF-VCAM ::=         SEQUENCE {
    minimumSpreadingFactor              MinimumSpreadingFactor,
    nf-Max                              NF-Max,
    maxAvailablePCPCH-Number            MaxAvailablePCPCH-Number,
    availableAP-SignatureList           AvailableAP-SignatureList,
    availableAP-SubchannelList          AvailableAP-SubchannelList          OPTIONAL
}

AvailableMinimumSF-ListUCSM ::=     SEQUENCE (SIZE (1..maxSF-Num)) OF
                                        MinimumSpreadingFactor

AvailableMinimumSF-ListVCAM ::=     SEQUENCE (SIZE (1..maxSF-Num)) OF
                                        AvailableMinimumSF-VCAM

AvailableSignatureList ::=          SEQUENCE (SIZE (1..maxSigNum)) OF
                                        Signature

AvailableSubChannelNumber ::=       INTEGER (0..11)

AvailableSubChannelNumberList ::=   SEQUENCE (SIZE (1..maxSubChNum)) OF
                                        AvailableSubChannelNumber

BlockSTTD-Indicator ::=             BOOLEAN

BurstType ::=                       ENUMERATED {
                                        short1, long2 }

BurstType1 ::=                      ENUMERATED { ms4, ms8, ms16 }

BurstType2 ::=                      ENUMERATED { ms3, ms6 }

CCTrCH-PowerControlInfo ::=         SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo
}

CD-AccessSlotSubchannel ::=         INTEGER (0..11)

CD-AccessSlotSubchannelList ::=     SEQUENCE (SIZE (1..maxSubChNum)) OF
                                        CD-AccessSlotSubchannel

CD-CA-ICH-ChannelisationCode ::=    INTEGER (0..255)

CD-CA-ICH-ScramblingCode ::=        INTEGER (0..255)

CD-PreambleScramblingCode ::=       INTEGER (0..255)

CD-SignatureCode ::=                INTEGER (0..15)

CD-SignatureCodeList ::=            SEQUENCE (SIZE (1..maxSigNum)) OF
                                        CD-SignatureCode

CellParametersID ::=                INTEGER (0..127)

CFN ::=                             INTEGER (0..255)
```

```
ChannelAssignmentActive ::=         CHOICE {
    notActive                           NULL,
    isActive                            AvailableMinimumSF-ListVCAMVCAM-Info
}

ChannelisationCode256 ::=           INTEGER (0..255)

ChannelReqParamsForUCSM ::=         SEQUENCE {
    availableAP-SignatureList           AvailableAP-SignatureList,
    availableAP-SubchannelList          AvailableAP-SubchannelList
}

ChannelReqParamsForUCSM-List ::=    SEQUENCE (SIZE (1..maxSigNum)) OF
                                        ChannelReqParamsForUCSM

ClosedLoopTimingAdjMode ::=         ENUMERATED {
                                        slot1, slot2 }

CodeNumber ::=                      INTEGER (0..maxCodeNum)

CodeNumberDSCH ::=                  INTEGER (0..maxCodeNumComp-1)

CodeRange ::=                       SEQUENCE {
    pdsch-CodeMapList                   PDSCH-CodeMapList,
    codeNumberStart                     CodeNumberDSCH,
    codeNumberStop                      CodeNumberDSCH
}

CodeWordSet ::=                     ENUMERATED {
                                        longCWS,
                                        mediumCWS,
                                        shortCWS,
                                        ssdtOff }

CommonTimeslotInfo ::=              SEQUENCE {
    -- TABULAR: The IE below is MD, but since it can be encoded in a single
    -- bit it is not defined as OPTIONAL.
    secondInterleavingMode              SecondInterleavingMode----------OPTIONAL,
    tfci-Coding                         TFCI-Coding                     OPTIONAL,
    puncturingLimit                     PuncturingLimit,
    repetitionPeriodAndLength           RepetitionPeriodAndLength       OPTIONAL
}

CommonTimeslotInfoSCCPCH ::=        SEQUENCE {
    -- TABULAR: The IE below is MD, but since it can be encoded in a single
    -- bit it is not defined as OPTIONAL.
    secondInterleavingMode              SecondInterleavingMode----------OPTIONAL,
    tfci-Coding                         TFCI-Coding                     OPTIONAL,
    puncturingLimit                     PuncturingLimit,
    repetitionPeriodLengthAndOffset     RepetitionPeriodLengthAndOffset OPTIONAL
}

CompressedModeMethod ::=            CHOICE {
    puncturing                          NULL,
    sf-2                                ScramblingCodeChange,
    upperLayerScheduling                NULL,
    noCompressing                       NULL
}

-- Values from -10 to 10 are used in Release 99
ConstantValue ::=                   INTEGER (-10..21)

CPCH-PersistenceLevelsList ::=      SEQUENCE (SIZE (1..maxCPCH-SetCount)) OF
                                        CPCH-PersistenceLevels

CPCH-PersistenceLevels ::=          SEQUENCE {
    cpch-SetID                          CPCH-SetID,
    dynamicPersistenceLevelTF-List      DynamicPersistenceLevelTF-List
}

CPCH-SetInfo ::=                    SEQUENCE {
    cpch-SetID                          CPCH-SetID,
    transportFormatSet                  TransportFormatSet,
    ap-PreambleScramblingCode           AP-PreambleScramblingCode,
    ap-AICH-ScramblingCode              AP-AICH-ScramblingCode,
    ap-AICH-ChannelisationCode          AP-AICH-ChannelisationCode,
    cd-PreambleScramblingCode           CD-PreambleScramblingCode,
```

```
    cd-CA-ICH-ScramblingCode            CD-CA-ICH-ScramblingCode,
    cd-CA-ICH-ChannelisationCode        CD-CA-ICH-ChannelisationCode,
    cd-AccessSlotSubchannelList         CD-AccessSlotSubchannelList         OPTIONAL,
    cd-SignatureCodeList                CD-SignatureCodeList                OPTIONAL,
    slotFormat                          SlotFormat,
    n-StartMessage                      N-StartMessage,
    channelAssignmentActive             ChannelAssignmentActive,
    -- TABULAR: VCAM info has been nested inside ChannelAssignmentActive,
    -- which in turn is mandatory since it's only a binary choice.
    cpch-StatusIndicationMode           CPCH-StatusIndicationMode,
    pcpch-ChannelInfoList               PCPCH-ChannelInfoList
}

CPCH-SetInfoList ::=                SEQUENCE (SIZE (1..maxCPCH-SetCount)) OF
                                        CPCH-SetInfo

CPCH-StatusIndicationMode ::=       ENUMERATED {
                                        pcpch-Availability,
                                        pcpch-AvailabilityAndMinAvailableSF }

-- Actual value = IE value * 512, only values from 0 to 599 used in Release 99.
DefaultDPCH-OffsetValue ::=         INTEGER (0..1023)

-- Actual value = IE value * 0.5
DeltaSIR ::=                        INTEGER (0..15)

DL-CCTrCh ::=                       SEQUENCE {
    individualTS-InfoDL-CCTrCHList      IndividualTS-InfoDL-CCTrCHList
}

DL-CCTrCh-HO ::=                    SEQUENCE {
    tfcs-Identity                       TFCS-Identity,
    individualTS-InfoDL-CCTrCHList      IndividualTS-InfoDL-CCTrCHList
}

DL-CCTrChList ::=                   CHOICE {
    single                              IndividualTS-InfoDL-CCTrCHListDL-CCTrCh,
    handover                            SEQUENCE (SIZE (1..8)) OF
                                            DL-CCTrCh-HO
}

DL-ChannelisationCode ::=           SEQUENCE {
    secondaryScramblingCode             SecondaryScramblingCode             OPTIONAL,
    codeNumber                          CodeNumber
}

DL-ChannelisationCodeList ::=       SEQUENCE (SIZE (1..maxChanCount)) OF
                                        DL-ChannelisationCode

DL-CommonInformation ::=            SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommon                  OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValue     DEFAULT 0OPTIONAL,
            dpch-CompressedModeInfo             DPCH-CompressedModeInfo     OPTIONAL,
            tx-DiversityMode                    TX-DiversityMode            OPTIONAL,
            ssdt-Information                    SSDT-Information            OPTIONAL
        },
        tdd                                 SEQUENCE {
            ul-TimingAdvance                    UL-TimingAdvance            OPTIONAL
        }
    }
}

DL-CommonInformationPredef ::=      SEQUENCE {
    dl-DPCH-InfoCommon                  DL-DPCH-InfoCommon                  OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            defaultDPCH-OffsetValue             DefaultDPCH-OffsetValue     OPTIONAL
        },
        tdd                                 NULL
    }
}

DL-DPCCH-SlotFormat ::=             ENUMERATED {
                                        slf0, slf1 }

DL-DPCH-InfoCommon ::=              SEQUENCE {
```

```
    dl-DPCH-PowerControlInfo            DL-DPCH-PowerControlInfo,
    spreadingFactor                     SF-DL-DPCH,
    -- TABULAR: The number of pilot bits is nested inside the spreading factor.
    positionFixedOrFlexible             PositionFixedOrFlexible,
    tfci-Existence                      BOOLEAN
}

DL-DPCH-InfoPerRL ::=               CHOICE {
    fdd                                 SEQUENCE {
        pCPICH-UsageForChannelEst           PCPICH-UsageForChannelEst       OPTIONAL,
        secondaryCPICH-Info                 SecondaryCPICH-Info             OPTIONAL,
        dl-ChannelisationCodeList           DL-ChannelisationCodeList,
        tpc-CombinationIndex                TPC-CombinationIndex,
        ssdt-CellIdentity                   SSDT-CellIdentity               OPTIONAL,
        closedLoopTimingAdjMode             ClosedLoopTimingAdjMode         OPTIONAL
    },
    tdd                                 DL-CCTrChListSEQUENCE {
        dl-CCTrChList                       DL-CCTrChList
    }
}

DL-DPCH-PowerControlInfo ::=            SEQUENCE {
    -- TABULAR: DPC-Mode is applicable for FDD mode only.
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dpc-Mode                            DPC-Mode                    OPTIONAL
        },
        tdd                                 NULL
    }
}

DL-FrameType ::=                    ENUMERATED {
                                        dl-FrameTypeA, dl-FrameTypeB }

DL-InfoPerRL ::=                    SEQUENCE {
    dl-InformationPerRL                 DL-InformationPerRL-Short,
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL
}

DL-InfoPerRL-List ::=               SEQUENCE (SIZE (1..maxRLcount)) OF
                                        DL-InfoPerRL

DL-InformationPerRL ::=             SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            pdsch-SHO-DCH-Info                  PDSCH-SHO-DCH-Info          OPTIONAL,
            pdsch-CodeMapping                   PDSCH-CodeMapping           OPTIONAL
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info
        }
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL                   OPTIONAL,
    secondaryCCPCH-Info                 SecondaryCCPCH-Info                 OPTIONAL,
    sib-ReferenceList                   SIB-ReferenceListFACH               OPTIONAL
}

DL-InformationPerRL-List ::=        SEQUENCE (SIZE (1..maxRLcount)) OF
                                        DL-InformationPerRL

DL-InformationPerRL-Short ::=       SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                                 NULL
    },
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL                   OPTIONAL
}

DL-OuterLoopControl ::=             ENUMERATED {
                                        increaseAllowed, increaseNotAllowed }

DL-PDSCH-Information ::=            SEQUENCE {
    pdsch-SHO-DCH-Info                  PDSCH-SHO-DCH-Info,
    pdsch-CodeMapping                   PDSCH-CodeMapping
}
```

```
DL-TS-ChannelisationCode ::=        ENUMERATED {
                                        cc16-1, cc16-2, cc16-3, cc16-4,
                                        cc16-5, cc16-6, cc16-7, cc16-8,
                                        cc16-9, cc16-10, cc16-11, cc16-12,
                                        cc16-13, cc16-14, cc16-15, cc16-16 }

DL-TS-ChannelisationCodeList ::=    SEQUENCE (SIZE (1..maxCodeCount)) OF
                                        DL-TS-ChannelisationCode

DPC-Mode ::=                        ENUMERATED {
                                        singleTPC,
                                        tpcTripletInSoft }

-- The actual value of DPCCH power offset is the value of this IE * 2.
DPCCH-PowerOffset ::=               INTEGER (-82..-3)

DPCH-CompressedModeInfo ::=         SEQUENCE {
    tgl                                 TGL,
    cfn                                 CFN,
    sn                                  Timeslot,
    tgp1                                TGP,
    tgp2                                TGP                                 OPTIONAL,
    tgd                                 TGD,
    pd                                  PD,
    pcm                                 PCM,
    prm                                 PRM,
    ul-DL-Mode                          UL-DL-Mode,
    compressedModeMethod                CompressedModeMethod,
    -- TABULAR: Scrambling code change is nested inside CompressedModeMethod
    dl-FrameType                        DL-FrameType,
    deltaSIR                            DeltaSIR,
    deltaSIRAfter                       DeltaSIR
}

DPDCH-ChannelisationCode ::=        ENUMERATED {
                                        e4, e8, e16, e32,
                                        e64, e128, e256 }

DPDCH-ChannelisationCodeList ::=    SEQUENCE (SIZE (1..maxDPDCHcount)) OF
                                        DPDCH-ChannelisationCode

DSCH-Mapping ::=                    SEQUENCE {
    maxTFCI-Field2Value                 MaxTFCI-Field2Value,
    spreadingFactor                     SF-PDSCH,
    codeNumber                          CodeNumberDSCH,
    multiCodeInfo                       MultiCodeInfo
}

DSCH-MappingList ::=                SEQUENCE (SIZE (1..maxNoTFCI-Groups)) OF
                                        DSCH-Mapping

DSCH-RadioLinkIdentifier ::=        INTEGER (0..511)

DurationTimeInfo ::=                INTEGER (1..4096)

DynamicPersistenceLevel ::=         INTEGER (1..8)

DynamicPersistenceLevelList ::=     SEQUENCE (SIZE (1..maxPRACHcount)) OF
                                        DynamicPersistenceLevel

DynamicPersistenceLevelTF-List ::= SEQUENCE (SIZE (1..maxTFs)) OF
                                        DynamicPersistenceLevel

FACH-PCH-Information ::=            SEQUENCE {
    transportFormatSet                  TransportFormatSet,
    ctch-Indicator                      BOOLEAN
}

FACH-PCH-InformationList ::=        SEQUENCE (SIZE (1..maxFACH-Count)) OF
                                        FACH-PCH-Information

FBI-BitNumber ::=                   INTEGER (1..2)

FrequencyInfo ::=                   SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            uarfcn-UL                           UARFCN-Nu,
```

```
            uarfcn-DL                       UARFCN-Nd                   OPTIONAL
        },
        tdd                             SEQUENCE {
            uarfcn-Nt                       UARFCN-Nt
        }
    }
}

IndividualTimeslotInfo ::=          SEQUENCE {
    timeslotNumber                      Timeslot,
    tfci-Existence                      BOOLEAN                             OPTIONAL,
    -- The IE above is CH, but since it is a boolean it's kept mandatory.
    burstType                           BurstType,
    midambleShift                       MidambleShift
}

IndividualTS-InfoDL-CCTrCH ::=      SEQUENCE {
    individualTimeslotInfo              IndividualTimeslotInfo,
    dl-TS-ChannelisationCodeList        DL-TS-ChannelisationCodeList
}

IndividualTS-InfoDL-CCTrCHList ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
                                    IndividualTS-InfoDL-CCTrCH

IndividualTS-InfoPDSCH ::=          SEQUENCE {
    individualTimeslotInfo              IndividualTimeslotInfo,
    pdsch-ChannelisationCode            PDSCH-ChannelisationCode
}

IndividualTS-InfoPDSCH-List ::=     SEQUENCE (SIZE (1..maxTimeslotCount)) OF
                                    IndividualTS-InfoPDSCH

IndividualTS-InfoPUSCH ::=          SEQUENCE {
    individualTimeslotInfo              IndividualTimeslotInfo,
    pusch-ChannelisationCode            PUSCH-ChannelisationCode
}

IndividualTS-InfoPUSCH-List ::=     SEQUENCE (SIZE (1..maxTimeslotCount)) OF
                                    IndividualTS-InfoPUSCH

IndividualTS-InfoUL-CCTrCH ::=      SEQUENCE {
    individualTimeslotInfo              IndividualTimeslotInfo,
    channelisationCode                  UL-TS-ChannelisationCode
}

IndividualTS-InfoUL-CCTrCH-List ::= SEQUENCE (SIZE (1..maxTimeslotCount)) OF
                                    IndividualTS-InfoUL-CCTrCH

IndividualTS-Interference ::=       SEQUENCE {
    timeslot                            Timeslot,
    ul-TimeslotInterference             UL-Interference
}

IndividualTS-InterferenceList ::=   SEQUENCE (SIZE (1..maxTScount)) OF
                                    IndividualTS-Interference

-- Value range of -50..33 is used for Release 99
MaxAllowedUL-TX-Power ::=           INTEGER (-50..77)

MaxAvailablePCPCH-Number ::=        INTEGER (1..64)

MaxTFCI-Field2Value ::=             INTEGER (1..1023)

MidambleConfiguration ::=           SEQUENCE {
    burstType1                          BurstType1,
    burstType2                          BurstType2
}

MidambleShift ::=                   INTEGER (0..maxMidambleShift-1)

MinimumSpreadingFactor ::=          ENUMERATED {
                                        sf4, sf8, sf16, sf32,
                                        sf64, sf128, sf256 }

MultiCodeInfo ::=                   INTEGER (1..16)

N-GAP ::=                           ENUMERATED {
                                        f2, f4, f8 }
```

```
N-PCH ::=                           INTEGER (1..8)

N-StartMessage ::=                  INTEGER (1..8)

-- **TODO**, not defined yet
NB01Max ::=                         SEQUENCE {
}

-- **TODO**, not defined yet
NB01Min ::=                         SEQUENCE {
}

NF-Max ::=                          INTEGER (1..64)

NumberOfFBI-Bits ::=                INTEGER (1..2)

PagingIndicatorLength ::=           ENUMERATED {
                                        pi2, pi4, pi8 }

PC-Preamble ::=                     ENUMERATED {
                                        pcp0, pcp8 }

PC-PreambleSlotFormat ::=           ENUMERATED {
                                        slf0, slf1 }

PCM ::=                             ENUMERATED {
                                        pc-mode0, pc-mode1 }

PCP-Length ::=                      ENUMERATED {
                                        as0, as8 }

PCPCH-ChannelInfo ::=               SEQUENCE {
    pcpch-UL-ScramblingCode             INTEGER (0..255),
    pcpch-DL-ChannelisationCode         INTEGER (0..511),
    pcpch-DL-ScramblingCode             INTEGER (0..255),
    pcp-Length                          PCP-Length,
    ucsm-Info                           UCSM-Info                           OPTIONAL
}

PCPCH-ChannelInfoList ::=           SEQUENCE (SIZE (1..maxPCPCHs)) OF
                                        PCPCH-ChannelInfo

PCPICH-UsageForChannelEst ::=       ENUMERATED {
                                        mayBeUsed,
                                        shallNotBeUsed }

-- Here the value 0 represents "infinity" in the tabular notation.
PD ::=                              INTEGER (0..35)

PDSCH-ChannelisationCode ::=        ENUMERATED {
                                        cc16-1, cc16-2, cc16-3, cc16-4,
                                        cc16-5, cc16-6, cc16-7, cc16-8,
                                        cc16-9, cc16-10, cc16-11, cc16-12,
                                        cc16-13, cc16-14, cc16-15, cc16-16 }

PDSCH-CodeInfo ::=                  SEQUENCE {
    spreadingFactor                     SF-PDSCH,
    codeNumber                          CodeNumberDSCH,
    multiCodeInfo                       MultiCodeInfo
}

PDSCH-CodeInfoList ::=              SEQUENCE (SIZE (1..maxTFCI-2-Combs)) OF
                                        PDSCH-CodeInfo

PDSCH-CodeMap ::=                   SEQUENCE {
    spreadingFactor                     SF-PDSCH,
    multiCodeInfo                       MultiCodeInfo
}

PDSCH-CodeMapList ::=               SEQUENCE (SIZE (1..maxNoCodeGroups)) OF
                                        PDSCH-CodeMap

PDSCH-CodeMapping ::=               SEQUENCE {
    dl-ScramblingCode                   SecondaryScramblingCode,
    signallingMethod                    CHOICE {
        codeRange                           CodeRange,
        tfci-Range                          DSCH-MappingList,
```

```
        explicit                            PDSCH-CodeInfoList,
        replace                             ReplacedPDSCH-CodeInfoList
    }
}

PDSCH-Info ::=                      SEQUENCE {
    tfcs-Identity                       TFCS-Identity                   OPTIONAL,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo              OPTIONAL,
    individualTimeslotInfoList          IndividualTS-InfoPDSCH-List     OPTIONAL
}

PDSCH-SHO-DCH-Info ::=              SEQUENCE {
    dsch-RadioLinkIdentifier            DSCH-RadioLinkIdentifier,
    tfci-CombiningSet                   TFCI-CombiningSet,
    rl-IdentifierList                   RL-IdentifierList               OPTIONAL
}

PDSCH-SysInfo ::=                   SEQUENCE {
    pdsch-Info                          PDSCH-Info,
    dsch-TFS                            TransportFormatSet              OPTIONAL
}

PDSCH-SysInfoList ::=               SEQUENCE (SIZE (1..maxPDSCHcount)) OF
                                        PDSCH-SysInfo

PersistenceScalingFactor ::=        ENUMERATED {
                                        psf0-9, psf0-8, psf0-7, psf0-6,
                                        psf0-5, psf0-4, psf0-3, psf0-2 }

PersistenceScalingFactorList ::=    SEQUENCE (SIZE (1..6)) OF
                                        PersistenceScalingFactor

PI-CountPerFrame ::=                ENUMERATED {
                                        e18, e36, e72, e144 }

PICH-Info ::=                       CHOICE {
    fdd                                 SEQUENCE {
        secondaryScramblingCode             SecondaryScramblingCode     OPTIONAL,
        channelisationCode256               ChannelisationCode256,
        pi-CountPerFrame                    PI-CountPerFrame,
        sttd-Indicator                      BOOLEANSTTD-Indicator
    },
    tdd                                 SEQUENCE {
        channelisationCode                  TDD-PICH-CCode              OPTIONAL,
        timeslot                            Timeslot                    OPTIONAL,
        burstType                           BurstType,
        midambleShift                       MidambleShift               OPTIONAL,
        repetitionPeriodLengthOffset        RepPerLengthOffset-PICH     OPTIONAL,
        pagingIndicatorLength               PagingIndicatorLength       DEFAULT pi2OPTIONAL,
        n-GAP                               N-GAP                       DEFAULT f4OPTIONAL,
        n-PCH                               N-PCH                       DEFAULT 2OPTIONAL
    }
}

PICH-PowerOffset ::=                INTEGER (-10..5)

PilotBits128 ::=                    ENUMERATED {
                                        pb4, pb8 }

PilotBits256 ::=                    ENUMERATED {
                                        pb2, pb4, pb8 }

PositionFixedOrFlexible ::=         ENUMERATED {
                                        fixed,
                                        flexible }

PowerControlAlgorithm ::=           CHOICE {
    algorithm1                          TPC-StepSize,
    algorithm2                          NULL
}

PowerOffsetP0 ::=                   INTEGER (1..8)

PRACH-Midamble ::=                  ENUMERATED {
                                        direct,
                                        direct-Inverted }
```

```
PRACH-Partitioning ::=              SEQUENCE (SIZE (1..8)) OF
                                        AccessServiceClass

PRACH-PowerOffset ::=               SEQUENCE {
    powerOffsetP0                       PowerOffsetP0,
    preambleRetransMax                  PreambleRetransMax
}

PRACH-RACH-Info ::=                 SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            availableSignatureList              AvailableSignatureList,
            availableSF                         SF-PRACH,
            scramblingCodeWordNumber            ScramblingCodeWordNumber,
            puncturingLimit                     PuncturingLimit,
            availableSubChannelNumberList       AvailableSubChannelNumberList
        },
        tdd                                 SEQUENCE {
            timeslot                            Timeslot,
            channelisationCode                  TDD-PRACH-CCode,
            prach-Midamble                      PRACH-Midamble              OPTIONAL
        }
    }
}

PRACH-SystemInformation ::=         SEQUENCE {
    prach-RACH-Info                     PRACH-RACH-Info,
    rach-TransportFormatSet             TransportFormatSet,
    rach-TFCS                           TFCS,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            prach-Partitioning                  PRACH-Partitioning,
            persistenceScalingFactorList        PersistenceScalingFactorList
                                                                        OPTIONAL,
            ac-To-ASC-MappingTable              AC-To-ASC-MappingTable  OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power,
            constantValue                       ConstantValue,
            prach-PowerOffset                   PRACH-PowerOffset,
            rach-TransmissionParameters         RACH-TransmissionParameters,
            aich-Info                           AICH-Info
        },
        tdd                                 SEQUENCE {
            asc-Info                            ASC-ListInfo                OPTIONAL
        }
    }
}

PRACH-SystemInformationList ::=     SEQUENCE (SIZE (1..maxPRACHcount)) OF
                                        PRACH-SystemInformation

PreambleRetransMax ::=              INTEGER (1..64)

-- **TODO**, tabular definition a little unclear
PreDefPhyChConfiguration ::=        SEQUENCE {
    ul-DPCH-InfoPredef                  UL-DPCH-InfoPredef,
    dl-CommonInformationPredef          DL-CommonInformationPredef
}

PrimaryCCPCH-Info ::=               CHOICE {
    fdd                                 SEQUENCE {
        tx-DiversityIndicator               BOOLEAN
    },
    tdd                                 SEQUENCE {
        timeslot                            Timeslot                    OPTIONAL,
        cellParametersID                    CellParametersID            OPTIONAL,
        syncCase                            SyncCase                    OPTIONAL,
        repetitionPeriodLengthAndOffset     RepetitionPeriodLengthAndOffset
    OPTIONAL,
        blockSTTD-Indicator                 BOOLEANblockSTTD-Indicator          OPTIONAL
    }
}

PrimaryCCPCH-InfoSI ::=             CHOICE {
    fdd                                 SEQUENCE {
        tx-DiversityIndicator               BOOLEAN
    },
    tdd                                 SEQUENCE {
        repetitionPeriodLengthAndOffset     RepetitionPeriodLengthAndOffset OPTIONAL,
```

```
        blockSTTD-Indicator                 BOOLEANBlockSTTD-Indicator                OPTIONAL
    }
}

PrimaryCCPCH-TX-Power ::=           INTEGER (6..43)

PrimaryCPICH-Info ::=               SEQUENCE {
    primaryScramblingCode               PrimaryScramblingCode
}

-- Value range -10 .. 50 used for Release 99
PrimaryCPICH-TX-Power ::=           INTEGER (-10..53)

PrimaryScramblingCode ::=           INTEGER (0..511)

PRM ::=                             ENUMERATED {
                                        pr-mode0, pr-mode1 }

PuncturingLimit ::=                 ENUMERATED {
                                        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-AllocationAssignment ::=      SEQUENCE {
    pusch-PowerControlInfo              PUSCH-PowerControlInfoUL-TargetSIR
    OPTIONAL,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    timeslotInfoList                    IndividualTS-InfoPUSCH-List         OPTIONAL
}

PUSCH-ChannelisationCode ::=        ENUMERATED {
                                        cc1-1, cc2-1, cc2-2,
                                        cc4-1, cc4-2, cc4-3, cc4-4,
                                        cc8-1, cc8-2, cc8-3, cc8-4,
                                        cc8-5, cc8-6, cc8-7, cc8-8,
                                        cc16-1, cc16-2, cc16-3, cc16-4,
                                        cc16-5, cc16-6, cc16-7, cc16-8,
                                        cc16-9, cc16-10, cc16-11, cc16-12,
                                        cc16-13, cc16-14, cc16-15, cc16-16 }

PUSCH-Info ::=                      SEQUENCE {
    pusch-Allocation                    CHOICE {
        pusch-AllocationPending             NULL,
        pusch-AllocationAssignment          PUSCH-AllocationAssignment
    }
}

PUSCH-PowerControlInfo ::=          SEQUENCE {
    ul-TargetSIR                        UL-TargetSIR
}

PUSCH-SysInfo ::=                   SEQUENCE {
    pusch-Info                          PUSCH-Info,
    usch-TFS                            TransportFormatSet                  OPTIONAL
}

PUSCH-SysInfoList ::=               SEQUENCE (SIZE (1..maxPUSCHcount)) OF
                                        PUSCH-SysInfo

RACH-TransmissionParameters ::=     SEQUENCE {
    mmax                                INTEGER (1..32),
    nb01Min                             NB01Min,
    nb01Max                             NB01Max
}

ReducedScramblingCodeNumber ::=     INTEGER (0..8191)

RepetitionPeriodAndLength ::=       CHOICE {
    repetitionPeriod1                   NULL,
    repetitionPeriod2                   INTEGER (1..1),
    -- repetitionPeriod2 could just as well be NULL also.
    repetitionPeriod4                   INTEGER (1..3),
    repetitionPeriod8                   INTEGER (1..7),
    repetitionPeriod16                  INTEGER (1..15),
    repetitionPeriod32                  INTEGER (1..31),
    repetitionPeriod64                  INTEGER (1..63)
}
```

```
RepetitionPeriodLengthAndOffset ::= CHOICE {
    repetitionPeriod1                   NULL,
    repetitionPeriod2                   SEQUENCE {
        length                              NULL,
        offset                              INTEGER (0..1)
    },
    repetitionPeriod4                   SEQUENCE {
        length                              INTEGER (1..3),
        offset                              INTEGER (0..3)
    },
    repetitionPeriod8                   SEQUENCE {
        length                              INTEGER (1..7),
        offset                              INTEGER (0..7)
    },
    repetitionPeriod16                  SEQUENCE {
        length                              INTEGER (1..15),
        offset                              INTEGER (0..15)
    },
    repetitionPeriod32                  SEQUENCE {
        length                              INTEGER (1..31),
        offset                              INTEGER (0..31)
    },
    repetitionPeriod64                  SEQUENCE {
        length                              INTEGER (1..63),
        offset                              INTEGER (0..63)
    }
}

ReplacedPDSCH-CodeInfo ::=          SEQUENCE {
    tfci-Field2                         MaxTFCI-Field2Value,
    spreadingFactor                     SF-PDSCH,
    codeNumber                          CodeNumberDSCH,
    multiCodeInfo                       MultiCodeInfo
}

ReplacedPDSCH-CodeInfoList ::=      SEQUENCE (SIZE (1..maxReplaceCount)) OF
                                        ReplacedPDSCH-CodeInfo

RepPerLengthOffset-PICH ::=         CHOICE {
    rpp4-2                              INTEGER (0..3),
    rpp8-2                              INTEGER (0..7),
    rpp8-4                              INTEGER (0..7),
    rpp16-2                             INTEGER (0..15),
    rpp16-4                             INTEGER (0..15),
    rpp32-2                             INTEGER (0..31),
    rpp32-4                             INTEGER (0..31),
    rpp64-2                             INTEGER (0..63),
    rpp64-4                             INTEGER (0..63)
}

RL-AdditionInformation ::=          SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    dl-DPCH-InfoPerRL                   DL-DPCH-InfoPerRL,
    tfci-CombiningIndicator             BOOLEAN,
    secondaryCCPCH-Info                 SecondaryCCPCH-Info             OPTIONAL,
    sib-ReferenceListFACH               SIB-ReferenceListFACH           OPTIONAL
}

RL-AdditionInformationList ::=      SEQUENCE (SIZE (1..maxAddRLcount)) OF
                                        RL-AdditionInformation

RL-IdentifierList ::=               SEQUENCE (SIZE (1..maxCombineSet)) OF
                                        PrimaryCPICH-Info

RL-RemovalInformation ::=           SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info
}

RL-RemovalInformationList ::=       SEQUENCE (SIZE (1..maxDelRLcount)) OF
                                        PrimaryCPICH-InfoRL-RemovalInformation

S-Field ::=                         ENUMERATED {
                                        e1bit, e2bits }

SCCPCH-ChannelisationCode ::=       ENUMERATED {
                                        cc16-1, cc16-2, cc16-3, cc16-4,
                                        cc16-5, cc16-6, cc16-7, cc16-8,
```

```
                                    cc16-9, cc16-10, cc16-11, cc16-12,
                                    cc16-13, cc16-14, cc16-15, cc16-16 }

SCCPCH-SystemInformation ::=        SEQUENCE {
    secondaryCCPCH-Info                 SecondaryCCPCH-Info,
    tfcs                                TFCS,
    fach-PCH-InformationList            FACH-PCH-InformationList,
    pich-Info                           PICH-Info                           OPTIONAL
}

SCCPCH-SystemInformationList ::=    SEQUENCE (SIZE (1..maxSCCPCHcount)) OF
                                        SCCPCH-SystemInformation

ScramblingCodeChange ::=            ENUMERATED {
                                        codeChange, noCodeChange }

ScramblingCodeType ::=              ENUMERATED {
                                        shortSC,
                                        longSC }

ScramblingCodeWordNumber ::=        INTEGER (0..15)

SecondaryCCPCH-Info ::=             SEQUENCE {
    selectionIndicator                  SelectionIndicator                  OPTIONAL,
    -- The IE above is conditional on the logical channel type.
    modeSpecificInfo                CHOICE {
        fdd                             SEQUENCE {
            pCPICH-UsageForChannelEst       PCPICH-UsageForChannelEst,
            secondaryCPICH-Info             SecondaryCPICH-Info             OPTIONAL,
            secondaryScramblingCode         SecondaryScramblingCode         OPTIONAL,
            sttd-Indicator                  BOOLEANSTTD-Indicator,
            sf-AndCodeNumber                SF-AndCodeNumber,
            pilotSymbolExistence            BOOLEAN,
            tfci-Existence                  BOOLEAN,
            positionFixedOrFlexible         PositionFixedOrFlexible,
            timingOffset                    TimingOffset                    DEFAULT 0OPTIONAL
        },
        tdd                             SEQUENCE {
            -- TABULAR: the offset is included in CommonTimeslotInfoSCCPCH
            commonTimeslotInfo              CommonTimeslotInfoSCCPCH        OPTIONAL,
            individualTimeslotInfo          IndividualTimeslotInfo,
            channelisationCode              SCCPCH-ChannelisationCode
        }
    }
}

SecondaryCPICH-Info ::=             SEQUENCE {
    secondaryDL-ScramblingCode          SecondaryScramblingCode             OPTIONAL,
    channelisationCode                  ChannelisationCode256
}

-- Value range 1..15 used for Release 99
SecondaryScramblingCode ::=         INTEGER (1..16)

SecondInterleavingMode ::=          ENUMERATED {
                                        frameRelated, timeslotRelated }

SelectionIndicator ::=              ENUMERATED {
                                        on, off }

SF-AndCodeNumber ::=                CHOICE {
    sf4                                 INTEGER (0..3),
    sf8                                 INTEGER (0..7),
    sf16                                INTEGER (0..15),
    sf32                                INTEGER (0..31),
    sf64                                INTEGER (0..63),
    sf128                               INTEGER (0..127),
    sf256                               INTEGER (0..255)
}

SF-DL-DPCH ::=                      CHOICE {
    sfd4                                NULL,
    sfd8                                NULL,
    sfd16                               NULL,
    sfd32                               NULL,
    sfd64                               NULL,
    sfd128                              PilotBits128,
    sfd256                              PilotBits256,
```

```
    sfd512                              NULL
}

SF-PDSCH ::=                            ENUMERATED {
                                        sfp4, sfp8, sfp16, sfp32,
                                        sfp64, sfp128, sfp256, spare }

SF-PRACH ::=                            ENUMERATED {
                                        sfpr32, sfpr64, sfpr128, sfpr256 }

Signature ::=                           INTEGER (0..15)

SlotFormat ::=                          SEQUENCE {
    pc-PreambleSlotFormat               PC-PreambleSlotFormat,
    ul-DPCCH-SlotFormat                 UL-DPCCH-SlotFormat,
    dl-DPCCH-SlotFormat                 DL-DPCCH-SlotFormat
}

SSDT-CellIdentity ::=                   ENUMERATED {
                                        ssdt-id-a, ssdt-id-b, ssdt-id-c,
                                        ssdt-id-d, ssdt-id-e, ssdt-id-f,
                                        ssdt-id-g, ssdt-id-h }

SSDT-Information ::=                    SEQUENCE {
    s-Field                             S-Field,
    codeWordSet                         CodeWordSet
}

STTD-Indicator ::=                      BOOLEAN

SyncCase ::=                            ENUMERATED {
                                        sc1, sc2 }

TDD-PICH-CCode ::=                      ENUMERATED {
                                        cc16-1, cc16-2, cc16-3, cc16-4,
                                        cc16-5, cc16-6, cc16-7, cc16-8,
                                        cc16-9, cc16-10, cc16-11, cc16-12,
                                        cc16-13, cc16-14, cc16-15, cc16-16 }

TDD-PRACH-CCode ::=                     ENUMERATED {
                                        cc8-1, cc8-2, cc8-3, cc8-4,
                                        cc8-5, cc8-6, cc8-7, cc8-8,
                                        cc16-1, cc16-2, cc16-3, cc16-4,
                                        cc16-5, cc16-6, cc16-7, cc16-8,
                                        cc16-9, cc16-10, cc16-11, cc16-12,
                                        cc16-13, cc16-14, cc16-15, cc16-16 }

TFC-ControlDuration ::=                 ENUMERATED {
                                        tfc-cd1, tfc-cd16, tfc-cd24, tfc-cd32,
                                        tfc-cd48, tfc-cd64, tfc-cd128,
                                        tfc-cd192, tfc-cd256, tfc-cd512,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7, spare8 }

TFCI-Coding ::=                         ENUMERATED {
                                        tfci-bits-4, tfci-bits-8,
                                        tfci-bits-16, tfci-bits-32 }

-- **TODO**, not defined
TFCI-CombiningSet ::=                   SEQUENCE {
}

TGD ::=                                 INTEGER (0..35)

TGL ::=                                 INTEGER (1..15)

TGP ::=                                 INTEGER (1..256)

TimeInfo ::=                            SEQUENCE {
    activationTime                      ActivationTime                  OPTIONAL,
    durationTimeInfo                            DurationTimeInfo                OPTIONAL
}

Timeslot ::=                            INTEGER (0..14)

TimeslotList ::=                        SEQUENCE (SIZE (1..14)) OF
                                        Timeslot
```

```
-- Actual value = IE value * 256
TimingOffset ::=                    INTEGER (0..149)

TPC-CombinationIndex ::=            INTEGER (0..5)

TPC-StepSize ::=                    ENUMERATED {
                                        dB1, dB2 }

TX-DiversityMode ::=                ENUMERATED {
                                        noDiversity,
                                        sttd,
                                        closedLoopMode1,
                                        closedLoopMode2 }

UARFCN-Nd ::=                       INTEGER (0..16383)

UARFCN-Nt ::=                       INTEGER (0..16383)

UARFCN-Nu ::=                       INTEGER (0..16383)

UCSM-Info ::=                       SEQUENCE {
    availableMinimumSF-ListUCSM         AvailableMinimumSF-ListUCSM,
    nf-Max                              NF-Max,
    channelReqParamsForUCSM-List        ChannelReqParamsForUCSM-List        OPTIONAL
}

UL-CCTrCH ::=                       SEQUENCE {
    tfcs-Identity                       TFCS-Identity                       OPTIONAL,
    timeInfo                            TimeInfo,
    commonTimeslotInfo                  CommonTimeslotInfo                  OPTIONAL,
    timeslotInfoList                    IndividualTS-InfoUL-CCTrCH-List     OPTIONAL
}

UL-CCTrCHList ::=                   SEQUENCE (SIZE (1..maxUL-CCTrCHcount)) OF
                                        UL-CCTrCH

UL-ChannelRequirement ::=           CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info,
    prach-RACH-Info                     PRACH-RACH-Info,
    spare                               NULL
}

UL-DL-Mode ::=                      ENUMERATED {
                                        dl-Only, ul-DL }

UL-DPCCH-SlotFormat ::=             ENUMERATED {
                                        slf0, slf1, slf2, slf3, slf4, slf5 }

UL-DPCH-Info ::=                    SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo            OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            dpdch-ChannelisationCodeList        DPDCH-ChannelisationCodeList,
            tfci-Existence                      BOOLEAN,
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL,
            fbi-BitNumber                       FBI-BitNumber,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 SEQUENCE {
            ul-CCTrCHList                       UL-CCTrCHList
        }
    }
}

UL-DPCH-InfoHO ::=                  SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoHO          OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            dpdch-ChannelisationCodeList        DPDCH-ChannelisationCodeList,
            tfci-Existence                      BOOLEAN,
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL,
            fbi-BitNumber                       FBI-BitNumber,
            puncturingLimit                     PuncturingLimit
        },
```

```
        tdd                                 SEQUENCE {
            ul-CCTrCHList                       UL-CCTrCHList
        }
    }
}

UL-DPCH-InfoPredef ::=              SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power       OPTIONAL,
            pc-Preamble                         PC-Preamble                 OPTIONAL,
            tfci-Existence                      BOOLEAN,
            puncturingLimit                     PuncturingLimit
        },
        tdd                                 NULL
    }
}

UL-DPCH-InfoShort ::=               SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfoShort,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            reducedScramblingCodeNumber         ReducedScramblingCodeNumber,
            dpdch-ChannelisationCode            DPDCH-ChannelisationCode,
            numberOfFBI-Bits                    NumberOfFBI-Bits            OPTIONAL
            -- The IE above is CH, which is questionable as such.
            -- There's no point in making a 1-bit integer optional, however.
        },
        tdd                                 NULL
    }
}

UL-DPCH-PowerControlInfo ::=        CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        pc-Preamble                         PC-Preamble,
        powerControlAlgorithm               PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power       OPTIONAL,
        ul-TargetSIR                        UL-TargetSIR,
        handoverGroup                       SEQUENCE {
            individualTS-InterferenceList       IndividualTS-InterferenceList,
            dpch-ConstantValue                  ConstantValue
        }                                                               OPTIONAL
    }
}

UL-DPCH-PowerControlInfoHO ::=      CHOICE {
    fdd                                 SEQUENCE {
        dpcch-PowerOffset                   DPCCH-PowerOffset,
        powerControlAlgorithm               PowerControlAlgorithm
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
    },
    tdd                                 SEQUENCE {
        maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power       OPTIONAL,
        ul-TargetSIR                        UL-TargetSIR,
        handoverGroup                       SEQUENCE {
            individualTS-InterferenceList       IndividualTS-InterferenceList,
            dpch-ConstantValue                  ConstantValue
        }
    }
}

UL-DPCH-PowerControlInfoShort ::=   SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            dpcch-PowerOffset                   DPCCH-PowerOffset,
            powerControlAlgorithm               PowerControlAlgorithm
        },
        tdd                                 NULL
    }
}

-- Value range -110 .. -70 used for Release 99
```

```
UL-Interference ::=                 INTEGER (-110..-47)

-- **TODO**, specification possibly wrong. 777215 mod 16 <> 0...
UL-ScramblingCode ::=               INTEGER (0..48575)

-- Actual value = (IE value * 0.5) - 11
UL-TargetSIR ::=                    INTEGER (0..62)

UL-TimingAdvance ::=                INTEGER (0..63)

UL-TS-ChannelisationCode ::=        ENUMERATED {
                                        cc1-1, cc2-1, cc2-2,
                                        cc4-1, cc4-2, cc4-3, cc4-4,
                                        cc8-1, cc8-2, cc8-3, cc8-4,
                                        cc8-5, cc8-6, cc8-7, cc8-8,
                                        cc16-1, cc16-2, cc16-3, cc16-4,
                                        cc16-5, cc16-6, cc16-7, cc16-8,
                                        cc16-9, cc16-10, cc16-11, cc16-12,
                                        cc16-13, cc16-14, cc16-15, cc16-16 }

VCAM-Info ::=                       SEQUENCE {
    availableMinimumSF-List             AvailableMinimumSF-ListVCAM
}

END
```

11.3.7 Measurement information elements

```
Measurement-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    CellIdentity
FROM UTRANMobility-IEs

    DRX-CycleLengthCoefficient
FROM UserEquipment-IEs

    RB-Identity
FROM RadioBearer-IEs

    TransportChannelIdentity
FROM TransportChannel-IEs

    FrequencyInfo,
    MaxAllowedUL-TX-Power,
    PrimaryCCPCH-Info,
    PrimaryCCPCH-TX-Power,
    PrimaryCPICH-Info,
    PrimaryCPICH-TX-Power,
    Timeslot
FROM PhysicalChannel-IEs

    BSIC
FROM Other-IEs

    maxAdditionalMeas,
    maxAddRLcount,
    maxBLER,
    maxCCTrCHcount,
    maxCellCount,
    maxCellsForbidden,
    maxDelRLcount,
    maxEventCount,
    maxFreqCount,
    maxInterCells,
    maxInterRAT,
    maxInterSys,
    maxInterSysCells,
    maxIntraCells,
    maxN-BadSAT,
    maxN-SAT,
    maxNoCells,
    maxNonUsedFrequency,
    maxNumFreq,
    maxTraf,
```

```
    maxTrCHcount,
    maxTSperCCTrCHcount,
    maxTStoMeasureCount,
    maxUsedRLcount,
    maxUsedUplTScount
FROM Constant-definitions;

AcquisitionSatInfo ::=              SEQUENCE {
    satID                               INTEGER (0..63),
    doppler0thOrder                     INTEGER (-2048..2047),
    extraDopplerInfo                    ExtraDopplerInfo                    OPTIONAL,
    codePhase                           INTEGER (0..1022),
    integerCodePhase                    INTEGER (0..19),
    gps-BitNumber                       INTEGER (0..3),
    codePhaseSearchWindow               CodePhaseSearchWindow,
    azimuthAndElevation                 AzimuthAndElevation                 OPTIONAL
}

AcquisitionSatInfoList ::=          SEQUENCE (SIZE (1..maxN-SAT)) OF
                                        AcquisitionSatInfo

ActiveSetCellReport ::=             ENUMERATED {
                                        includeAll,
                                        excludeAll,
                                        other }

-- **TODO**, definition to be checked from TS 09.31
AdditionalAssistanceData ::=        OCTET STRING (SIZE (1..38))SEQUENCE {
}

AdditionalMeasurementID-List ::=    SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasurementIdentityNumber

AlmanacSatInfo ::=                  SEQUENCE {
    satID                               INTEGER (0..63),
    deltaI                              BIT STRING (SIZE (16)),
    e                                   BIT STRING (SIZE (16)),
    m0                                  BIT STRING (SIZE (24)),
    a-Sqrt                              BIT STRING (SIZE (24)),
    omega0                              BIT STRING (SIZE (24)),
    omegaDot                            BIT STRING (SIZE (16)),
    omega                               BIT STRING (SIZE (24)),
    af0                                 BIT STRING (SIZE (11)),
    af1                                 BIT STRING (SIZE (11))
}

AlmanacSatInfoList ::=              SEQUENCE (SIZE (1..maxN-SAT)) OF
                                        AlmanacSatInfo

AverageRLC-BufferPayload ::=        ENUMERATED {
                                        pla0, pla4, pla8, pla16, pla32,
                                        pla64, pla128, pla256, pla512,
                                        pla1024, pla2k, pla4k, pla8k, pla16k }

AzimuthAndElevation ::=             SEQUENCE {
    azimuth                             INTEGER (0..31),
    elevation                           INTEGER (0..7)
}

BadSatList ::=                      SEQUENCE (SIZE (1..maxN-BadSAT)) OF
                                        INTEGER (0..63)

BCCH-ARFCN ::=                      INTEGER (0..1023)

BLER-MeasurementResults ::=         SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    dl-TransportChannelBLER             DL-TransportChannelBLER             OPTIONAL
}

BLER-MeasurementResultsList ::=     SEQUENCE (SIZE (1..maxBLER)) OF
                                        BLER-MeasurementResults

BLER-TransChIdList ::=              SEQUENCE (SIZE (1..maxBLER)) OF
                                        TransportChannelIdentity

-- IE value 0 = true value -0.05, IE value 16 = true value -0.003125,
-- IE value 17 = true value 0.003125, IE value 32 = true value 0.05
BTS-ClockDrift ::=                  INTEGER (0..31)
```

```
BurstModeParameters ::=             SEQUENCE {
    burstStart                          INTEGER (0..15),
    burstLength                         INTEGER (10..25),
    burstFreq                           INTEGER (1..16)
}

CCTrCH-Timeslot ::=                 SEQUENCE {
    iscp                                DL-TimeslotISCP                     OPTIONAL,
    rscp                                RSCP                                OPTIONAL
}

CCTrCH-TimeslotList ::=             SEQUENCE (SIZE (1..maxTSperCCTrCHcount)) OF
                                        CCTrCH-Timeslot

CellDCH-ReportCriteria ::=          CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria
}

-- Actual value = IE value * 0.5
CellIndividualOffset ::=            INTEGER (-20..20)

CellInfo ::=                        SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 01,
    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,
            dl-CCTrCH-Info                      DL-CCTrCH-Info              OPTIONAL,
            dl-TimeslotInfo                     DL-TimeslotInfo             OPTIONAL
        }
    }
}

CellInfoSI ::=                      SEQUENCE {
    cellIndividualOffset                CellIndividualOffset                DEFAULT 1,
    referenceTimeDifferenceToCell       ReferenceTimeDifferenceToCell       OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info           OPTIONAL,
            primaryCPICH-TX-Power               PrimaryCPICH-TX-Power       OPTIONAL,
            readSFN-Indicator                   BOOLEAN,
            tx-DiversityIndicator               BOOLEAN
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-TX-Power               PrimaryCCPCH-TX-Power,
            dl-CCTrCH-Info                      DL-CCTrCH-Info              OPTIONAL,
            dl-TimeslotInfo                     DL-TimeslotInfo             OPTIONAL
        }
    },
    cellSelectionReselectionInfo        CellSelectionReselectionInfo,
    signallingOption                    SignallingOption
}

CellMeasuredResults ::=             SEQUENCE {
    cellIdentity                        CellIdentity                        OPTIONAL,
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference           OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            cpich-Ec-N0                         CPICH-Ec-N0                 OPTIONAL,
            cpich-RSCP                          CPICH-RSCP                  OPTIONAL,
            cpich-SIR                           CPICH-SIR                   OPTIONAL,
            pathloss                            Pathloss                    OPTIONAL,
            cfn-SFN-ObsTimeDifference           CFN-SFN-ObsTimeDifference   OPTIONAL
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            dl-CCTrCH-SIR-List                  DL-CCTrCH-SIR-List          OPTIONAL,
```

```
            dl-TimeslotISCP-List                DL-TimeslotISCP-List        OPTIONAL
        }
    }
}

CellMeasurementEventResults ::=     CHOICE {
    fdd                                 SEQUENCE (SIZE (1..maxCellCount)) OF
                                            PrimaryCPICH-Info,
    tdd                                 SEQUENCE (SIZE (1..maxCellCount)) OF
                                            PrimaryCCPCH-Info
}

CellPosition ::=                    SEQUENCE {
    relativeNorth                       INTEGER (-32767..32767),
    relativeEast                        INTEGER (-32767..32767),
    relativeAltitude                    INTEGER (-4095..4095)
}

CellReportingQuantities ::=         SEQUENCE {
    sfn-SFN-OTD-Type                    SFN-SFN-OTD-Type,
    cellIdentity                        CellIdentity,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            cpich-Ec-N0                         BOOLEAN,
            cpich-RSCP                          BOOLEAN,
            cpich-SIR                           BOOLEAN,
            pathloss                            BOOLEAN,
            cfn-SFN-ObsTimeDifference           BOOLEAN
        },
        tdd                                 SEQUENCE {
            dl-CCTrCH-SIR                       BOOLEAN,
            timeslotISCP                        BOOLEAN,
            primaryCCPCH-RSCP                   BOOLEAN,
            pathloss                            BOOLEAN
        }
    }
}

CellSelectionReselectionInfo ::=    SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 Qmin-FDD,
        tdd                                 Qmin-TDD
    }                                                               OPTIONAL,
    maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power       OPTIONAL,
    signallingOption                    SignallingOption
}

CellToMeasure ::=                   SEQUENCE {
    sfn-sfn-Drift                       INTEGER (0..30)             OPTIONAL,
    primaryCPICH-Info                   PrimaryCPICH-Info,
    frequencyInfo                       FrequencyInfo               OPTIONAL,
    sfn-SFN-ObservedTimeDifference      SFN-SFN-ObsTimeDifference1,
    fineSFN-SFN                         FineSFN-SFN,
    cellPosition                        CellPosition                OPTIONAL
}

CellToMeasureInfoList ::=           SEQUENCE (SIZE (1..maxNoCells)) OF
                                        CellToMeasure

CellToReport ::=                    SEQUENCE {
    frequency                           Frequency,
    bsic                                BSIC
}

CellToReportList ::=                SEQUENCE (SIZE (1..maxCellCount)) OF
                                        CellToReport

CFN-SFN-ObsTimeDifference ::=       INTEGER (0..9830399)

CodePhaseSearchWindow ::=           ENUMERATED {
                                        w1023, w1, w2, w3, w4, w6, w8,
                                        w12, w16, w24, w32, w48, w64,
                                        w96, w128, w192 }

CompressedNavModel ::=              SEQUENCE {
    iode                                BIT STRING (SIZE (4)),
    t-oe                                BIT STRING (SIZE (7)),
    c-rc                                BIT STRING (SIZE (12)),
```

```
    c-rs                                BIT STRING (SIZE (12)),
    c-ic                                BIT STRING (SIZE (9)),
    c-is                                BIT STRING (SIZE (9)),
    c-uc                                BIT STRING (SIZE (11)),
    c-us                                BIT STRING (SIZE (11)),
    e                                   BIT STRING (SIZE (16)),
    m0                                  BIT STRING (SIZE (22)),
    a-Sqrt                              BIT STRING (SIZE (13)),
    delta-n                             BIT STRING (SIZE (11)),
    omega0                              BIT STRING (SIZE (14)),
    omegaDot                            BIT STRING (SIZE (12)),
    i0                                  BIT STRING (SIZE (15)),
    iDot                                BIT STRING (SIZE (11)),
    omega                               BIT STRING (SIZE (21)),
    t-oc                                BIT STRING (SIZE (7)),
    af0                                 BIT STRING (SIZE (7)),
    af1                                 BIT STRING (SIZE (3)),
    af2                                 BIT STRING (SIZE (1))
}

CPICH-Ec-N0 ::=                     INTEGER (-20..0)

-- IE value 0 = <-24 dB, 1 = between -24 and -23 and so on
CPICH-Ec-N0-OTDOA ::=               INTEGER (0..26)

CPICH-RSCP ::=                      INTEGER (-115..-40)

CPICH-SIR ::=                       INTEGER (-10..20)

DGPS-CorrectionSatInfo ::=          SEQUENCE {
    satID                               INTEGER (0..63),
    iode                                BIT STRING (SIZE (8)),
    udre                                UDRE,
    prc                                 INTEGER (-2048..2048),
    rrc                                 INTEGER (-125..125),
    deltaPRC2                           INTEGER (-127..127),
    deltaRRC2                           INTEGER (-7..7),
    deltaPRC3                           INTEGER (-127..127),
    deltaRRC3                           INTEGER (-7..7)
}

DGPS-CorrectionSatInfoList ::=      SEQUENCE (SIZE (1..maxN-SAT)) OF
                                        DGPS-CorrectionSatInfo

DGPS-Information ::=                SEQUENCE {
    satID                               SatID,
    iode                                IODE,
    udre                                UDRE,
    scaleFactor                         ScaleFactor,
    prc                                 PRC,
    rrc                                 RRC
}

DGPS-InformationList ::=            SEQUENCE (SIZE (1..maxN-SAT)) OF
                                        DGPS-Information

DiffCorrectionStatus ::=            ENUMERATED {
                                        udre-1-0, udre-0-75, udre-0-5, udre-0-3,
                                        udre-0-2, udre-0-1, noData, invalidData }

-- **TODO**, not defined yet
DL-CCTrCH-Info ::=                  SEQUENCE {
}

DL-CCTrCH-SIR ::=                   SEQUENCE {
    ccTrCH-TimeslotList                 CCTrCH-TimeslotList
}

DL-CCTrCH-SIR-List ::=              SEQUENCE (SIZE (1..maxCCTrCHcount)) OF
                                        CCTrCH-TimeslotListDL-CCTrCH-SIR

-- Actual value = IE value * 0.02
DL-PhysicalChannelBER ::=           INTEGER (0..255)

-- **TODO**, not defined yet
DL-TimeslotInfo ::=                 SEQUENCE {
}
```

```
-- **TODO**, not defined yet
DL-TimeslotISCP ::=                 SEQUENCE {
}

DL-TimeslotISCP-List ::=            SEQUENCE (SIZE (1..maxTStoMeasureCount)) OF
                                        DL-TimeslotISCP

-- Actual value = IE value * 0.02
DL-TransportChannelBLER ::=         INTEGER (0..255)

DopplerUncertainty ::=              ENUMERATED {
                                        hz12-5, hz25, hz50, hz100, hz200 }

EllipsoidPoint ::=                  OCTET STRING (SIZE (7))

EllipsoidPointAltitude ::=          OCTET STRING (SIZE (9))

EllipsoidPointAltitudeEllipse ::=   OCTET STRING (SIZE (14))

EllipsoidPointUncertCircle ::=      OCTET STRING (SIZE (8))

EllipsoidPointUncertEllipse ::=     OCTET STRING (SIZE (11))

EnvironmentCharacterization ::=     ENUMERATED {
                                        possibleHeavyMultipathNLOS,
                                        lightMultipathLOS,
                                        notDefined }

Event1a ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList,
    w                                   W,
    hysteresis                          Hysteresis                          OPTIONAL,
    reportDeactivationThreshold         ReportDeactivationThreshold
}

Event1b ::=                         SEQUENCE {
    triggeringCondition                 TriggeringCondition,
    reportingRange                      ReportingRange,
    forbiddenAffectCellList             ForbiddenAffectCellList,
    w                                   W,
    hysteresis                          Hysteresis                          OPTIONAL
}

Event1c ::=                         SEQUENCE {
    hysteresis                          Hysteresis                          OPTIONAL,
    replacementActivationThreshold      ReplacementActivationThreshold
}

Event2a ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2b ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}

Event2c ::=                         SEQUENCE {
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval,
    nonUsedFreqParameterList            NonUsedFreqParameterList            OPTIONAL
}
```

```
Event2d ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event2e ::=                         SEQUENCE {
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval,
    nonUsedFreqParameterList            NonUsedFreqParameterList        OPTIONAL
}

Event2f ::=                         SEQUENCE {
    usedFreqThreshold                   Threshold,
    usedFreqW                           W,
    hysteresis                          HysteresisInterFreq,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event3a ::=                         SEQUENCE {
    thresholdOwnSystem                  Threshold,
    w                                   W,
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event3b ::=                         SEQUENCE {
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event3c ::=                         SEQUENCE {
    thresholdOtherSystem                Threshold,
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

Event3d ::=                         SEQUENCE {
    hysteresis                          Hysteresis,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

EventIDInterFreq ::=                ENUMERATED {
                                        e2a, e2b, e2c, e2d, e2e, e2f }

EventIDInterSystem ::=              ENUMERATED {
                                        e3a, e3b, e3c, e3d }

EventIDIntraFreq ::=                ENUMERATED {
                                        e1a, e1b, e1c, e1d, e1e,
                                        e1f, e1g, e1h, e1i, e1j }

EventIDTrafficVolume ::=            ENUMERATED {
                                        e4a, e4b }

EventResults ::=                    CHOICE {
    intraFreqEventResults               IntraFreqEventResults,
    interFreqEventResults               InterFreqEventResults,
    interSystemEventResults             InterSystemEventResults,
    trafficVolumeEventResults           TrafficVolumeEventResults,
    qualityEventResults                 QualityEventResults,
```

```
    ue-InternalEventResults             UE-InternalEventResults,
    lcs-MeasurementEventResults         LCS-MeasurementEventResults
}

ExtraDopplerInfo ::=                SEQUENCE {
    doppler1stOrder                     INTEGER (-42..21),
    dopplerUncertainty                  DopplerUncertainty
}

FACH-MeasurementOccasionInfo ::=    SEQUENCE {
    k-UTRA                              DRX-CycleLengthCoefficient,
    otherRAT-InSysInfoList              OtherRAT-InSysInfoList
}

FilterCoefficient ::=               ENUMERATED {
                                        fc1, fc2, fc3, fc4, fc6, fc8,
                                        fc12, fc16, fc24, fc32, fc64,
                                        fc128, fc256, fc512, fc1024,
                                        spare1 }

FineSFN-SFN ::=                     ENUMERATED {
                                        fs0, fs0-25, fs0-5, fs0-75 }

ForbiddenAffectCell ::=             SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info
        }
    }
}

ForbiddenAffectCellList ::=         SEQUENCE (SIZE (1..maxCellsForbidden)) OF
                                        ForbiddenAffectCell

FreqQualityEstimateQuantity-FDD ::= ENUMERATED {
                                        cpich-Ec-N0,
                                        cpich-RSCP }

FreqQualityEstimateQuantity-TDD ::= ENUMERATED {
                                        primaryCCPCH-RSCP }

-- **TODO**, not defined yet
Frequency ::=                       SEQUENCE {
}

GPS-MeasurementParam ::=            SEQUENCE {
    satelliteID                         INTEGER (0..63),
    c-N0                                INTEGER (0..63),
    doppler                             INTEGER (-32768..32768),
    wholeGPS-Chips                      INTEGER (0..1023),
    fractionalGPS-Chips                 INTEGER (0..1023),
    multipathIndicator                  MultipathIndicator,
    pseudorangeRMS-Error                INTEGER (0..63)
}

GPS-MeasurementParamList ::=        SEQUENCE (SIZE (1..maxN-SAT)) OF
                                        GPS-MeasurementParam

GPS-TOW-1msec ::=                   INTEGER (0..604700000)

GPS-TOW-Assist ::=                  SEQUENCE {
    satID                               INTEGER (0..63),
    tlm-Message                         BIT STRING (SIZE (14)),
    antiSpoof                           BOOLEAN,
    alert                               BOOLEAN,
    tlm-Reserved                        BIT STRING (SIZE (2))
}

GPS-TOW-AssistList ::=              SEQUENCE (SIZE (1..maxN-SAT)) OF
                                        GPS-TOW-Assist

GPS-TOW-HighResolution ::=          INTEGER (0..999)

GSM-CarrierRSSI ::=                 BIT STRING (SIZE (6))
```

```
-- **TODO**, not defined yet
GSM-OutputPower ::=                 SEQUENCE {
}

HCS-CellReselectInformation ::=     SEQUENCE {
    penaltyTime                         PenaltyTime
}

HCS-NeighbouringCellInformation ::= SEQUENCE {
    hcs-PRIO                            HCS-PRIO                                DEFAULT 0OPTIONAL,
    q-HCS                               Q-HCS                                   DEFAULT 0OPTIONAL,
    hcs-CellReselectInformation         PenaltyTimeHCS-CellReselectInformation          OPTIONAL
}

HCS-PRIO ::=                        INTEGER (0..7)

-- Actual value = IE value * 0.5
Hysteresis ::=                      INTEGER (0..15)

-- Actual value = IE value * 0.5
HysteresisInterFreq ::=             INTEGER (0..29)

InterFreqCell ::=                   SEQUENCE {
    frequencyInfo                       FrequencyInfo,
    nonFreqRelatedEventResults          CellMeasurementEventResults
}

InterFreqCellID ::=                 INTEGER (0..maxInterCells)

InterFreqCellInfoList ::=           SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellList                OPTIONAL
}

InterFreqCellInfoSI-List ::=        SEQUENCE {
    removedInterFreqCellList            RemovedInterFreqCellList            OPTIONAL,
    newInterFreqCellList                NewInterFreqCellSI-List             OPTIONAL
}

InterFreqCellList ::=               SEQUENCE (SIZE (1..maxFreqCount)) OF
                                        InterFreqCell

InterFreqCellMeasuredResultsList ::= SEQUENCE (SIZE (1..maxInterCells)) OF
                                        CellMeasuredResults

InterFreqEvent ::=                  CHOICE {
    event2a                             Event2a,
    event2b                             Event2b,
    event2c                             Event2c,
    event2d                             Event2d,
    event2e                             Event2e,
    event2f                             Event2f
}

InterFreqEventList ::=              SEQUENCE (SIZE (1..maxEventCount)) OF
                                        InterFreqEvent

InterFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDInterFreq,
    interFreqCellList                   InterFreqCellList
}

InterFreqMeasQuantity ::=           SEQUENCE {
    reportingCriteria                   CHOICE {
        intraFreqReportingCriteria          SEQUENCE {
            intraFreqMeasQuantity               IntraFreqMeasQuantity,
        },
        interFreqReportingCriteria          SEQUENCE {
            filterCoefficient                   FilterCoefficient           DEFAULT 1,
            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..maxNumFreq)) OF
                                        InterFreqMeasuredResults

InterFreqMeasurementSysInfo ::=     SEQUENCE {
    interFreqMeasurementID              MeasurementIdentityNumber           OPTIONAL,
    interFreqCellInfoSI-List            InterFreqCellInfoSI-List            OPTIONAL,
    interFreqMeasQuantity               InterFreqMeasQuantity               OPTIONAL
}

InterFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    interFreqReportingCriteria          InterFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

InterFreqReportingCriteria ::=      SEQUENCE {
    interFreqEventList                  InterFreqEventList                  OPTIONAL
}

InterFreqReportingQuantity ::=      SEQUENCE {
    utra-Carrier-RSSI                   BOOLEAN,
    frequencyQualityEstimate            BOOLEAN,
    nonFreqRelatedQuantities            CellReportingQuantities
}

InterFreqSetUpdate ::=              SEQUENCE {
    ue-AutonomousUpdateMode             UE-AutonomousUpdateMode
}

InterFrequencyMeasurement ::=       SEQUENCE {
    interFreqCellInfoList               InterFreqCellInfoList,
    interFreqMeasQuantity               InterFreqMeasQuantity               OPTIONAL,
    interFreqReportingQuantity          InterFreqReportingQuantity          OPTIONAL,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    interFreqSetUpdate                  UE-AutonomousUpdateModeInterFreqSetUpdate
    OPTIONAL,
    reportCriteria                      InterFreqReportCriteria
}

InterSystemCellID ::=               INTEGER (0..maxInterSysCells)

InterSystemCellInfoList ::=         SEQUENCE {
    removedInterSystemCellList          RemovedInterSystemCellList,
    newInterSystemCellList              NewInterSystemCellList
}

InterSystemEvent ::=                CHOICE {
    event3a                             Event3a,
    event3b                             Event3b,
    event3c                             Event3c,
    event3d                             Event3d
}

InterSystemEventList ::=            SEQUENCE (SIZE (1..maxEventCount)) OF
                                        InterSystemEvent

InterSystemEventResults ::=         SEQUENCE {
    eventID                             EventIDInterSystem,
    cellToReportList                    CellToReportList
}

InterSystemInfo ::=                 ENUMERATED {
                                        gsm, spare1 }

InterSystemMeasQuantity ::=             SEQUENCE {
    measQuantityUTRAN-QualityEstimate       IntraFreqMeasQuantity,
    systemSpecificInfo                      CHOICE {
```

```
        gsm                                     SEQUENCE {
            measurementQuantity                     MeasurementQuantityGSM,
            filterCoefficient                       FilterCoefficient       DEFAULT 1,
            bsic-VerificationRequired               BOOLEAN
        },
        is-2000                                 SEQUENCE {
            tadd-EcIo                               INTEGER (0..63),
            tcomp-EcIo                              INTEGER (0..15),
            softSlope                               INTEGER (0..63)         OPTIONAL,
            addIntercept                            INTEGER (0..63)         OPTIONAL
        }
    }
}

InterSystemMeasuredResults ::=      CHOICE {
    gsm                                 SEQUENCE {
        frequency                           Frequency,
        gsm-CarrierRSSI                     GSM-CarrierRSSI                 OPTIONAL,
        pathloss                            Pathloss                        OPTIONAL,
        bsic                                BSIC                            OPTIONAL,
        observedTimeDifferenceToGSM         ObservedTimeDifferenceToGSM     OPTIONAL
    },
    spareother                              NULL
}

InterSystemMeasuredResultsList ::= SEQUENCE (SIZE (1..maxInterSys)) OF
                                    InterSystemMeasuredResults

InterSystemMeasurement ::=          SEQUENCE {
    interSystemCellInfoList             InterSystemCellInfoList             OPTIONAL,
    interSystemMeasQuantity             InterSystemMeasQuantity             OPTIONAL,
    interSystemReportingQuantity        InterSystemReportingQuantity        OPTIONAL,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    reportCriteria                      InterSystemReportCriteria
}

InterSystemMeasurementSysInfo ::=   SEQUENCE {
    interSystemMeasurementID            MeasurementIdentityNumber           OPTIONAL,
    interSystemCellInfoList             InterSystemCellInfoList             OPTIONAL,
    interSystemMeasQuantity             InterSystemMeasQuantity             OPTIONAL
}

InterSystemReportCriteria ::=       CHOICE {
    interSystemReportingCriteria        InterSystemReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

InterSystemReportingCriteria ::=    SEQUENCE {
    interSystemEventList                InterSystemEventList                OPTIONAL
}

InterSystemReportingQuantity ::=    SEQUENCE {
    utran-EstimatedQuality              BOOLEAN,
    systemSpecificInfo                  CHOICE {
        gsm                                 SEQUENCE {
            pathloss                            BOOLEAN,
            observedTimeDifferenceGSM           BOOLEAN,
            gsm-Carrier-RSSI                    BOOLEAN,
            bsic                                BOOLEAN
        },
        spare1                              NULLSEQUENCE {}
    }
}

IntraFreqCellID ::=                 INTEGER (0..maxIntraCells)

IntraFreqCellInfoList ::=           SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
    newIntraFreqCellList                NewIntraFreqCellList                OPTIONAL
}

IntraFreqCellInfoSI ::=             SEQUENCE {
    cellInfo                            CellInfoSI
}

IntraFreqCellInfoSI-List ::=        SEQUENCE {
    removedIntraFreqCellList            RemovedIntraFreqCellList            OPTIONAL,
```

```
    newIntraFreqCellList                NewIntraFreqCellSI-List             OPTIONAL
}

IntraFreqEvent ::=                  CHOICE {
    e1a                                 Event1a,
    e1b                                 Event1b,
    e1c                                 Event1c,
    e1d                                 Hysteresis,
    e1e                                 TriggeringCondition,
    e1f                                 TriggeringCondition,
    e1g                                 Hysteresis,
    e1h                                 Hysteresis,
    e1i                                 Hysteresis,
    e1j                                 Hysteresis
}

IntraFreqEventCriteria ::=          SEQUENCE {
    event                               IntraFreqEvent,
    timeToTrigger                       TimeToTrigger,
    reportingAmount                     ReportingAmount,
    reportingInterval                   ReportingInterval
}

IntraFreqEventCriteriaList ::=      SEQUENCE (SIZE (1..maxEventCount)) OF
                                        IntraFreqEventCriteria

IntraFreqEventResults ::=           SEQUENCE {
    eventID                             EventIDIntraFreq,
    cellMeasurementEventResults         CellMeasurementEventResults
}

IntraFreqMeasQuantity ::=           SEQUENCE {
    filterCoefficient                   FilterCoefficient                   DEFAULT 1,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            intraFreqMeasQuantity-FDD           IntraFreqMeasQuantity-FDD
        },
        tdd                                 SEQUENCE {
            intraFreqMeasQuantity-TDD           IntraFreqMeasQuantity-TDD
        }
    }
}

IntraFreqMeasQuantity-FDD ::=       ENUMERATED {
                                        cpich-Ec-NO,
                                        cpich-RSCP,
                                        cpich-SIR,
                                        pathloss,
                                        utra-CarrierRSSI }

IntraFreqMeasQuantity-TDD ::=       ENUMERATED {
                                        primaryCCPCH-RSCP,
                                        pathloss,
                                        timeslotISCP,
                                        utra-CarrierRSSI }

IntraFreqMeasuredResults ::=        SEQUENCE {
    cellMeasuredResults                 CellMeasuredResults
}

IntraFreqMeasuredResultsList ::=    SEQUENCE (SIZE (1..maxIntraCells)) OF
                                        CellMeasuredResultsIntraFreqMeasuredResults

IntraFreqMeasurementSysInfo ::=     SEQUENCE {
    intraFreqMeasurementID              MeasurementIdentityNumber           OPTIONAL,
    intraFreqCellInfoSI-List            IntraFreqCellInfoSI-List            OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantityForRACH   IntraFreqReportingQuantityForRACH   OPTIONAL,
    maxReportedCellsOnRACH              MaxReportedCellsOnRACH              OPTIONAL,
    reportingInfoForCellDCH             ReportingInfoForCellDCH             OPTIONAL
}

IntraFreqReportCriteria ::=         CHOICE {
    intraFreqReportingCriteria          IntraFreqReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}
```

```
IntraFreqReportingCriteria ::=      SEQUENCE {
    eventCriteriaList                   IntraFreqEventCriteriaList
}

IntraFreqReportingQuantity ::=      SEQUENCE {
    activeSetReportingQuantities        CellReportingQuantities,
    monitoredSetReportingQuantities     CellReportingQuantities,
    unlistedSetReportingQuantities      CellReportingQuantities             OPTIONAL
}

IntraFreqReportingQuantityForRACH ::= SEQUENCE {
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            intraFreqRepQuantityRACH-FDD        IntraFreqRepQuantityRACH-FDD
        },
        tdd                                 SEQUENCE {
            intraFreqRepQuantityRACH-TDD        IntraFreqRepQuantityRACH-TDD
        }
    }
}

IntraFreqRepQuantityRACH-FDD ::=    ENUMERATED {
                                        cpich-EcN0, cpich-RSCP,
                                        cpich-SIR, pathloss, noReport }

IntraFreqRepQuantityRACH-TDD ::=    ENUMERATED {
                                        timeslotISCP,
                                        primaryCCPCH-RSCP,
                                        noReport }

IntraFrequencyMeasurement ::=       SEQUENCE {
    intraFreqCellInfoList               IntraFreqCellInfoList               OPTIONAL,
    intraFreqMeasQuantity               IntraFreqMeasQuantity               OPTIONAL,
    intraFreqReportingQuantity          IntraFreqReportingQuantity          OPTIONAL,
    reportingCellStatus                 ReportingCellStatus                 OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                      IntraFreqReportCriteria
}

IODD ::=                            INTEGER (0..255)

IODE ::=                            INTEGER (0..255)

IP-Length ::=                       ENUMERATED {
                                        ipl5, ipl10 }

IP-Spacing ::=                      ENUMERATED {
                                        e5, e7, e10, e15, e20,
                                        e30, e40, e50 }

IS-2000SpecificMeasInfo ::=         ENUMERATED {
                                        frequency, timeslot, colourcode,
                                        outputpower, pn-Offset }

K-InterRAT ::=                      INTEGER (0..12)

LCS-Accuracy ::=                    BIT STRING (SIZE (7))

LCS-CipherParameters ::=            SEQUENCE {
    cipheringKeyFlag                    BIT STRING (SIZE (1)),
    cipheringSerialNumber               INTEGER (0..65535)
}

LCS-Error ::=                       SEQUENCE {
    errorReason                         LCS-ErrorCause,
    additionalAssistanceData            AdditionalAssistanceData
    -- The IE above is defined in GSM 09.31, the actual definition
    -- will have to be checked
}

LCS-ErrorCause ::=                  ENUMERATED {
                                        notEnoughOTDOA-Cells,
                                        notEnoughGPS-Satellites,
                                        assistanceDataMissing,
                                        methodNotSupported,
                                        undefinedError,
                                        requestDeniedByUser,
```

```
                                        notProcessedAndTimeout }

LCS-EventID ::=                     ENUMERATED {
                                        e7a, e7b, e7c }

LCS-EventParam ::=                  SEQUENCE {
    eventID                             LCS-EventID,
    reportingAmount                     ReportingAmount,
    reportFirstFix                      BOOLEAN,
    measurementInterval                 LCS-MeasurementInterval,
    eventSpecificInfo                   LCS-EventSpecificInfo
}

LCS-EventParamList ::=              SEQUENCE (SIZE (1..maxEventCount)) OF
                                        LCS-EventParam

LCS-EventSpecificInfo ::=           CHOICE {
    e7a                                 ThresholdPositionChange,
    e7b                                 ThresholdSFN-SFN-Change,
    e7c                                 ThresholdSFN-GPS-TOW
}

LCS-GPS-AcquisitionAssistance ::=   SEQUENCE {
    referenceTime                       CHOICE {
        utran-ReferenceTime                 UTRAN-ReferenceTime,
        gps-ReferenceTimeOnly               INTEGER (0..604700000)
    },
    satelliteInformationList            AcquisitionSatInfoList
}

LCS-GPS-Almanac ::=                 SEQUENCE {
    almanacSatInfoList                  AlmanacSatInfoList
}

LCS-GPS-AssistanceSIB ::=           SEQUENCE {
    lcs-CipherParameters                LCS-CipherParameters            OPTIONAL,
    referenceGPS-TOW                    ReferenceGPS-TOW,
    status                              DiffCorrectionStatus,
    btsClockDrift                       BTS-ClockDrift                  OPTIONAL,
    timeOffset                          LCS-TimeOffset                  OPTIONAL,
    iodd                                IODD                            OPTIONAL,
    dgps-InformationList                DGPS-InformationList            OPTIONAL
}

LCS-GPS-AssistanceData ::=          SEQUENCE {
    lcs-GPS-ReferenceTime               LCS-GPS-ReferenceTime           OPTIONAL,
    lcs-GPS-ReferenceLocation           EllipsoidPointAltitudeLCS-GPS-ReferenceLocation
    OPTIONAL,
    lcs-GPS-DGPS-Corrections            LCS-GPS-DGPS-Corrections        OPTIONAL,
    lcs-GPS-NavigationModel             LCS-GPS-NavigationModel         OPTIONAL,
    lcs-GPS-IonosphericModel            LCS-GPS-IonosphericModel        OPTIONAL,
    lcs-GPS-UTC-Model                   LCS-GPS-UTC-Model               OPTIONAL,
    lcs-GPS-Almanac                     AlmanacSatInfoListLCS-GPS-Almanac
    OPTIONAL,
    lcs-GPS-AcquisitionAssistance       LCS-GPS-AcquisitionAssistance   OPTIONAL,
    lcs-GPS-Real-timeIntegrity          BadSatListLCS-GPS-Real-timeIntegrity        OPTIONAL
}

LCS-GPS-DGPS-Corrections ::=        SEQUENCE {
    gps-TOW                             INTEGER (0..604799),
    statusHealth                        DiffCorrectionStatus,
    dgps-CorrectionSatInfoList          DGPS-CorrectionSatInfoList
}

LCS-GPS-IonosphericModel ::=        SEQUENCE {
    alfa0                               BIT STRING (SIZE (8)),
    alfa1                               BIT STRING (SIZE (8)),
    alfa2                               BIT STRING (SIZE (8)),
    alfa3                               BIT STRING (SIZE (8)),
    beta0                               BIT STRING (SIZE (8)),
    beta1                               BIT STRING (SIZE (8)),
    beta2                               BIT STRING (SIZE (8)),
    beta3                               BIT STRING (SIZE (8))
}

LCS-GPS-Measurement ::=             SEQUENCE {
    referenceSFN                        ReferenceSFN                    OPTIONAL,
    gps-TOW-1msec                       GPS-TOW-1msec,
```

```
    gps-TOW-HighResolution              GPS-TOW-HighResolution              OPTIONAL,
    gps-MeasurementParamList            GPS-MeasurementParamList
}

LCS-GPS-NavigationModel ::=         SEQUENCE {
    n-SAT                               INTEGER (1..16),
    navigationModelSatInfoList          NavigationModelSatInfoList
}

-- **TODO**, definition in 23.032
LCS-GPS-ReferenceLocation ::=       SEQUENCE {
}

LCS-GPS-Real-timeIntegrity ::=      SEQUENCE {
    badSatList                          BadSatList
}

LCS-GPS-ReferenceTime ::=           SEQUENCE {
    gps-Week                            INTEGER (0..1023),
    gps-TOW                             INTEGER (0..604700000000),
    sfn                                 INTEGER (0..4095),
    gps-TOW-AssistList                  GPS-TOW-AssistList                  OPTIONAL
}

LCS-GPS-UTC-Model ::=               SEQUENCE {
    a0                                  BIT STRING (SIZE (32)),
    a1                                  BIT STRING (SIZE (24)),
    delta-t-LS                          BIT STRING (SIZE (8)),
    t-ot                                BIT STRING (SIZE (8)),
    wn-t                                BIT STRING (SIZE (8)),
    wn-lsf                              BIT STRING (SIZE (8)),
    dn                                  BIT STRING (SIZE (8)),
    delta-t-LSF                         BIT STRING (SIZE (8))
}

LCS-IPDL-Parameters ::=             SEQUENCE {
    ip-Spacing                          IP-Spacing,
    ip-Length                           IP-Length,
    ip-Offset                           INTEGER (0..9),
    seed                                INTEGER (0..63),
    burstModeParameters                 BurstModeParameters
}

LCS-MeasuredResults ::=             SEQUENCE {
    lcs-MultipleSets                    LCS-MultipleSets                    OPTIONAL,
    lcs-ReferenceCellIdentity           PrimaryCPICH-Info                   OPTIONAL,
    lcs-OTDOA-Measurement               LCS-OTDOA-Measurement               OPTIONAL,
    lcs-Position                        LCS-Position                        OPTIONAL,
    lcs-GPS-Measurement                 LCS-GPS-Measurement                 OPTIONAL,
    lcs-Error                           LCS-Error                           OPTIONAL
}

LCS-Measurement ::=                 SEQUENCE {
    lcs-ReportingQuantity               LCS-ReportingQuantity,
    reportCriteria                      LCS-ReportCriteria,
    lcs-OTDOA-AssistanceData            LCS-OTDOA-AssistanceData            OPTIONAL,
    lcs-GPS-AssistanceData              LCS-GPS-AssistanceData              OPTIONAL
}

LCS-MeasurementEventResults ::=     SEQUENCE {
    event7a                             LCS-Position,
    event7b                             LCS-OTDOA-Measurement,
    event7c                             LCS-GPS-Measurement
}

LCS-MeasurementInterval ::=         ENUMERATED {
                                        e5, e15, e60, e300,
                                        e900, e1800, e3600, e7200 }

LCS-MethodType ::=                  ENUMERATED {
                                        ue-Assisted,
                                        ue-Based,
                                        ue-BasedPreferred,
                                        ue-AssistedPreferred }

LCS-MultipleSets ::=                SEQUENCE {
    numberOfOTDOA-IPDL-GPS-Sets         INTEGER (2..3),
    numberOfReferenceCells              INTEGER (1..3),
```

```
    referenceCellRelation               ReferenceCellRelation
}

LCS-OTDOA-AssistanceData ::=        SEQUENCE {
    lcs-OTDOA-ReferenceCell             LCS-OTDOA-ReferenceCell             OPTIONAL,
    lcs-OTDOA-MeasurementAssistDataList LCS-OTDOA-MeasurementAssistDataList OPTIONAL,
    lcs-IPDL-Parameters                 LCS-IPDL-Parameters                 OPTIONAL
}

LCS-OTDOA-AssistanceSIB ::=         SEQUENCE {
    lcs-CipherParameters                LCS-CipherParameters                OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    referenceCellPosition               ReferenceCellPosition,
    lcs-IPDL-Parameters                 LCS-IPDL-Parameters                 OPTIONAL,
    cellToMeasureInfoList               CellToMeasureInfoList
}

LCS-OTDOA-Measurement ::=           SEQUENCE {
    sfn                                 INTEGER (0..4095),
    -- Actual value = IE value * 0.25 + 876
    ue-Rx-Tx-TimeDifference             INTEGER (0..1184),
    qualityType                         QualityType,
    qualityChoice                       CHOICE {
        std-10                              ReferenceQuality10,
        std-50                              ReferenceQuality50,
        cpich-EcN0                          CPICH-Ec-N0-OTDOA,
        defaultQuality                      ReferenceQuality
    },
    neighborList                        NeighborList                        OPTIONAL
}

LCS-OTDOA-MeasurementAssistData ::= SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference1,
    fineSFN-SFN                         FineSFN-SFN                         OPTIONAL,
    searchWindowSize                    OTDOA-SearchWindowSize,
    relativeNorth                       INTEGER (-20000..20000)             OPTIONAL,
    relativeEast                        INTEGER (-20000..20000)             OPTIONAL,
    relativeAltitude                    INTEGER (-4000..4000)               OPTIONAL
}

LCS-OTDOA-MeasurementAssistDataList ::= SEQUENCE (SIZE (1..15)) OF
                                        LCS-OTDOA-MeasurementAssistData

LCS-OTDOA-ReferenceCell ::=         SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellPosition                        ReferenceCellPosition               OPTIONAL
}

LCS-Position ::=                    SEQUENCE {
    referenceSFN                        ReferenceSFN,
    gps-TOW                             INTEGER (0..604700000000),
    positionEstimate                    PositionEstimate
}

LCS-ReportCriteria ::=              CHOICE {
    lcs-ReportingCriteria               LCS-EventParamList
    OPTIONALReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

LCS-ReportingCriteria ::=           SEQUENCE {
    eventParameterList                  LCS-EventParamList                  OPTIONAL
}

LCS-ReportingQuantity ::=           SEQUENCE {
    methodType                          LCS-MethodType,
    positioningMethod                   PositioningMethod,
    responseTime                        LCS-ResponseTime,
    accuracy                            LCS-Accuracy                        OPTIONAL,
    gps-TimingOfCellWanted              BOOLEAN,
    multipleSets                        BOOLEAN,
    environmentCharacterization         EnvironmentCharacterization         OPTIONAL
}
```

```
LCS-ResponseTime ::=                ENUMERATED {
                                        s1, s2, s4, s8, s16,
                                        s32, s64, s128 }

LCS-TimeOffset ::=                  INTEGER (0..4095)

MaxNumberOfReportingCells ::=       ENUMERATED {
                                        mandatoryCellsOnly,
                                        mandatoryCellsPlus1,
                                        mandatoryCellsPlus2,
                                        mandatoryCellsPlus3,
                                        mandatoryCellsPlus4,
                                        mandatoryCellsPlus5,
                                        mandatoryCellsPlus6 }

MaxReportedCellsOnRACH ::=          ENUMERATED {
                                        noReport,
                                        currentCell,
                                        currentAnd-1-BestNeighbour,
                                        currentAnd-2-BestNeighbour,
                                        currentAnd-3-BestNeighbour,
                                        currentAnd-4-BestNeighbour,
                                        currentAnd-5-BestNeighbour,
                                        currentAnd-6-BestNeighbour }

MeasuredResults ::=                 CHOICE {
    intraFreqMeasuredResultsList        IntraFreqMeasuredResultsList,
    interFreqMeasuredResultsList        InterFreqMeasuredResultsList,
    interSystemMeasuredResultsList      InterSystemMeasuredResultsList,
    trafficVolumeMeasuredResultsList    TrafficVolumeMeasuredResultsList,
    qualityMeasuredResults              QualityMeasuredResults,
    ue-InternalMeasuredResults          UE-InternalMeasuredResults,
    lcs-MeasuredResults                 LCS-MeasuredResults
}

MeasuredResultsList ::=             SEQUENCE (SIZE (1..maxAdditionalMeas)) OF
                                        MeasuredResults

MeasuredResultsOnRACH ::=           SEQUENCE {
    currentCell                         SEQUENCE {
        modeSpecificInfo                    CHOICE {
            fdd                                 SEQUENCE {
                measurementQuantity                 CHOICE {
                    cpich-Ec-N0                         CPICH-Ec-N0,
                    cpich-RSCP                          CPICH-RSCP,
                    cpich-SIR                           CPICH-SIR,
                    pathloss                            Pathloss
                }
            },
            tdd                                 SEQUENCE {
                timeslotISCP                        TimeslotISCP,
                primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP
            }
        }
    },
    monitoredCells                      MonitoredCellRACH-List              OPTIONAL
}

MeasurementCommand ::=              CHOICE {
    setup                               MeasurementType,
    modify                              SEQUENCE {
        measurementType                     MeasurementType                 OPTIONAL
    },
    release                             NULL
}

MeasurementControlSysInfo ::=       SEQUENCE {
    intraFreqMeasurementSysInfo         IntraFreqMeasurementSysInfo         OPTIONAL,
    interFreqMeasurementSysInfo         InterFreqMeasurementSysInfo         OPTIONAL,
    interSystemMeasurementSysInfo       InterSystemMeasurementSysInfo       OPTIONAL,
    trafficVolumeMeasSysInfo            TrafficVolumeMeasSysInfo            OPTIONAL,
    ue-InternalMeasurementSysInfo       UE-InternalMeasurementSysInfo       OPTIONAL
}

-- **TODO**, not defined yet
MeasurementIdentityNumber ::=       SEQUENCE {
}
```

```
MeasurementQuantityGSM ::=          ENUMERATED {
                                        gsm-CarrierRSSI,
                                        pathloss }

MeasurementReportingMode ::=        SEQUENCE {
    measurementReportTransferMode       TransferMode,
    periodicalOrEventTrigger            PeriodicalOrEventTrigger
}

MeasurementType ::=                 CHOICE {
    intraFrequencyMeasurement           IntraFrequencyMeasurement,
    interFrequencyMeasurement           InterFrequencyMeasurement,
    interSystemMeasurement              InterSystemMeasurement,
    lcs-Measurement                     LCS-Measurement,
    trafficVolumeMeasurement            TrafficVolumeMeasurement,
    qualityMeasurement                  QualityMeasurement,
    ue-InternalMeasurement              UE-InternalMeasurement
}

MeasurementValidity ::=             SEQUENCE {
    resume-Release                      Resume-Release
}

MonitoredCellRACH-List ::=          SEQUENCE (SIZE (1..7)) OF
                                        MonitoredCellRACH-Result

MonitoredCellRACH-Result ::=        SEQUENCE {
    sfn-SFN-ObsTimeDifference           SFN-SFN-ObsTimeDifference           OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            primaryCPICH-Info                   PrimaryCPICH-Info,
            measurementQuantity                 CHOICE {
                cpich-Ec-N0                         CPICH-Ec-N0,
                cpich-RSCP                          CPICH-RSCP,
                cpich-SIR                           CPICH-SIR,
                pathloss                            Pathloss
            }                                                               OPTIONAL
        },
        tdd                                 SEQUENCE {
            primaryCCPCH-Info                   PrimaryCCPCH-Info,
            primaryCCPCH-RSCP                   PrimaryCCPCH-RSCP           OPTIONAL
        }
    }
}

MonitoredSetCellReport ::=          ENUMERATED {
                                        excludeAll,
                                        other }

MultipathIndicator ::=              ENUMERATED {
                                        nm,
                                        low,
                                        medium,
                                        high }

NavigationModelSatInfo ::=          SEQUENCE {
    satID                               INTEGER (0..63),
    satelliteStatus                     SatelliteStatus,
    compression                         CHOICE {
        uncompressed                        UncompressedNavModel,
        compressed                          CompressedNavModel
    }
}

NavigationModelSatInfoList ::=      SEQUENCE (SIZE (1..maxN-SAT)) OF
                                        NavigationModelSatInfo

Neighbor ::=                        SEQUENCE {
    neighborIdentity                    PrimaryCPICH-Info                   OPTIONAL,
    neignborQuantity                    NeighborQuantity,
    sfn-SFN-ObsTimeDifference2          SFN-SFN-ObsTimeDifference2
}

NeighborList ::=                    SEQUENCE (SIZE (1..15)) OF
                                        Neighbor

-- **TODO**, to be defined fully
NeighborQuantity ::=                SEQUENCE {
```

```
}

NewInterFreqCell ::=                SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfo
}

NewInterFreqCellList ::=            SEQUENCE (SIZE (1..maxInterCells)) OF
                                        NewInterFreqCell

NewInterFreqCellSI ::=              SEQUENCE {
    interFreqCellID                     InterFreqCellID                     OPTIONAL,
    frequencyInfo                       FrequencyInfo                       OPTIONAL,
    cellInfo                            CellInfoSI
}

NewInterFreqCellSI-List ::=         SEQUENCE (SIZE (1..maxInterCells)) OF
                                        NewInterFreqCellSI

NewInterSystemCell ::=              SEQUENCE {
    technologySpecificInfo              CHOICE {
        gsm                                 SEQUENCE {
            q-Offset                            Q-Offset                    OPTIONAL,
            hcs-NeighbouringCellInformation     HCS-NeighbouringCellInformation
                                                                            OPTIONAL,
            q-Min                               Q-Min,
            maxAllowedUL-TX-Power               MaxAllowedUL-TX-Power,
            bsic                                BSIC,
            bcch-ARFCN                          BCCH-ARFCN,
            gsm-OutputPower                     GSM-OutputPower             OPTIONAL
        },
        is-2000                             SEQUENCE {
            is-2000SpecificMeasInfo             IS-2000SpecificMeasInfo
        },
        spare                               NULL
    }
}


NewInterSystemCellList ::=          SEQUENCE (SIZE (1..maxInterSysCells)) OF
                                        NewInterSystemCell

NewIntraFreqCell ::=                SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfo
}

NewIntraFreqCellList ::=            SEQUENCE (SIZE (1..maxIntraCells)) OF
                                        NewIntraFreqCell

NewIntraFreqCellSI ::=              SEQUENCE {
    intraFreqCellID                     IntraFreqCellID                     OPTIONAL,
    cellInfo                            CellInfoSI
}

NewIntraFreqCellSI-List ::=         SEQUENCE (SIZE (1..maxIntraCells)) OF
                                        NewIntraFreqCell

NonUsedFreqParameter ::=            SEQUENCE {
    nonUsedFreqThreshold                Threshold,
    nonUsedFreqW                        W
}

NonUsedFreqParameterList ::=        SEQUENCE (SIZE (1..maxNonUsedFrequency)) OF
                                        NonUsedFreqParameter

ObservedTimeDifferenceToGSM ::=     INTEGER (0..4095)

OtherRAT-InSysInfo ::=              SEQUENCE {
    rat-Type                            RAT-Type,
    k-InterRAT                          K-InterRAT
}

OtherRAT-InSysInfoList ::=          SEQUENCE (SIZE (1..maxInterRAT)) OF
                                        OtherRAT-InSysInfo

OTDOA-SearchWindowSize ::=          ENUMERATED {
```

```
                                        c10, c20, c30, c40, c50,
                                        c60, c70, moreThan70 }

Pathloss ::=                            INTEGER (46..158)

PenaltyTime ::=                         CHOICE {
    notUsed                                 NULL,
    pt10                                    TemporaryOffset,
    pt20                                    TemporaryOffset,
    pt30                                    TemporaryOffset,
    pt40                                    TemporaryOffset,
    pt50                                    TemporaryOffset,
    pt60                                    TemporaryOffset
}

PendingTimeAfterTrigger ::=             ENUMERATED {
                                        ptat0-25, ptat0-5, ptat1,
                                        ptat2, ptat4, ptat8, ptat16 }

PeriodicalOrEventTrigger ::=            ENUMERATED {
                                        periodical,
                                        eventTrigger }

PeriodicalReportingCriteria ::=         SEQUENCE {
    reportingAmount                         ReportingAmount                 OPTIONAL,
    reportingInterval                       ReportingIntervalLong           OPTIONAL
}

-- **TODO**, contents to be defined, source 23.032
PositionEstimate ::=                    CHOICE {
    ellipsoidPoint                          EllipsoidPointSEQUENCE {},
    ellipsoidPointUncertCircle              EllipsoidPointUncertCircleSEQUENCE {},
    ellipsoidPointUncertEllipse             EllipsoidPointUncertEllipseSEQUENCE {},
    ellipsoidPointAltitude                  EllipsoidPointAltitudeSEQUENCE {},
    ellipsoidPointAltitudeEllipse           EllipsoidPointAltitudeEllipseSEQUENCE {}
}

PositioningMethod ::=                   ENUMERATED {
                                        otdoa,
                                        gps,
                                        otdoaOrGPS }

PRC ::=                                 INTEGER (-32767..32767)

-- **TODO**, not defined yet
PrimaryCCPCH-RSCP ::=                   SEQUENCE {
}

Q-Accept-s-n ::=                        INTEGER (0..63)

Q-HCS ::=                               INTEGER (0..99)

Q-Offset ::=                            INTEGER (-50..50)

-- Actual value = IE value * 0.5
Q-OffsetS-N ::=                         INTEGER (-40..40)

-- **TODO**, not defined yet
Q-Min   ::=                             SEQUENCE {
}

Qmin-FDD ::=                            INTEGER (-20..0)

-- Actual value = IE value * 2 - 115
Qmin-TDD ::=                            INTEGER (0..45)

-- **TODO**, not defined yet
QualityEventResults ::=                 SEQUENCE {
}

-- **TODO**, not defined yet
QualityMeasQuantity ::=                 SEQUENCE {
}

QualityMeasuredResults ::=              SEQUENCE {
    blerMeasurementResultsList              BLER-MeasurementResultsList     OPTIONAL,
    dl-PhysicalChannelBER                   DL-PhysicalChannelBER           OPTIONAL,
    sir                                     SIR                             OPTIONAL
```

```
}

QualityMeasurement ::=              SEQUENCE {
    qualityMeasurementObject            QualityMeasurementObject            OPTIONAL,
    qualityMeasQuantity                 QualityMeasQuantity                 OPTIONAL,
    qualityReportingQuantity            QualityReportingQuantity            OPTIONAL,
    reportCriteria                      QualityReportCriteria
}

-- **TODO**, not defined yet
QualityMeasurementObject ::=        SEQUENCE {
}

QualityReportCriteria ::=           CHOICE {
    qualityReportingCriteria            QualityReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
    noReporting                         NULL
}

-- **TODO**, not defined yet
QualityReportingCriteria ::=        SEQUENCE {
}

QualityReportingQuantity ::=        SEQUENCE {
    dl-TransChBLER                      BOOLEAN,
    bler-TransChIdList                  BLER-TransChIdList                  OPTIONAL,
    sir                                 BOOLEAN
}

QualityType ::=                     ENUMERATED {
                                        std-10, std-50, cpich-Ec-N0 }

RAT-Type ::=                        ENUMERATED {
                                        gsm, is2000, spare1, spare2,
                                        spare3, spare4, spare5, spare6,
                                        spare7, spare8, spare9, spare10,
                                        spare11, spare12, spare13, spare14 }

-- **TODO**, definition to be checked from 23.032
ReferenceCellPosition ::=           SEQUENCE CHOICE {
    ellipsoidPoint                      EllipsoidPoint,
    ellipsoidPointWithAltitude          EllipsoidPointAltitude
}

ReferenceCellRelation ::=           ENUMERATED {
                                        first-12-second-3,
                                        first-13-second-2,
                                        first-1-second-23 }

ReferenceGPS-TOW ::=                INTEGER (0..604700000000)

ReferenceQuality ::=                ENUMERATED {
                                        m0-19, m20-39, m40-79,
                                        m80-159, m160-319, m320-639,
                                        m640-1319, m1320Plus }

-- Actual value = IE value * 10
ReferenceQuality10 ::=              INTEGER (1..32)

-- Actual value = IE value * 50
ReferenceQuality50 ::=              INTEGER (1..32)

ReferenceSFN ::=                    INTEGER (0..4095)

-- Actual value = IE value * 512
ReferenceTimeDifferenceToCell ::=   CHOICE {
    -- Actual value = IE value * 40
    accuracy40                          INTEGER (0..960),
    -- Actual value = IE value * 256
    accuracy256                         INTEGER (0..150),
    -- Actual value = IE value * 2560
    accuracy2560                        INTEGER (0..15)
}

RemovedInterFreqCell :: =           SEQUENCE {
    interFreqCellID                     InterFreqCellID
}
```

```
RemovedInterFreqCellList ::=        SEQUENCE (SIZE (1..maxInterCells)) OF
                                        InterFreqCellIDRemovedInterFreqCell

RemovedInterSystemCell ::=          SEQUENCE {
    interSystemCellID                   InterSystemCellID
}

RemovedInterSystemCellList ::=      SEQUENCE (SIZE (1..maxInterSysCells)) OF
                                        InterSystemCellIDRemovedInterSystemCell

RemovedIntraFreqCell ::=            SEQUENCE {
    intraFreqCellID                     IntraFreqCellID
}

RemovedIntraFreqCellList ::=        SEQUENCE (SIZE (1..maxIntraCells)) OF
                                        IntraFreqCellIDRemovedIntraFreqCell

ReplacementActivationThreshold ::=  ENUMERATED {
                                        notApplicable, t1, t2,
                                        t3, t4, t5, t6, t7 }

ReportDeactivationThreshold ::=     ENUMERATED {
                                        notApplicable, t1, t2,
                                        t3, t4, t5, t6, t7 }

ReportingAmount ::=                 ENUMERATED {
                                        ra1, ra2, ra4, ra8, ra16, ra32,
                                        ra64, ra-Infinity }

ReportingCellStatus ::=             SEQUENCE {
    maxNumberOfReportingCells           MaxNumberOfReportingCells,
    measurement                         CHOICE {
        intraFreq                           ReportingCellStatusIntraFreq,
        otherMeasurement                    NULL
    }
}

ReportingCellStatusIntraFreq ::=    SEQUENCE {
    activeSetCellReport                 ActiveSetCellReport,
    monitoredSetCellReport              MonitoredSetCellReport
}

ReportingInfoForCellDCH ::=         SEQUENCE {
    intraFreqReportingQuantity          IntraFreqReportingQuantity,
    reportCriteria                      CellDCH-ReportCriteria
}

ReportingInterval ::=               ENUMERATED {
                                        noPeriodicalreporting, ri0-25,
                                        ri0-5, ri1, ri2, ri4, ri8, ri16 }

ReportingIntervalLong ::=           ENUMERATED {
                                        ril0, ril0-25, ril0-5, ril1,
                                        ril2, ril3, ril4, ril6, ril8,
                                        ril12, ril16, ril20, ril24,
                                        ril28, ril32, ril64 }

-- Actual value = IE value * 0.5
ReportingRange ::=                  INTEGER (0..29)

Resume-Release ::=                  CHOICE {
    resume                              UE-State,
    release                             NULL
}

RL-AdditionInfo ::=                 SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info
}

RL-AdditionInfoList ::=             SEQUENCE (SIZE (1..maxAddRLcount)) OF
                                        PrimaryCPICH-InfoRL-AdditionInfo

RL-InformationLists ::=             SEQUENCE {
    rl-AdditionInfoList                 RL-AdditionInfoList             OPTIONAL,
    rl-RemovalInfoList                  RL-RemovalInfoList              OPTIONAL
}

RL-RemovalInfo ::=                  SEQUENCE {
```

```
    primaryCPICH-Info                   PrimaryCPICH-Info
}

RL-RemovalInfoList ::=              SEQUENCE (SIZE (1..maxDelRLcount)) OF
                                        PrimaryCPICH-InfoRL-RemovalInfo

RLC-BuffersPayload ::=              ENUMERATED {
                                        pl0, pl4, pl8, pl16, pl32, pl64, pl128,
                                        pl256, pl512, pl1024, pl2k, pl4k,
                                        pl8k, pl16k, pl32k, pl64k, pl128k,
                                        pl256k, pl512k, pl1024k }

RRC ::=                             INTEGER (-127..127)

-- **TODO**, not defined yet
RSCP ::=                            SEQUENCE {
}

SatelliteStatus ::=                 ENUMERATED {
                                        ns-NN-U,
                                        es-SN,
                                        es-NN-U,
                                        es-NN-C }

SatID ::=                           INTEGER (0..31)

ScaleFactor ::=                     ENUMERATED {
                                        prc0-02-rrc0-002,
                                        prc0-32-rrc0-032 }

SFN-SFN-ObsTimeDifference ::=       CHOICE {
    type1                               SFN-SFN-ObsTimeDifference1,
    -- Actual value for type2 = IE value * 0.25
    type2                               SFN-SFN-ObsTimeDifference2
}

SFN-SFN-ObsTimeDifference1 ::=      INTEGER (0..9830399)

SFN-SFN-ObsTimeDifference2 ::=      INTEGER (-5119..5120)

SFN-SFN-OTD-Type ::=                ENUMERATED {
                                        noReport,
                                        type1,
                                        type2 }

SignallingOption ::=                CHOICE {
    alternative1                        SEQUENCE {
        q-OffsetS-N                     Q-OffsetS-N                         OPTIONAL
    },
    alternative2                    NULL
}

SIR ::=                             INTEGER (-10..20)

TemporaryOffset ::=                 ENUMERATED {
                                        to10, to20, to30, to40, to50,
                                        to60, to70, infinite }

-- **TODO**, not defined yet
Threshold ::=                       SEQUENCE {
}

ThresholdPositionChange ::=         ENUMERATED {
                                        pc10, pc20, pc30, pc40, pc50,
                                        pc100, pc200, pc300, pc500,
                                        pc1000, pc2000, pc5000, pc10000,
                                        pc20000, pc50000, pc100000 }

ThresholdSFN-GPS-TOW ::=            ENUMERATED {
                                        ms1, ms2, ms3, ms5, ms10,
                                        ms20, ms50, ms100 }

ThresholdSFN-SFN-Change ::=         ENUMERATED {
                                        c0-25, c0-5, c1, c2, c3, c4, c5,
                                        c10, c20, c50, c100, c200, c500,
                                        c1000, c2000, c5000 }

-- **TODO**, not defined yet
```

```
TimeslotISCP ::=                    SEQUENCE {
}

TimeslotListWithISCP ::=            SEQUENCE (SIZE (1..14)) OF
                                        TimeslotWithISCP

TimeslotWithISCP ::=                SEQUENCE {
    timeslot                            Timeslot,
    timeslotISCP                        TimeslotISCP
}

TimeToTrigger ::=                   ENUMERATED {
                                        ttt0, ttt10, ttt20, ttt40, ttt60,
                                        ttt80, ttt100, ttt120, ttt160,
                                        ttt200, ttt240, tt320, ttt640,
                                        ttt1280, ttt2560, ttt5000 }

TrafficVolumeEventParam ::=         SEQUENCE {
    eventID                             TrafficVolumeEventType,
    reportingThreshold                  TrafficVolumeThreshold
}

TrafficVolumeEventResults ::=       SEQUENCE {
    transportChannelCausingEvent        TransportChannelIdentity,
    trafficVolumeEventIdentity          TrafficVolumeEventTypeEventIDTrafficVolume
}

TrafficVolumeEventType ::=          ENUMERATED {
                                        e4a,
                                        e4b }

TrafficVolumeMeasObject ::=         SEQUENCE {
    targetTransportChannelID            TransportChannelIdentity
}

TrafficVolumeMeasObjectList ::=     SEQUENCE (SIZE (1..maxTrCHcount)) OF
                                        TrafficVolumeMeasObject

TrafficVolumeMeasQuantity ::=       ENUMERATED {
                                        rlc-BufferPayload,
                                        averageRLC-BufferPayload,
                                        varianceOfRLC-BufferPayload }

TrafficVolumeMeasSysInfo ::=        SEQUENCE {
    trafficVolumeMeasurementID          MeasurementIdentityNumber           OPTIONAL,
    trafficVolumeMeasurementObjectList      TrafficVolumeMeasurementObjectList
    OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL
}

TrafficVolumeMeasuredResults ::=    SEQUENCE {
    rb-Identity                         RB-Identity,
    rlc-BuffersPayload                  RLC-BuffersPayload                  OPTIONAL,
    averageRLC-BufferPayload            AverageRLC-BufferPayload            OPTIONAL,
    varianceOfRLC-BufferPayload         VarianceOfRLC-BufferPayload         OPTIONAL
}

TrafficVolumeMeasuredResultsList ::= SEQUENCE (SIZE (1..maxTraf)) OF
                                        TrafficVolumeMeasuredResults

TrafficVolumeMeasurement ::=        SEQUENCE {
    TrafficVolumeMeasurementObjectList  TrafficVolumeMeasurementObjectList  OPTIONAL,
    trafficVolumeMeasQuantity           TrafficVolumeMeasQuantity           OPTIONAL,
    trafficVolumeReportingQuantity      TrafficVolumeReportingQuantity      OPTIONAL,
    measurementValidity                 MeasurementValidity                 OPTIONAL,
    reportCriteria                      TrafficVolumeReportCriteria
}

TrafficVolumeMeasurementObject ::= SEQUENCE {
    targetTransportChannelID            TransportChannelIdentity
}

TrafficVolumeMeasurementObjectList ::= SEQUENCE (SIZE (1..maxTrCHcount)) OF
                                        TransportChannelIdentityTrafficVolumeMeasurementObject

TrafficVolumeReportCriteria ::=     CHOICE {
    trafficVolumeReportingCriteria      TrafficVolumeReportingCriteria,
    periodicalReportingCriteria         PeriodicalReportingCriteria,
```

```
    noReporting                         NULL
}

TrafficVolumeReportingCriteria ::= SEQUENCE {
    transChCriteriaList                 TransChCriteriaList                 OPTIONAL,
    timeToTrigger                       TimeToTrigger                       OPTIONAL,
    pendingTimeAfterTrigger             PendingTimeAfterTrigger             OPTIONAL,
    tx-InterruptionAfterTrigger         TX-InterruptionAfterTrigger         OPTIONAL,
    reportingAmount                     ReportingAmount                     OPTIONAL,
    reportingInterval                   ReportingInterval                   OPTIONAL
}

TrafficVolumeReportingQuantity ::= SEQUENCE {
    rlc-RB-BufferPayload                BOOLEAN,
    rlc-RB-BufferPayloadAverage         BOOLEAN,
    rlc-RB-BufferPayloadVariance        BOOLEAN
}

TrafficVolumeThreshold ::=          ENUMERATED {
                                        th8, th16, th32, th64, th128,
                                        th256, th512, th1024, th1536,
                                        th2048, th3072, th4096, th6144,
                                        th8192 }

TransChCriteria ::=                 SEQUENCE {
    transportChannelID                  TransportChannelIdentity,
    eventSpecificParameters             SEQUENCE (SIZE (1..2)) OF
                                            TrafficVolumeEventParam         OPTIONAL
}

TransChCriteriaList ::  =           SEQUENCE (SIZE (1..maxTrCHcount)) OF
                                        TransChCriteria

TransferMode ::=                    ENUMERATED {
                                        acknowledgedModeRLC,
                                        unacknowledgedModeRLC }

TransmittedPowerThreshold ::=       INTEGER (-50..33)

TriggeringCondition ::=             ENUMERATED {
                                        activeSetCellsOnly,
                                        monitoredCellsOnly,
                                        activeSetAndMonitoredCells }

TX-InterruptionAfterTrigger ::=     ENUMERATED {
                                        txiat0-25, txiat0-5, txiat1,
                                        txiat2, txiat4, txiat8, txiat16 }

UDRE ::=                            ENUMERATED {
                                        lessThan1,
                                        between1-and-4,
                                        between4-and-8,
                                        over8 }

UE-6AB-Event ::=                    SEQUENCE {
    timeToTrigger                       TimeToTrigger,
    transmittedPowerThreshold           TransmittedPowerThreshold
}

UE-6FG-Event ::=                    SEQUENCE {
    timeToTrigger                       TimeToTrigger,
    ue-RX-TX-TimeDifferenceThreshold    UE-RX-TX-TimeDifferenceThreshold
}

UE-AutonomousUpdateMode ::=         CHOICE {
    on                                  NULL,
    onWithNoReporting                   NULL,
    off                                 RL-InformationLists
}


UE-InternalEventParam ::=           CHOICE {
    event6a                             UE-6AB-Event,
    event6b                             UE-6AB-Event,
    event6c                             TimeToTrigger,
    event6d                             TimeToTrigger,
    event6e                             TimeToTrigger,
    event6f                             UE-6FG-Event,
```

```
    event6g                             UE-6FG-Event
}

UE-InternalEventParamList ::=       SEQUENCE (SIZE (1..maxEventCount)) OF
                                        UE-InternalEventParam

UE-InternalEventResults ::=         CHOICE {
    event6a                             NULL,
    event6b                             NULL,
    event6c                             NULL,
    event6d                             NULL,
    event6e                             NULL,
    event6f                             PrimaryCPICH-Info,
    event6g                             PrimaryCPICH-Info
}

UE-InternalMeasQuantity ::=         SEQUENCE {
    measurementQuantity                 UE-MeasurementQuantity,
    filterCoefficient                   FilterCoefficient                   DEFAULT 1
}

UE-InternalMeasuredResults ::=      SEQUENCE {
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            ue-TransmittedPowerFDD              UE-TransmittedPowerFDD      OPTIONAL,
            ue-RX-TX-ReportEntryList            UE-RX-TX-ReportEntryList    OPTIONAL
        },
        tdd                                 SEQUENCE {
            ue-TransmittedPowerTDD-List         UE-TransmittedPowerTDD-List OPTIONAL
        }
    }
}

UE-InternalMeasurement ::=          SEQUENCE {
    ue-InternalMeasQuantity             UE-InternalMeasQuantity             OPTIONAL,
    ue-InternalReportingQuantity        UE-InternalReportingQuantity        OPTIONAL,
    reportCriteria                      UE-InternalReportCriteria
}

UE-InternalMeasurementSysInfo ::=   SEQUENCE {
    ue-InternalMeasurementID            MeasurementIdentityNumber           OPTIONAL,
    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,
    ue-RX-TX-TimeDifferece              BOOLEAN,
    ue-Position                         BOOLEAN
}

UE-MeasurementQuantity ::=          ENUMERATED {
                                        ue-TransmittedPower,
                                        utra-Carrier-RSSI,
                                        ue-RX-TX-TimeDifference }

UE-RX-TX-ReportEntry ::=            SEQUENCE {
    primaryCPICH-Info                   PrimaryCPICH-Info,
    ue-RX-TX-TimeDifference             UE-RX-TX-TimeDifference
}

UE-RX-TX-ReportEntryList ::=        SEQUENCE (SIZE (1..maxUsedRLcount)) OF
                                        UE-RX-TX-ReportEntry

UE-RX-TX-TimeDifference ::=         INTEGER (876..1172)

UE-RX-TX-TimeDifferenceThreshold ::= INTEGER (769..1280)

UE-State ::=                        ENUMERATED {
```

```
                                        cell-DCH, all-But-Cell-DCH, all-States }

UE-TransmittedPowerFDD ::=          INTEGER (-50..33)

-- **TODO**, not defined yet
UE-TransmittedPowerTDD ::=          SEQUENCE {
}

UE-TransmittedPowerTDD-List ::=     SEQUENCE (SIZE (1..maxUsedUplTScount)) OF
                                        UE-TransmittedPowerTDD

UncompressedNavModel ::=            SEQUENCE {
    iode                                BIT STRING (SIZE (8)),
    t-oe                                BIT STRING (SIZE (16)),
    c-rc                                BIT STRING (SIZE (16)),
    c-rs                                BIT STRING (SIZE (16)),
    c-ic                                BIT STRING (SIZE (16)),
    c-is                                BIT STRING (SIZE (16)),
    c-uc                                BIT STRING (SIZE (16)),
    c-us                                BIT STRING (SIZE (16)),
    e                                   BIT STRING (SIZE (32)),
    m0                                  BIT STRING (SIZE (32)),
    a-Sqrt                              BIT STRING (SIZE (32)),
    delta-n                             BIT STRING (SIZE (16)),
    omega0                              BIT STRING (SIZE (32)),
    omegaDot                            BIT STRING (SIZE (24)),
    i0                                  BIT STRING (SIZE (32)),
    iDot                                BIT STRING (SIZE (14)),
    omega                               BIT STRING (SIZE (32)),
    t-oc                                BIT STRING (SIZE (16)),
    af0                                 BIT STRING (SIZE (22)),
    af1                                 BIT STRING (SIZE (16)),
    af2                                 BIT STRING (SIZE (8))
}

UTRA-CarrierRSSI ::=                INTEGER (-95..-30)

UTRAN-ReferenceTime ::=             SEQUENCE {
    gps-TOW                             INTEGER (0..604700000000),
    sfn                                 INTEGER (0..4095)
}

VarianceOfRLC-BufferPayload ::=     ENUMERATED {
                                        plv0, plv4, plv8, plv16, plv32, plv64,
                                        plv128, plv256, plv512, plv1024,
                                        plv2k, plv4k, plv8k, plv16k }

-- Actual value = IE value * 0.1
W ::=                               INTEGER (0..20)

END
```

11.3.8 Other information elements

```
Other-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    CN-DomainSysInfoList,
    NAS-SystemInformationGSM-MAP,
    PLMN-Type
FROM CoreNetwork-IEs

    CellAccessRestriction,
    CellIdentity,
    CellSelectReselectInfo,
    URA-IdentityList
FROM UTRANMobility-IEs

    CapabilityUpdateRequirement,
    CPCH-Parameters,
    DRAC-SysInfoList,
    ProtocolErrorCause,
    UE-ConnTimersAndConstants,
    UE-IdleTimersAndConstants
FROM UserEquipment-IEs
```

```
    PreDefRadioConfigurationList
FROM RadioBearer-IEs

    PreDefTransChConfiguration
FROM TransportChannel-IEs

    AICH-PowerOffset,
    ConstantValue,
    CPCH-PersistenceLevelsList,
    CPCH-SetInfoList,
    DynamicPersistenceLevelList,
    FrequencyInfo,
    IndividualTS-InterferenceList,
    MaxAllowedUL-TX-Power,
    MidambleConfiguration,
    PDSCH-SysInfoList,
    PICH-PowerOffset,
    PRACH-SystemInformationList,
    PreDefPhyChConfiguration,
    PrimaryCCPCH-InfoSI,
    PrimaryCCPCH-TX-Power,
    PUSCH-SysInfoList,
    SCCPCH-SystemInformationList,
    UL-Interference
FROM PhysicalChannel-IEs

    FACH-MeasurementOccasionInfo,
    LCS-GPS-AssistanceSIB,
    LCS-OTDOA-AssistanceSIB,
    MeasurementControlSysInfo
FROM Measurement-IEs

    ANSI-41-GlobalServiceRedirectInfo,
    ANSI-41-PrivateNeighborListInfo,
    ANSI-41-RAND-Information,
    ANSI-41-UserZoneID-Information
FROM ANSI-41-IEs

    maxDataLength,
    maxInterSysMessages,
    maxNoOfErrors,
    maxSysInfoBlockCount,
    maxSysInfoBlockFACHcount
FROM Constant-definitions;

BCC ::=                             INTEGER (0..7)

BCCH-ModificationInfo ::=           SEQUENCE {
    mib-ValueTag                        MIB-ValueTag,
    bcch-ModificationTime               BCCH-ModificationTime               OPTIONAL
}

-- Actual value = IE value * 2
BCCH-ModificationTime ::=           INTEGER (0..2047)

BSIC ::=                            SEQUENCE {
    ncc                                 NCC,
    bcc                                 BCC
}

CBS-DRX-Level1Information ::=       SEQUENCE {
    ctch-AllocationPeriod               INTEGER (1..256),
    cbs-FrameOffset                     INTEGER (0..255)
}

CDMA2000-Message ::=                SEQUENCE {
    msg-Type                            BIT STRING (SIZE (8)),
    payload                             BIT STRING (SIZE (1..512))
}

CDMA2000-MessageList ::=            SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        CDMA2000-Message

CellValueTag ::=                    INTEGER (1..4)

GSM-MessageList ::=                 SEQUENCE (SIZE (1..maxInterSysMessages)) OF
                                        BIT STRING (SIZE (1..512))
```

```
InterSystemHO-Failure ::=           SEQUENCE {
    interSystemHO-FailureCause          InterSystemHO-FailureCause          OPTIONAL,
    interSystemMessage                  InterSystemMessage                  OPTIONAL
}

InterSystemHO-FailureCause ::=      CHOICE {
    configurationUnacceptable           NULL,
    physicalChannelFailure              NULL,
    protocolError                       ProtocolErrorInformation,
    unspecified                         NULL,
    spare1                              NULL,
    spare2                              NULL,
    spare3                              NULL
}

InterSystemMessage ::=              SEQUENCE {
    systemType                          SystemType,
    systemSpecificMessage               CHOICE {
        gsm                                 SEQUENCE {
            gsm-MessageList                     GSM-MessageList
        },
        cdma2000                            SEQUENCE {
            cdma2000-MessageList                CDMA2000-MessageList
        },
        spare1                              NULL,
        spare2                              NULL,
        spare3                              NULL,
        spare4                              NULL,
        spare5                              NULL,
        spare6                              NULL,
        spare7                              NULL,
        spare8                              NULL,
        spare9                              NULL,
        spare10                             NULL,
        spare11                             NULL,
        spare12                             NULL,
        spare13                             NULL,
        spare14                             NULL,
    }
}

MasterInformationBlock ::=          SEQUENCE {
        mib-ValueTag                    MIB-ValueTag,
        plmn-Type                       PLMN-Type,
        -- TABULAR: The PLMN identity and ANSI-41 core network information
        -- are included in PLMN-Type.
        modeSpecificInfo                CHOICE {
            fdd                             NULL,
            tdd                             SEQUENCE {
                sfn-prime                       SFN-Prime
            }
        },
        sib-ReferenceList               SIB-ReferenceList,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

MIB-ValueTag ::=                    INTEGER (1..8)

NCC ::=                             INTEGER (0..7)

PLMN-ValueTag ::=                   INTEGER (1..256)

ProtocolErrorInformation ::=        SEQUENCE {
    diagnosticsType                     CHOICE {
        type1                               SEQUENCE {
            protocolErrorCause                  ProtocolErrorCause
        },
        spare                               NULL
    }
}

ProtocolErrorInformationList ::=    SEQUENCE (SIZE (1..maxNoOfErrors)) OF
                                        ProtocolErrorInformation

SchedulingInformation ::=           SEQUENCE {
    sib-Type                            SIB-TypeAndTag,
```

```
    scheduling                          SEQUENCE {
        segCount                            SegCount                        DEFAULT 1,
        sib-Pos                             CHOICE {
            -- The element name indicates the repetition period and the value
            -- (multiplied by two) indicates the position of the first segment.
            rep4                                INTEGER (0..1),
            rep8                                INTEGER (0..3),
            rep16                               INTEGER (0..7),
            rep32                               INTEGER (0..15),
            rep64                               INTEGER (0..31),
            rep128                              INTEGER (0..63),
            rep256                              INTEGER (0..127),
            rep512                              INTEGER (0..255),
            rep1024                             INTEGER (0..511),
            rep2048                             INTEGER (0..1023)
        },
        sib-PosOffsetInfo                   SibOFF-List                     OPTIONAL
    }                                                                       OPTIONAL
}

SegCount ::=                        INTEGER (1..16)

SegmentIndex ::=                    INTEGER (0..15)

-- Actual value = 2 * IE value
SFN-Prime ::=                       INTEGER (0..2047)

SIB-Content ::=                     CHOICE {
    masterInformationBlock              MasterInformationBlock,
    sysInfoType1                        SysInfoType1,
    sysInfoType2                        SysInfoType2,
    sysInfoType3                        SysInfoType3,
    sysInfoType4                        SysInfoType4,
    sysInfoType5                        SysInfoType5,
    sysInfoType6                        SysInfoType6,
    sysInfoType7                        SysInfoType7,
    sysInfoType8                        SysInfoType8,
    sysInfoType9                        SysInfoType9,
    sysInfoType10                       SysInfoType10,
    sysInfoType11                       SysInfoType11,
    sysInfoType12                       SysInfoType12,
    sysInfoType13                       SysInfoType13,
    sysInfoType13-1                     SysInfoType13-1,
    sysInfoType13-2                     SysInfoType13-2,
    sysInfoType13-3                     SysInfoType13-3,
    sysInfoType13-4                     SysInfoType13-4,
    sysInfoType14                       SysInfoType14,
    sysInfoType15                       SysInfoType15,
    sysInfoType16                       SysInfoType16,
    spare                               SEQUENCE {}
}

SIB-Data ::=                        BIT STRING (SIZE (1..maxDataLength))

SIB-Reference ::=                   SEQUENCE {
    schedulingInformation               SchedulingInformation
}

SIB-ReferenceList ::=               SEQUENCE (SIZE (1..maxSysInfoBlockCount)) OF
                                        SchedulingInformationSIB-Reference

SIB-ReferenceListFACH ::=           SEQUENCE (SIZE (1..maxSysInfoBlockFACHcount)) OF
                                        SchedulingInformationSIB-Reference

SIB-Type ::=                        ENUMERATED {
                                        masterInformationBlock,
                                        systemInformationBlockType1,
                                        systemInformationBlockType2,
                                        systemInformationBlockType3,
                                        systemInformationBlockType4,
                                        systemInformationBlockType5,
                                        systemInformationBlockType6,
                                        systemInformationBlockType7,
                                        systemInformationBlockType8,
                                        systemInformationBlockType9,
                                        systemInformationBlockType10,
                                        systemInformationBlockType11,
                                        systemInformationBlockType12,
```

```
                                    systemInformationBlockType13,
                                    systemInformationBlockType13-1,
                                    systemInformationBlockType13-2,
                                    systemInformationBlockType13-3,
                                    systemInformationBlockType13-4,
                                    systemInformationBlockType14,
                                    systemInformationBlockType15,
                                    systemInformationBlockType16,
                                    spare1, spare2, spare3 }

SIB-TypeAndTag ::=                  CHOICE {
    sysInfoType1                        PLMN-ValueTag,
    sysInfoType2                        PLMN-ValueTag,
    sysInfoType3                        CellValueTag,
    sysInfoType4                        CellValueTag,
    sysInfoType5                        CellValueTag,
    sysInfoType6                        CellValueTag,
    sysInfoType7                        NULL,
    sysInfoType8                        CellValueTagNULL,
    sysInfoType9                        NULL,
    sysInfoType10                       NULL,
    sysInfoType11                       CellValueTag,
    sysInfoType12                       CellValueTag,
    sysInfoType13                       CellValueTag,
    sysInfoType13-1                     CellValueTag,
    sysInfoType13-2                     CellValueTag,
    sysInfoType13-3                     CellValueTag,
    sysInfoType13-4                     CellValueTag,
    sysInfoType14                       CellValueTagNULL,
    sysInfoType15                       CellValueTagNULL,
    sysInfoType16                       NULL
}

SibOFF ::=                          ENUMERATED {
                                        so2, so4, so6, so8, so10,
                                        so12, so14, so16, so18,
                                        so20, so22, so24, so26,
                                        so28, so30, so32 }

SibOFF-List ::=                     SEQUENCE (SIZE (1..15)) OF
                                        SibOFF

SysInfoType1 ::=                    SEQUENCE {
    -- Core network IEs
        cn-CommonGSM-MAP-NAS-SysInfo    NAS-SystemInformationGSM-MAP,
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType2 ::=                    SEQUENCE {
    -- UTRAN mobility IEs
        ura-IdentityList                URA-IdentityList,
    -- User equipment IEs
        ue-ConnTimersAndConstants       UE-ConnTimersAndConstants,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType3 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfo,
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType4 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- UTRAN mobility IEs
        cellIdentity                    CellIdentity,
        cellSelectReselectInfo          CellSelectReselectInfo,
```

```
        cellAccessRestriction           CellAccessRestriction,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType5 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             NULL,
            tdd                             SEQUENCE {
                midambleConfiguration           MidambleConfiguration       OPTIONAL
            }
        },
        primaryCCPCH-Info               PrimaryCCPCH-InfoSI                 OPTIONAL,
        prach-SystemInformationList     PRACH-SystemInformationList,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList,
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
        -- Conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType6 ::=                    SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        primaryCCPCH-Info               PrimaryCCPCH-InfoSI                 OPTIONAL,
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                pich-PowerOffset                PICH-PowerOffset,
                aich-PowerOffset                AICH-PowerOffset
            },
            tdd                             SEQUENCE {
                pusch-SysInfo                   PUSCH-SysInfoList           OPTIONAL,
                pdsch-SysInfo                   PDSCH-SysInfoList           OPTIONAL
            }
        },
        prach-SystemInformationList     PRACH-SystemInformationList,
        sCCPCH-SystemInformationList    SCCPCH-SystemInformationList,
        cbs-DRX-Level1Information       CBS-DRX-Level1Information           OPTIONAL,
        -- Conditional on any of the CTCH indicator IEs in
        -- sCCPCH-SystemInformationList
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType7 ::=                    SEQUENCE {
    -- Physical channel IEs
        modeSpecificInfo                CHOICE {
            fdd                             SEQUENCE {
                ul-Interference                 UL-Interference
            },
            tdd                             NULL
        },
        prach-Information-SIB5-List     DynamicPersistenceLevelList,
        prach-Information-SIB6-List     DynamicPersistenceLevelList         OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType8 ::=                    SEQUENCE {
    -- User equipment IEs
        cpch-Parameters                 CPCH-Parameters,
    -- Physical channel IEs
        cpch-SetInfoList                CPCH-SetInfoList,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType9 ::=                    SEQUENCE {
    -- Physical channel IEs
```

```
        cpch-PersistenceLevelsList      CPCH-PersistenceLevelsList,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType10 ::=                   SEQUENCE {
    -- User equipment IEs
        drac-SysInfoList                DRAC-SysInfoList,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType11 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo       OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType12 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Measurement IEs
        fach-MeasurementOccasionInfo    FACH-MeasurementOccasionInfo       OPTIONAL,
        measurementControlSysInfo       MeasurementControlSysInfo,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType13 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Core network IEs
        cn-DomainSysInfoList            CN-DomainSysInfoList,
    -- User equipment IEs
        ue-IdleTimersAndConstants       UE-IdleTimersAndConstants           OPTIONAL,
        capabilityUpdateRequirement     CapabilityUpdateRequirement         OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType13-1 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-RAND-Information        ANSI-41-RAND-Information,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType13-2 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-UserZoneID-Information  ANSI-41-UserZoneID-Information,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType13-3 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-PrivateNeighborListInfo ANSI-41-PrivateNeighborListInfo,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType13-4 ::=                 SEQUENCE {
    -- ANSI-41 IEs
        ansi-41-GlobalServiceRedirectInfo
                                        ANSI-41-GlobalServiceRedirectInfo,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType14 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Physical channel IEs
        primaryCCPCH-TX-Power           PrimaryCCPCH-TX-Power               OPTIONAL,
```

```
        individualTS-InterferenceList   IndividualTS-InterferenceList,
        rach-ConstantValue              ConstantValue                       OPTIONAL,
        dpch-ConstantValue              ConstantValue                       OPTIONAL,
        usch-ConstantValue              ConstantValue                       OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType15 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Measurement IEs
        lcs-GPS-Assistance              LCS-GPS-AssistanceSIB               OPTIONAL,
        lcs-OTDOA-Assistance            LCS-OTDOA-AssistanceSIB             OPTIONAL,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SysInfoType16 ::=                   SEQUENCE {
    -- Other IEs
        sib-ReferenceList               SIB-ReferenceList                   OPTIONAL,
    -- Radio bearer IEs
        preDefinedRadioConfigurations   PreDefRadioConfigurationList,
    -- Transport channel IEs
        preDefTransChConfiguration      PreDefTransChConfiguration,
    -- Physical channel IEs
        preDefPhyChConfiguration        PreDefPhyChConfiguration,
    -- Extension mechanism
        non-Release99-Information       SEQUENCE {}                         OPTIONAL
}

SystemType ::=                      ENUMERATED {
                                        gsm, cdma2000,
                                        spare1, spare2, spare3, spare4,
                                        spare5, spare6, spare7, spare8,
                                        spare9, spare10, spare11,
                                        spare12, spare13, spare14 }

END
```

11.3.9 ANSI-41 information elements

```
ANSI-41-IEs DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    ansi41MaxLength
FROM Constant-definitions;

ANSI-41-GlobalServiceRedirectInfo ::=   BIT STRING (SIZE (1..ansi41MaxLength))

ANSI-41-PrivateNeighborListInfo ::=     BIT STRING (SIZE (1..ansi41MaxLength))

ANSI-41-RAND-Information ::=            BIT STRING (SIZE (1..ansi41MaxLength))

ANSI-41-UserZoneID-Information ::=      BIT STRING (SIZE (1..ansi41MaxLength))

Min-P-REV ::=                           BIT STRING (SIZE (8))

NAS-SystemInformationANSI-41 ::=        BIT STRING (SIZE (1..ansi41MaxLength))

NID ::=                                 BIT STRING (SIZE (16))

P-REV ::=                               BIT STRING (SIZE (8))

SID ::=                                 BIT STRING (SIZE (15))

END
```

11.4 Constant definitions

```
Constant-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN
```

```
-- **TODO**
algorithmCount              INTEGER ::= 8

-- **TODO**
ansi41MaxLength             INTEGER ::= 64

-- **TODO**
maxAddTFC-Count             INTEGER ::= 8

-- **TODO**
maxAdditionalMeas           INTEGER ::= 8

-- **TODO**
maxAddRLcount               INTEGER ::= 8

-- **TODO**
maxAlgoTypeCount            INTEGER ::= 8

-- **TODO**
maxAP-SigNum                INTEGER ::= 8

-- **TODO**
maxAP-SubCH                 INTEGER ::= 8

-- **TODO**
maxBLER                     INTEGER ::= 8

-- **TODO**
maxCCTrCH-Count             INTEGER ::= 8

-- **TODO**
maxCCTrCHcount              INTEGER ::= 8

-- **TODO**
maxCellCount                INTEGER ::= 8

-- **TODO**
maxCellsForbidden           INTEGER ::= 8

-- **TODO**
maxChanCount                INTEGER ::= 8

-- **TODO**
maxCNdomains                INTEGER ::= 8

-- **TODO**
maxCodeCount                INTEGER ::= 8

-- **TODO**
maxCodeNum                  INTEGER ::= 8

-- **TODO**
maxCodeNumComp-1            INTEGER ::= 8

maxCombineSet               INTEGER ::= 8

-- **TODO**
maxCPCH-SetCount            INTEGER ::= 8

-- **TODO**
maxCPCHsetcount             INTEGER ::= 8

-- **TODO**
maxCTFC                     INTEGER ::= 8

-- **TODO**
maxCTFC-DCH                 INTEGER ::= 8

-- **TODO**
maxCTFC-DSCH                INTEGER ::= 8

-- **TODO**
maxDataLength               INTEGER ::= 8

-- **TODO**
maxDelRLcount               INTEGER ::= 8

-- **TODO**
```

```
maxDelTFC-Count             INTEGER ::= 8

-- **TODO**
maxDelTrCHcount             INTEGER ::= 8

-- **TODO**
maxDL-CCTrCHcount           INTEGER ::= 8

-- **TODO**
maxDPDCHcount               INTEGER ::= 8

-- **TODO**
maxDRAC-Classes             INTEGER ::= 8

-- **TODO**
maxDRACReconAddTrCHcount    INTEGER ::= 8

-- **TODO**
maxEventCount               INTEGER ::= 8

-- **TODO**
maxFACH-Count               INTEGER ::= 8

-- **TODO**
maxFACHcount                INTEGER ::= 8

-- **TODO**
maxFlowID                   INTEGER ::= 8

-- **TODO**
maxFreqCount                INTEGER ::= 8

-- **TODO**
maxFrequencyBandsCount      INTEGER ::= 8

-- **TODO**
maxInterCells               INTEGER ::= 8

-- **TODO**
maxInterRAT                 INTEGER ::= 8

-- **TODO**
maxInterSys                 INTEGER ::= 8

-- **TODO**
maxInterSysCells            INTEGER ::= 8

-- **TODO**
maxInterSysMessages         INTEGER ::= 8

-- **TODO**
maxIntervals                INTEGER ::= 8

-- **TODO**
maxIntraCells               INTEGER ::= 8

-- **TODO**
maxMeasurementTypeCount     INTEGER ::= 8

-- **TODO**
maxMidambleShift-1          INTEGER ::= 8

-- **TODO**
maxMuxOptionsCount          INTEGER ::= 8

-- **TODO**
maxN-BadSAT                 INTEGER ::= 8

-- **TODO**
maxN-SAT                    INTEGER ::= 8

-- **TODO**
maxNoCells                  INTEGER ::= 8

-- **TODO**
maxNoCNdomains              INTEGER ::= 8

-- **TODO**
```

```
maxNoCodeGroups             INTEGER ::= 8

-- **TODO**
maxNonUsedFrequency         INTEGER ::= 8

-- **TODO**
maxNoOfErrors               INTEGER ::= 8

-- **TODO**
maxNoSystemCapability       INTEGER ::= 8

-- **TODO**
maxNoTFCI-Groups            INTEGER ::= 8

-- **TODO**
maxNumFreq                  INTEGER ::= 8

-- **TODO**
maxOtherRBcount             INTEGER ::= 8

-- **TODO**
maxPCPCHs                   INTEGER ::= 8

-- **TODO**
maxPDSCHcount               INTEGER ::= 8

-- **TODO**
maxPRACHcount               INTEGER ::= 8

-- **TODO**
maxPredefConfigCount        INTEGER ::= 8

-- **TODO**
maxPUSCHcount               INTEGER ::= 8

-- **TODO**
maxRABcount                 INTEGER ::= 8

maxRAT                      INTEGER ::= 4

-- **TODO**
maxRAT-Count                INTEGER ::= 8

-- **TODO**
maxRB-WithPDCPcount         INTEGER ::= 8

-- **TODO**
maxRBcount                  INTEGER ::= 8

-- **TODO**
maxReconAddTrCHcount        INTEGER ::= 8

-- **TODO**
maxReconRBcount             INTEGER ::= 8

-- **TODO**
maxReconRBs                 INTEGER ::= 8

-- **TODO**
maxRelRBcount               INTEGER ::= 8

-- **TODO**
maxReplaceCount             INTEGER ::= 8

-- **TODO**
maxRLcount                  INTEGER ::= 8

maxRM                       INTEGER ::= 256

-- **TODO**
maxRstTrCH-Count            INTEGER ::= 8

-- **TODO**
maxSCCPCHcount              INTEGER ::= 8

-- **TODO**
maxSetupRBcount             INTEGER ::= 8
```

```
-- **TODO**
maxSF-Num                    INTEGER ::= 8

-- **TODO**
maxSigNum                    INTEGER ::= 8

-- **TODO**
maxSRBcount                  INTEGER ::= 8

-- **TODO**
maxSubChNum                  INTEGER ::= 8

-- **TODO**
maxSysInfoBlockCount         INTEGER ::= 8

-- **TODO**
maxSysInfoBlockFACHcount     INTEGER ::= 8

-- **TODO**
maxTF-Count                  INTEGER ::= 8

-- **TODO**
maxTF-Value                  INTEGER ::= 8

-- **TODO**
maxTFC-Count                 INTEGER ::= 8

-- **TODO**
maxTFC-Value                 INTEGER ::= 8

-- **TODO**
maxTFC-Value-1               INTEGER ::= 8

-- **TODO**
maxTFCI-1-Combs              INTEGER ::= 8

-- **TODO**
maxTFCI-2-Combs              INTEGER ::= 8

-- **TODO**
maxTFCI-Value                INTEGER ::= 8

-- **TODO**
maxTFcount                   INTEGER ::= 8

-- **TODO**
maxTFs                       INTEGER ::= 8

-- **TODO**
maxTimeslotCount             INTEGER ::= 8

-- **TODO**
maxTraf                      INTEGER ::= 8

-- **TODO**
maxTrCH                      INTEGER ::= 8

-- **TODO**
maxTrChCount                 INTEGER ::= 8

-- **TODO**
maxTrCHcount                 INTEGER ::= 8

-- **TODO**
maxTrChValue                 INTEGER ::= 8

-- **TODO**
maxTScount                   INTEGER ::= 14

-- **TODO**
maxTSperCCTrCHcount          INTEGER ::= 8

-- **TODO**
maxTStoMeasureCount          INTEGER ::= 8

-- **TODO**
maxUL-CCTrCHcount            INTEGER ::= 8
```

```
-- **TODO**
maxURAcount                 INTEGER ::= 8

-- **TODO**
maxUsedUplTScount           INTEGER ::= 8

-- **TODO**
maxUsedRLcount              INTEGER ::= 8

-- **TODO**
pageCount                   INTEGER ::= 8

END
```

3GPP TSG RAN WG2#13
Oahu, HI, USA, 22-26 May, 2000

Document R2-001097
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	395	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 2000-05-11

Subject: Addition of the Segmentation indication field for transparent mode RLC in the RLC Info

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature	X		Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: This CR presents a new Segmentation indication parameter, which indicates whether segmentation is used in DL in the transparent RLC mode.

Clauses affected: 10.3.4.18, 11.3.4

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

10.3.4.18 RLC info

Information Element/Group name	Need	Multi	Type and reference	Semantics description
CHOICE *Uplink RLC mode*	OP			Indicates if Acknowledged, Unacknowledged or Transparent mode RLC shall be used. One spare value needed, criticality: reject.
>AM RLC				
>>Transmission RLC discard	OP		Transmission RLC discard 10.3.4.20	
>>Transmission window size	MP		Integer(1,8,16,32,128,256,512,768,1024,1536,2048,2560,3072,3584,4096)	Maximum number of RLC PUs sent without getting them acknowledged. This parameter is needed if acknowledged mode is used. One spare value needed, criticality: reject
>>Timer_RST	MP		Enumerated(50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 700, 800, 900, 1000)	It is used to detect the loss of RESET ACK PDU. 16 spare values needed, criticality: reject
>>Max_RST	MP		Enumerated(1, 4, 6, 8, 12 16, 24, 32)	The maximum number of retransmission of RESET PDU. 8 spare values needed, criticality: reject
>> Polling info	OP		Polling info 10.3.4.4	
>UM RLC				
>> Transmission RLC discard	OP		Transmission RLC discard10.3.4.20	
>TM RLC				(no specific data)
CHOICE *Downlink RLC mode*	OP			Indicates if Acknowledged, Unacknowledged or Transparent mode RLC shall be used. One spare value needed, criticality: reject.
>AM RLC				
>>In-sequence delivery	MP		Boolean	TRUE indicates that RLC shall preserve the order of higher layer PDUs when these are delivered.
>>Receiving window size	MP		Integer(1,8,16,32,128,256,512,768,1024,1536,2048,2560,3072,3584,4096)	Maximum number of RLC PUs allowed to be received. This parameter is needed if acknowledged mode is used. At least one spare value with criticality reject needed
>>Downlink RLC status Info	OP			
>UM RLC				
>>In-sequence delivery	MP		Boolean	TRUE indicates that RLC shall preserve the order of higher layer PDUs when these are delivered.
>TM RLC				
>>Segmentation indication	MP		Boolean	TRUE indicates that segmentation is performed.
~~>>In-sequence delivery~~	~~MP~~		~~Boolean~~	~~TRUE indicates that RLC shall preserve the order of higher layer PDUs when these are delivered.~~

11.3.4 Radio bearer information elements

```
DL-TM-RLC-Mode ::=                  SEQUENCE {
    segmentationIndicationinSequenceDelivery                    BOOLEAN
}
```

3GPP TSG RAN WG2#13
Oahu, HI, USA, 22-26 May, 2000

Document R2-001281
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	396r1	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: TSG-RAN WG2 **Date:** 2000-05-19

Subject: Radio Bearer identity for CCCH

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	X
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: The Radio Bearer identity for CCCH needs to be specified. The RB id is used in the calculation of Message Authentication Code.
RB id #0 is used for CCCH and all the other signalling radio bearer ids are shifted further (0-3 -> 1-4). This will leave 27 radio bearers for user plane.

Clauses affected: 8.1.9, 8.1.10, 8.2, 8.3.1, 8.5.11, 10.2, 10.2.42, 10.3.3.17, 10.3.4.11, 10.3.10, 11.3.3, 11.3.4, 11.4, 13.4.3, 14.10.1

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

8.1.9 Downlink Direct transfer

Figure 14a: Downlink Direct transfer, normal flow

8.1.9.1 General

The downlink direct transfer procedure is used in the downlink direction to carry higher layer (NAS) messages over the radio interface.

8.1.9.2 Initiation of downlink direct transfer procedure in the UTRAN

In the UTRAN, the direct transfer procedure is initiated when the upper layers request the transfer of a NAS message after the initial signalling connection is established. The UTRAN may initiate the downlink direct transfer procedure also when another RRC procedure is ongoing, and in that case the state of the latter procedure shall not be affected. The UTRAN shall transmit the DOWNLINK DIRECT TRANSFER message on the downlink DCCH using AM RLC on RB 3~~2~~ or RB 4~~3~~. The UTRAN should select the RB according to the following:

- If the non-access stratum indicates "low priority" for this message, RB 4~~3~~ should be selected, if available. Specifically, for a GSM-MAP based CN, RB 4~~3~~ should, if available, be selected when "SAPI 3" is requested. RB 3~~2~~ should be selected when RB 4~~3~~ is not available.
- If the non-access stratum indicates "high priority" for this message, RB 3~~2~~ should be selected. Specifically, for a GSM-MAP based CN, RB 3~~2~~ should be selected when "SAPI 0" is requested.

The UTRAN sets the IE "CN Domain Identity" to indicate, which CN domain the NAS message is originated from.

8.1.9.3 Reception of a DOWNLINK DIRECT TRANSFER message by the UE

Upon reception of the DOWNLINK DIRECT TRANSFER message, the UE RRC shall, using the IE "CN Domain Identity", route the contents of the higher layer PDU, if any, to the correct higher layer entity.

When the UE receives a DOWNLINK DIRECT TRANSFER message, it shall not affect the state of any other ongoing RRC procedures when not stated otherwise elsewhere.

8.1.9.4 Invalid DOWNLINK DIRECT TRANSFER message

If the UE receives a DOWNLINK DIRECT TRANSFER message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- Transmit an RRC STATUS message on the uplink DCCH using AM RLC and include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.

When the transmission of the RRC STATUS message has been confirmed by RLC, the UE shall resume normal operation as if the invalid DOWNLINK DIRECT TRANSFER message has not been received.

8.1.10 Uplink Direct transfer

Figure 14b: Uplink Direct transfer, normal flow

8.1.10.1 General

The uplink direct transfer procedure is used in the uplink direction to carry all subsequent higher layer (NAS) messages over the radio interface.

8.1.10.2 Initiation of uplink direct transfer procedure in the UE

In the UE, the uplink direct transfer procedure shall be initiated when the upper layers request a transfer of a NAS message after the initial signalling connection is established. When not stated otherwise elsewhere, the UE may initiate the uplink direct transfer procedure also when another procedure is ongoing, and in that case the state of the latter procedure shall not be affected. The UE shall transmit the UPLINK DIRECT TRANSFER message on the uplink DCCH using AM RLC on RB 3~~2~~ or RB 4~~3~~. The UE shall select the RB according to the following:

- If the non-access stratum indicates "low priority" for this message, RB 4~~3~~ shall be selected, if available. Specifically, for a GSM-MAP based CN, RB 4~~3~~ shall, if available, be selected when "SAPI 3" is requested. RB 3~~2~~ shall be selected when RB 4~~3~~ is not available.

- If the non-access stratum indicates "high priority" for this message, RB 3~~2~~ shall be selected. Specifically, for a GSM-MAP based CN, RB 3~~2~~ shall be selected when "SAPI 0" is requested.

The UE shall set the IE "Flow Identifier" to the same value as that allocated to that particular session when transmitting the INITIAL DIRECT TRANSFER message for that session.

8.1.10.3 Reception of UPLINK DIRECT TRANSFER message by the UTRAN

On reception of the UPLINK DIRECT TRANSFER message the NAS message should be routed using the value indicated in the IE "Flow Identifier".

If the IE "Measured results" is present in the message, the UTRAN shall extract the contents to be used for radio resource control.

When the UTRAN receives an UPLINK DIRECT TRANSFER message, it shall not affect the state of any other ongoing RRC procedures, when not stated otherwise elsewhere.

8.2 Radio Bearer control procedures

8.2.1 Radio bearer establishment

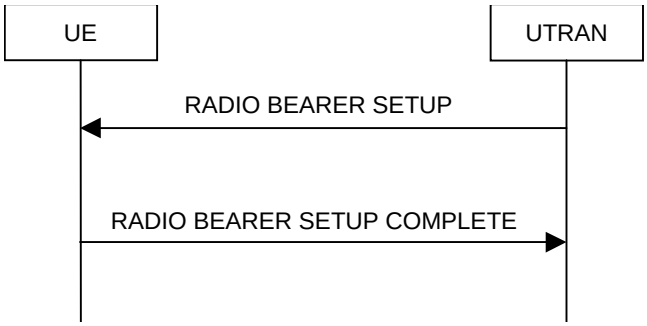

Figure 18: Radio Bearer Establishment, normal case

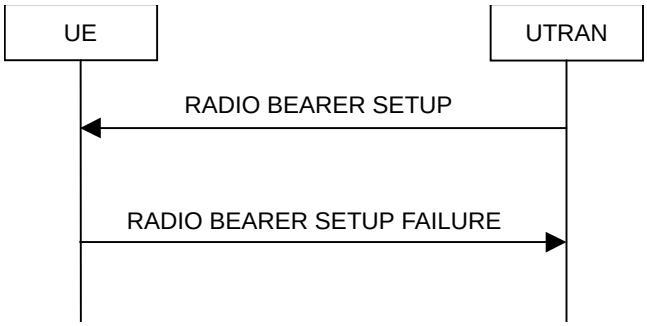

Figure 19: Radio Bearer Establishment, UE reverts to old configuration

8.2.1.1 General

The purpose with this procedure is to establish new radio bearer(s). Each radio bearer established by the procedure belongs to one of the following categories:

- a signalling radio bearer, i.e. used for control plane signalling;
- a radio bearer that implements a radio access bearer (RAB) or RAB subflow(s) in the user plane.

While establishing radio bearers, the procedure may perform a hard handover, see 8.3.5. The procedure may also be used to establish a transport channel for the transparent transfer of signalling.

8.2.1.2 Initiation

The upper layer in the network may request an establishment of radio bearer(s).

To initiate the procedure, UTRAN:

- configures new radio links in any new physical channel configuration and start transmission and reception on the new radio links;
- transmits a RADIO BEARER SETUP message on the downlink DCCH using AM or UM RLC.

If transport channels are added, reconfigured or deleted in uplink and/or downlink, UTRAN shall:

- set TFCS according to the new transport channel(s).

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.

8.2.1.3 Reception of a RADIO BEARER SETUP message by the UE

Upon reception of a RADIO BEARER SETUP message the UE shall perform actions as specified below and transmit a RADIO BEARER SETUP COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the RADIO BEARER SETUP COMPLETE message has been confirmed by RLC the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall be able to receive an RADIO BEARER SETUP message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency:

The UE shall:

- for the new radio bearer(s), use the multiplexing option applicable for the transport channels used according to the IE "RB mapping info";
- for the new radio bearer(s), if the variable CIPHERING_STATUS is set to "Started", initialise ciphering on those radio bearers using the current ciphering hyperframe number;
- for radio bearer(s) existing prior to the message, use the multiplexing option applicable for the transport channels used, according to their IE "RB mapping info" or their previously stored multiplexing options;
- configure MAC multiplexing if that is needed in order to use said transport channel(s);
- use MAC logical channel priority when selecting TFC in MAC;
- suspend data transmission on RB 3~~2~~ and upward, if RLC-AM or RLC-UM is used on those radio bearers.

If the IE "New C-RNTI" is included, the UE shall:

- use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If the IE "RAB information to setup" is included, the procedure is used to establish radio bearers belonging to a radio access bearer and the UE shall:

- Associate the new radio bearers with the radio access bearer that is identified by the IE "RAB info".
- Check whether that radio acces bearer exists in the variable ESTABLISHED_RABS.

  If the radio access bearer exists the UE shall:

  - store information about the radio bearer under the radio access bearer entry in the variable ESTABLISHED_RABS.

  If the radio access bearer does not exist the UE shall:

  - store information about the new radio access bearer in the variable ESTABLISHED_RABS
  - store information about the radio bearer under the radio access bearer entry in the variable ESTABLISHED_RABS.
  - indicate the establishment of the radio access bearer to the upper layer entity using the IE "CN domain identity", forwarding the content of the IE "RAB identity".

- For each new radio bearer, the UE shall:
  - create a new RAB subflow for the radio access bearer.
  - Number the RAB subflow in the order of when the radio bearers within the radio access bearers where created.
  - Store the number of the RAB subflow in the variable ESTABLISHED_RABS.
- Indicate the establishment of each new RAB subflow to the upper layer entity using the IE "CN domain identity".

The UE should turn off the transmitter during the reconfiguration. The UE may first release the current physical channel configuration and shall then establish a new physical channel configuration according to 8.5.7 and the following.

If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor the IE "Downlink DPCH info" is included, the UE shall

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information:

The UE shall enter a state according to 8.5.8.

8.2.1.4 Unsupported configuration in the UE

If UTRAN instructs the UE to use a configuration that it does not support, the UE transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC and set the IE "failure cause" the cause value "configuration unacceptable".

When the transmission of the RADIO BEARER SETUP FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers, the UE shall clear the variable ORDERED_CONFIG and the procedure ends.

8.2.1.5 Physical channel failure

If the UE failed to establish the physical channel(s) indicated in the RADIO BEARER SETUP message the UE shall:

- Revert to the configuration prior to the reception of the RADIO BEARER SETUP message (old configuration) and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC. The procedure ends and the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers and resumes the normal operation as if no radio bearer establishment attempt had occurred.

A physical channel failure occurs in case the criteria as defined in 8.5.4 are not fulfilled. If the UE is unable to revert to the old configuration or if used, the activation time has expired, the UE shall:

- initiate a RRC connection re-establishment procedure according to subclause 8.1.5 and set the IE "failure cause" the cause value "physical channel failure".

8.2.1.6 Reception of the RADIO BEARER SETUP COMPLETE message by the UTRAN

When UTRAN has received the RADIO BEARER SETUP COMPLETE message, UTRAN may delete any old configuration and the procedure ends on the UTRAN side.

If the IE "UL Timing Advance" is included, UTRAN shall evaluate the timing advance value that the UE has to use in the new cell after handover.

8.2.1.7 Reception of RADIO BEARER SETUP FAILURE by the UTRAN

When UTRAN has received the RADIO BEARER SETUP FAILURE message, UTRAN may restore the old and delete the new configuration and the procedure ends on the UTRAN side. Upper layers should be notified of the failure.

8.2.1.8 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set upon the reception of the RADIO BEARER SETUP message, the UE shall:

- keep the old configuration as before the RADIO BEARER SETUP message was received;
- transmit an RRC STATUS message on the DCCH using AM RLC. The IE "Protocol error cause" shall be set to "Message not compatible with receiver state". When the transmission of RRC STATUS message has been confirmed by RLC the procedure ends and the UE shall clear the variable ORDERED_CONFIG and resume normal operation as if no RADIO BEARER SETUP message had been received.

8.2.1.9 Invalid RADIO BEARER SETUP message

If the variable ORDERED_CONFIG is not set and the RADIO BEARER SETUP message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- transmit a RADIO BEARER SETUP FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error";
- include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION;
- when the transmission of the RADIO BEARER SETUP FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid RADIO BEARER SETUP message has not been received and the procedure ends.

8.2.2 Radio bearer reconfiguration

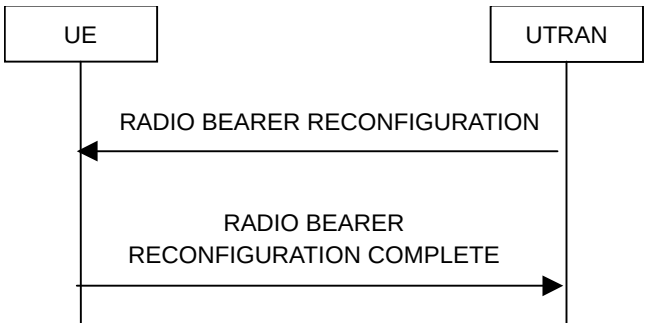

Figure 20: Radio bearer reconfiguration, normal flow

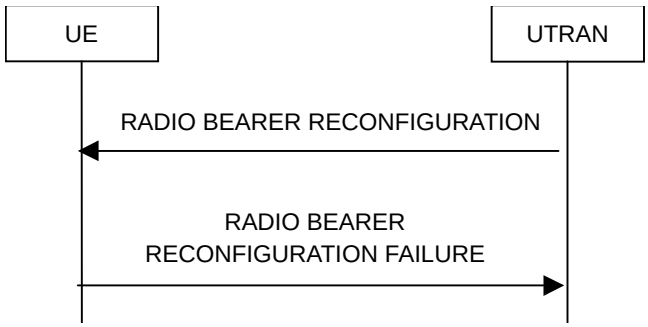

Figure 21: Radio bearer reconfiguration, failure case

8.2.2.1 General

The radio bearer reconfiguration procedure is used to reconfigure parameters for a radio bearer or the signalling link to reflect a change in QoS. While doing so, the procedure may perform a hard handover, see 8.3.5.

8.2.2.2 Initiation

The UTRAN initiates the procedure by:

- configuring new radio links in any new physical channel configuration and start transmission and reception on the new radio links;
- Transmitting a RADIO BEARER RECONFIGURATION message on the downlink DCCH using AM or UM RLC.

If transport channels are added, reconfigured or deleted in uplink and/or downlink, the UTRAN shall:

- Set TFCS according to the new transport channel(s).

UTRAN should indicate that uplink transmission shall be suspended on certain bearers. Uplink transmission on a radio bearer used by the RRC signalling should not be suspended.

If the IE "Activation Time" is included, UTRAN should set it to a value taking the UE performance requirements into account.

UTRAN should take the UE capabilities into account when setting the new configuration.

If the message is used to initiate a transition from CELL_DCH to CELL_FACH state, the UTRAN may assign a common channel configuration of a given cell and C-RNTI to be used in that cell to the UE.

8.2.2.3 Reception of RADIO BEARER RECONFIGURATION by the UE in CELL_DCH state

Upon reception of a RADIO BEARER RECONFIGURATION message in CELL_DCH state, the UE shall perform actions specified below.

The UE shall be able to receive an RADIO BEARER RECONFIGURATION message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall:

- For each reconfigured radio bearer or signalling link, use the multiplexing option applicable for the transport channels used according to the IE "RB mapping info";
- Configure MAC multiplexing if that is needed in order to use said transport channel(s);
- Use MAC logical channel priority when selecting TFC in MAC;

- Suspend or resume uplink transmission for each radio bearer, as indicated by the IE "RB suspend/resume" information element;

- Suspend data transmission on RB 32 and upward, if RLC-AM or RLC-UM is used on those radio bearers.

The UE should turn off the transmitter during the reconfiguration. The UE may first release the current physical channel configuration and shall then establish a new physical channel configuration according to 8.5.7 and the following.

If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in.

If neither the IEs "Secondary CCPCH info" nor "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall;

- Delete stored TFS and use the TFS given in system information.

If the IE "Primary CCPCH info" and the IE "New C-RNTI" are included, the UE shall:

- Select the cell indicated by the IE "Primary CCPCH info";

- Use the given C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the RADIO BEARER RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the UE shall resume data transmission on each radio bearer fulfilling the following criteria:

- The radio bearer identity is RB 32 and upward;

- RLC-AM or RLC-UM is used; and

- The radio bearers was not indicated to be suspended by the IE "RB suspend/resume" information element in the RADIO BEARER RECONFIGURATION message.

The procedure ends.

If the RADIO BEARER RECONFIGURATION message is used to initiate a transition from CELL_DCH to CELL_FACH state, the RADIO BEARER RECONFIGURATION COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition. The UE shall clear the variable ORDERED_CONFIG and the procedure ends.

8.2.2.4 Reception of an RADIO BEARER RECONFIGURATION message by the UE in CELL_FACH state

Upon reception of a RADIO BEARER RECONFIGURATION message in CELL_FACH state, the UE shall perform actions specified below.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall:

- For each reconfigured radio bearer or signalling link, use the multiplexing option applicable for the transport channels used according to the IE "RB mapping info";
- Configure MAC multiplexing if that is needed in order to use said transport channel(s);
- Use MAC logical channel priority when selecting TFC in MAC;
- Suspend or resume uplink transmission for each radio bearer, as indicated by the IE "RB suspend/resume".

If the IE "New C-RNTI" is included, the UE shall:

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor the IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included then the UE shall act upon the 'PDSCH code mapping' IE as specified in Subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted (there being only one link in the active set).

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the RADIO BEARER RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

8.2.2.5 Reception of a RADIO BEARER RECONFIGURATION COMPLETE message by the UTRAN

When UTRAN has received the RADIO BEARER RECONFIGURATION COMPLETE message, UTRAN may delete the old configuration..

If the IE "UL Timing Advance" is included, UTRAN shall evaluate the timing advance value that the UE has to use in the new cell after handover.

8.2.2.6 Unsupported configuration in the UE

If the UTRAN instructs the UE to use a configuration that it does not support, the UE shall:

- transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC;
- set the cause value in IE "failure cause" to "configuration unacceptable".

When the transmission of the RADIO BEARER RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG and the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers. It shall resume the normal operation as if no radio bearer reconfiguration attempt had occurred and the procedure ends.

8.2.2.7 Physical channel failure

A physical channel failure occurs in case the criteria as defined in 8.5.4 are not fulfilled.

If the UE failed to establish the physical channel(s) indicated in the RADIO BEARER RECONFIGURATION message the UE shall:

- revert to the configuration prior to the reception of the RADIO BEARER RECONFIGURATION message (old configuration);
- transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC;
- set the cause value in IE "failure cause" to "physical channel failure";
- when the transmission of the RADIO BEARER RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers. The procedure ends and the UE resumes the normal operation as if no radio bearer reconfiguration attempt had occurred.

If the UE is unable to revert to the old configuration or if used, the activation time has expired, the UE shall:

- Initiate a RRC connection re-establishment procedure according to subclause 8.1.5.

8.2.2.8 Reception of a RADIO BEARER RECONFIGURATION FAILURE message by the UTRAN

When UTRAN has received the RADIO BEARER RECONFIGURATION FAILURE message, UTRAN may restore the old and delete the new configuration. The procedure ends on the UTRAN side. Upper layers should be notified of the failure.

8.2.2.9 No response from the UE in CELL DCH_state

If no RADIO BEARER RECONFIGURATION COMPLETE message or RADIO BEARER RECONFIGURATION FAILURE message has been received, the UTRAN may delete the old and new configuration. If the UE requests a re-establishment of the RRC connection, before all UE dedicated resources have been cleared, the new configuration may be re-assigned in the re-establishment procedure.

During transition from CELL_DCH to CELL_FACH, the UTRAN may also receive a CELL UPDATE message if the UE cannot use the assigned physical channel.

8.2.2.10 No response from the UE in CELL_FACH state

If no RADIO BEARER RECONFIGURATION COMPLETE message or RADIO BEARER RECONFIGURATION FAILURE message has been received, the UTRAN may delete the old and new configuration. If the UE makes a cell update before all UE dedicated resources have been cleared, the configuration procedure can be restarted.

8.2.2.11 Physical channel failure during transmission from CELL_DCH to CELL_FACH

If the UE fails to select the cell, which was assigned in the RADIO BEARER RECONFIGURATION message initiating transition from CELL_DCH to CELL_FACH, the UE shall perform cell reselection and initiate the cell update procedure.

8.2.2.12 Suspension of signalling bearer

If the RADIO BEARER RECONFIGURATION message includes a request to suspend the signalling link with the IE "RB suspend/resume", the UE shall:

- Revert to the configuration prior to the reception of the RADIO BEARER RECONFIGURATION message (old configuration);
- send a RADIO BEARER RECONFIGURATION FAILURE message to the UTRAN;
- set the cause value in IE "failure cause" to "configuration unacceptable";
- When the transmission of the RADIO BEARER RECONFIGURATION FAILURE message has been confirmed by RLC, the procedure ends and the UE shall resume the normal operation as if no radio bearer reconfiguration attempt had occurred.

8.2.2.13 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set upon the reception of the RADIO BEARER RECONFIGURATION message, the UE shall:

- keep the old configuration as before the RADIO BEARER RECONFIGURATION message was received;
- transmit an RRC STATUS message on the DCCH using AM RLC. The IE "Protocol error cause" shall be set to "Message not compatible with receiver state". When the transmission of RRC STATUS message has been confirmed by RLC the procedure ends and the UE shall clear the variable ORDERED_CONFIG and resume normal operation as if no RADIO BEARER RECONFIGURATION message had been received.

8.2.2.14 Invalid RADIO BEARER RECONFIGURATION message

If the variable ORDERED_CONFIG is not set and the RADIO BEARER RECONFIGURATION message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- Transmit a RADIO BEARER RECONFIGURATION FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error".
- Include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- When the transmission of the RADIO BEARER RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid RADIO BEARER RECONFIGURATION message has not been received and the procedure ends.

8.2.3 Radio bearer release

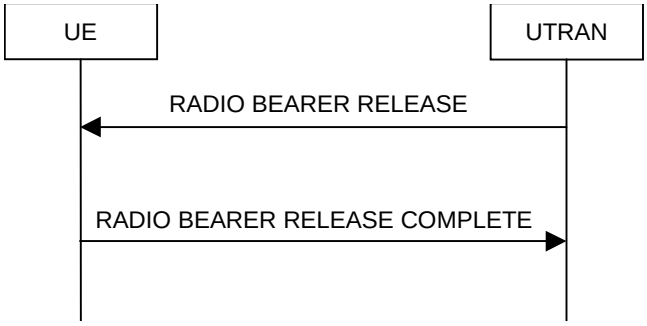

Figure 22: Radio Bearer Release, normal case

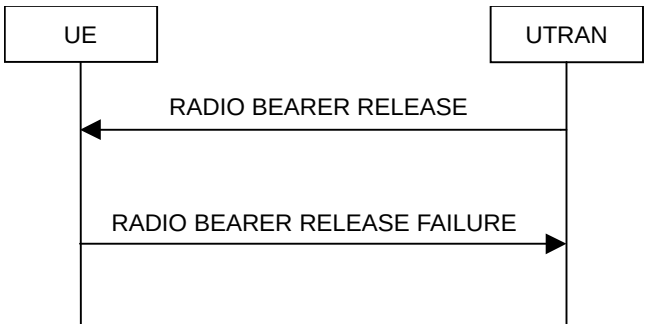

Figure 23: Radio Bearer Release, UE reverts to old configuration

8.2.3.1 General

The purpose of this procedure is to release existing radio bearer(s). While doing so, the procedure may perform a hard handover, see 8.3.5.

8.2.3.2 Initiation

The upper layer in the network may request a release of radio bearer(s).

To initiate the procedure, UTRAN:

- configures new radio links in any new physical channel configuration and start transmission and reception on the new radio links;
- transmits a RADIO BEARER RELEASE message on the downlink DCCH using AM or UM RLC.

If transport channels are added, reconfigured or deleted in uplink and/or downlink, UTRAN shall:

Set TFCS according to the new transport channel(s).

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.

8.2.3.3 Reception of RADIO BEARER RELEASE by the UE

Upon reception of a RADIO BEARER RELEASE message the UE shall perform the following.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall be able to receive an RADIO BEARER RELEASE message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency.

The UE shall:

For the released radio bearer(s),

- delete all stored multiplexing options;
- indicate release of the RAB subflow stored in the variable ESTABLISHED_RABS to the upper layer entity corresponding to the CN domain identity stored in the variable ESTABLISHED_RABS;
- delete the information about the radio bearer from the variable ESTABLISHED_RABS.

  When all radio bearers belonging to the same radio access bearer have been released, the UE shall:

  - indicate release of the radio access bearer to the upper layer entity using the CN domain identity together with the RAB identity stored in the variable ESTABLISHED_RABS;
  - delete all information about the radio access bearer from the variable ESTABLISHED_RABS.

For all remaining radio bearer(s):

- use the multiplexing option applicable for the transport channels used according to their IE "RB mapping info" or their previously stored multiplexing options;
- configure MAC multiplexing if that is needed in order to use said transport channel(s);
- use MAC logical channel priority when selecting TFC in MAC;
- suspend data transmission on RB 3~~2~~ and upward, if RLC-AM or RLC-UM is used on those radio bearers.

If the IE "New C-RNTI" is included, the UE shall:

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

The UE should turn off the transmitter during the reconfiguration. The UE may first release the current physical channel configuration and shall then establish a new physical channel configuration according to 8.5.7 and the following.

If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor the IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.
- If the RADIO BEARER RELEASE message is used to initiate a state transition to the CELL_FACH state and if an IE primary CCPCH info and C-RNTI to a given cell is included, the UE shall elect the cell indicated by the PCCPCH info IE.
- Use the C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC. If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the RADIO BEARER RELEASE COMPLETE message has been confirmed by RLC the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers and the procedure ends.

If the RADIO BEARER RELEASE message is used to initiate a transition from CELL_DCH to CELL_FACH state, the RADIO BEARER RELEASE COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition.

8.2.3.4 Unsupported configuration in the UE

If UTRAN instructs the UE to use a configuration that it does not support, the UE shall Transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC and set the value of the IE "failure cause" to "configuration unacceptable".

When the transmission of the RADIO BEARER RELEASE FAILURE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG and the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers. The procedure ends.

8.2.3.5 Physical channel failure

If the UE failed to establish the physical channel(s) indicated in the RADIO BEARER RELEASE message the UE shall:

- Revert to the configuration prior to the reception of the RADIO BEARER RELEASE message (old configuration) and transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC and set the value of the IE "failure cause" to "physical channel failure". When the transmission of the RADIO BEARER RELEASE FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers. The procedure ends and the UE resumes the normal operation as if no radio bearer release attempt had occurred.

A physical channel failure occurs in case the criteria as defined in 8.5.4 are not fulfilled . If the UE is unable to revert to the old configuration or if used, the activation time has expired, the UE shall:

- Initiate a RRC connection re-establishment procedure according to subclause 8.1.5.

8.2.3.6 Reception of the RADIO BEARER RELEASE COMPLETE message by the UTRAN

When UTRAN has received the RADIO BEARER RELEASE COMPLETE message, UTRAN may delete any old configuration, and the procedure ends on the UTRAN side.

If the IE "UL Timing Advance" is included, UTRAN shall evaluate the timing advance value that the UE has to use in the new cell after handover.

8.2.3.7 Reception of the RADIO BEARER RELEASE FAILURE message by the UTRAN

When UTRAN has received the RADIO BEARER RELEASE FAILURE message, UTRAN may restore the old and delete the new configuration and the procedure ends on the UTRAN side. Upper layers should be notified of the failure.

8.2.3.8 Physical channel failure during transition from CELL_DCH to CELL_FACH

During transition from CELL_DCH to CELL_FACH, the UTRAN may also receive a CELL UPDATE message if the UE cannot use the assigned physical channel.

If the UE fails to select the cell, which was assigned in the RADIO BEARER RELEASE message initiating transition from CELL_DCH to CELL_FACH, the UE shall perform cell reselection and initiate the cell update procedure.

8.2.3.9 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set upon the reception of the RADIO BEARER RELEASE message, the UE shall:

- keep the old configuration as before the RADIO BEARER RELEASE message was received;
- transmit an RRC STATUS message on the DCCH using AM RLC. The IE "Protocol error cause" shall be set to "Message not compatible with receiver state". When the transmission of RRC STATUS message has been confirmed by RLC the procedure ends and the UE shall clear the variable ORDERED_CONFIG and resume normal operation as if no RADIO BEARER RELEASE message had been received.

8.2.3.10 Invalid RADIO BEARER RELEASE message

If the variable ORDERED_CONFIG is not set and the RADIO BEARER RELEASE message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- Transmit a RADIO BEARER RELEASE FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error".
- Include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- When the transmission of the RADIO BEARER RELEASE FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid RADIO BEARER RELEASE message has not been received and the procedure ends.

8.2.4 Transport channel reconfiguration

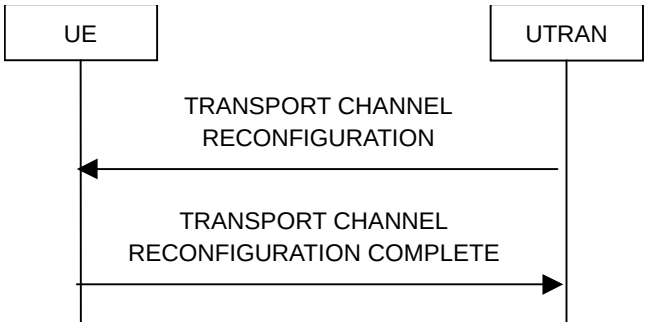

Figure 24: Transport channel reconfiguration, normal flow

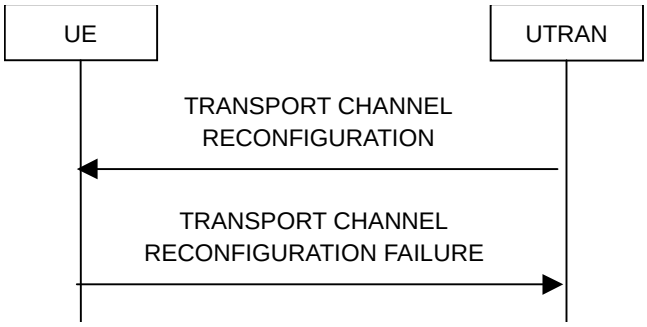

Figure 25: Transport channel reconfiguration, failure case

8.2.4.1 General

The transport channel reconfiguration procedure is used to reconfigure transport channel parameters. While doing so, the procedure may perform a hard handover, see 8.3.5.

8.2.4.2 Initiation

The UTRAN shall:

- Configure new radio links in any new physical channel configuration and start transmission and reception on the new radio links.
- transmit a TRANSPORT CHANNEL RECONFIGURATION message on the downlink DCCH using AM or UM RLC.

If transport channels are added, reconfigured or deleted in uplink and/or downlink, the UTRAN shall:

- Set TFCS according to the new transport channel(s).

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.

8.2.4.3 Reception of an TRANSPORT CHANNEL RECONFIGURATION message by the UE in CELL_DCH state

Upon reception of a TRANSPORT CHANNEL RECONFIGURATION message in CELL_DCH state, the UE shall perform the following actions.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall be able to receive an TRANSPORT CHANNEL RECONFIGURATION message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency.

The UE should turn off the transmitter during the reconfiguration. The UE may first release the current physical channel configuration and shall then establish a new physical channel configuration according to 8.5.7 and the following.

The UE shall suspend data transmission on RB 3~~2~~ and upward, if RLC-AM or RLC-UM is used on those radio bearers.

If neither the IE "PRACH info" nor the IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor the IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If the IE "TFS" is neither included nor previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.

If the TRANSPORT CHANNEL RECONFIGURATION message is used to initiate a state transition to the CELL_FACH state and if the IE "Primary CCPCH info" and IE "New C-RNTI" to a given cell is included, the UE shall

- Select the cell indicated by the IE "Primary CCPCH info".
- Use the C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

If the TRANSPORT CHANNEL RECONFIGURATION message is used to initiate a transition from CELL_DCH to CELL_FACH state, the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition. When the transmission of the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG, the UE shall resume data transmission on RB 32 and upwards if RLC-AM or RLC-UM is used on those radio bearers and the procedure ends.

8.2.4.4 Reception of an TRANSPORT CHANNEL RECONFIGURATION message by the UE in CELL_FACH state

Upon reception of a TRANSPORT CHANNEL RECONFIGURATION message in CELL_FACH state, the UE shall perform the following.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

If the IE "New C-RNTI" is included, the UE shall:

- Use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

If neither the IE "PRACH info" nor IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted (there being only one link in the active set).

The UE shall use the transport channel(s) applicable for the physical channel types that is used. If the IE "TFS" is neither included nor previously stored in the UE for that transport channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

8.2.4.5 Reception of the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message by the UTRAN

When UTRAN has received the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message, UTRAN may delete any old configuration and the procedure ends on the UTRAN side.

If the IE "UL Timing Advance" is included, UTRAN shall evaluate the timing advance value that the UE has to use in the new cell after handover.

8.2.4.6 Unsupported configuration in the UE

If the UTRAN instructs the UE to use a configuration that it does not support, the UE shall:

- transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and set the cause value in IE "Failure Cause" to "configuration unacceptable".

- When the transmission of the TRANSPORT CHANNEL RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers and the procedure ends.

8.2.4.7 Physical channel failure

If the UE failed to establish the physical channel(s) indicated in the TRANSPORT CHANNEL RECONFIGURATION message the UE shall:

- Revert to the configuration prior to the reception of the TRANSPORT CHANNEL RECONFIGURATION message (old configuration) and transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and set the cause value in IE "Failure Cause" to "physical channel failure". When the transmission of the TRANSPORT CHANNEL RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers. The procedure ends and the UE resumes the normal operation as if no transport channel reconfiguration attempt had occurred.

A physical channel failure occurs in case the criteria as defined in 8.5.4 are not fulfilled. If the UE is unable to revert to the old configuration or if used, the activation time has expired, the UE shall:

- Initiate a RRC connection re-establishment procedure according to subclause 8.1.5.

8.2.4.8 Reception of the TRANSPORT CHANNEL RECONFIGURATION FAILURE message by the UTRAN

When UTRAN has received the TRANSPORT CHANNELRECONFIGURATION FAILURE message, UTRAN may restore the old and delete the new configuration and the procedure ends on the UTRAN side. Upper layers should be notified of the failure.

8.2.4.9 Non-receipt of TRANSPORT CHANNEL CONFIGURATION COMPLETE message and TRANSPORT CHANNEL RECONFIGURATION FAILURE message in CELL_DCH state

If UTRAN does not receive TRANSPORT CHANNEL RECONFIGURATION COMPLETE message or TRANSPORT CHANNEL RECONFIGURATION FAILURE it may delete the old and new configuration. If the UE requests a re-establishment of the RRC connection, before all UE dedicated resources have been cleared, the new configuration may be re-assigned in the re-establishment procedure.

During transition from CELL_DCH to CELL_FACH, the UTRAN may also receive a CELL UPDATE message if the UE cannot use the assigned physical channel.

8.2.4.10 Non-receipt of TRANSPORT CHANNEL CONFIGURATION COMPLETE message and TRANSPORT CHANNEL RECONFIGURATION FAILURE message in CELL_FACH state

If UTRAN does not receive TRANSPORT CHANNEL RECONFIGURATION COMPLETE message or TRANSPORT CHANNEL RECONFIGURATION FAILURE message it may delete the old and new configuration. If the UE makes a cell update before all UE dedicated resources have been cleared, the configuration procedure can be restarted.

8.2.4.11 Physical channel failure during transition from CELL_DCH to CELL_FACH

If the UE fails to select the cell, which was assigned in the TRANSPORT CHANNEL RECONFIGURATION message initiating transition from CELL_DCH to CELL_FACH, the UE shall perform cell and initiate the cell update procedure.

8.2.4.12 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set upon the reception of the TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- keep the old configuration as before the TRANSPORT CHANNEL RECONFIGURATION message was received;

- transmit an RRC STATUS message on the DCCH using AM RLC. The IE "Protocol error cause" shall be set to "Message not compatible with receiver state". When the transmission of RRC STATUS message has been confirmed by RLC the procedure ends and the UE shall clear the variable ORDERED_CONFIG and resume normal operation as if no TRANSPORT CHANNEL RECONFIGURATION message had been received.

8.2.4.13 Invalid TRANSPORT CHANNEL RECONFIGURATION message

If the variable ORDERED_CONFIG is not set and the TRANSPORT CHANNEL RECONFIGURATION message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- Transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error".

- Include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.

- When the transmission of the TRANSPORT CHANNEL RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid TRANSPORT CHANNEL RECONFIGURATION message has not been received and the procedure ends.

8.2.5 Transport format combination control

Figure 26: Transport format combination control, normal flow

8.2.5.1 General

The transport format combination control procedure is used to control the allowed uplink transport format combinations within the transport format combination set.

8.2.5.2 Initiation

The UTRAN shall transmit the TRANSPORT FORMAT COMBINATION CONTROL message on the downlink DCCH using AM, UM or TM RLC. When not stated otherwise elsewhere, the UE may initiate the transport format combination control procedure also when another procedure is ongoing, and in that case the state of the latter procedure shall not be affected.

UTRAN should not initiate a transport format combination control procedure, during while awaiting the completion of the following procedures:

- Radio bearer establishment (subclause 8.2.1);
- Radio bearer release (subclause 8.2.3);
- Radio bearer reconfiguration (subclause 8.2.2);
- Transport channel reconfiguration (subclause 8.2.4);
- Physical channel reconfiguration (subclause 8.2.6).

To change the sub-set of allowed transport format combinations, the UTRAN shall set the allowed TFCs in the IE "TFC subset". The network can optionally specify the duration for which a new TFC sub-set applies. The network shall do this by using the IE "TFC Control duration".

To completely remove the previous restrictions of allowed transport format combinations, the UTRAN shall set the "full transport format combination" in the IE "TFC subset".

8.2.5.3 Reception of a TRANSPORT FORMAT COMBINATION CONTROL message by the UE

Upon reception of the TRANSPORT FORMAT COMBINATION CONTROL message, and if the variable ORDERED_CONFIG is not set the UE shall determine whether the IE "TFC Control duration" is included.

If the IE "TFC Control duration" is not included then the UE shall:

- Store the newly specified TFC (sub)set in the variable to be called 'default TFC (sub)set';
- Configure the allowed transport format combinations as defined in subclause 8.5.7.5.3.

If the IE "TFC Control duration" is included in the message then:

- The TFC set or TFC sub-set specified in the message shall be activated at frame *n* + *z* where *n* is the frame (with 10 ms resolution) at which the UE received the message and *z* is specified in TR 25.926 (UE radio access capabilities). The specified TFC set or sub-set shall then be applied for the number of (10 ms) frames specified in the IE "TFC Control duration".

If no further TFC Control messages are received during this interval then:

- At the end of the defined period the UE shall change the TFC (sub)set back to the 'default TFC (sub)set'.

If further TFC Control messages are received during the 'TFC Control duration' period then the UE shall re-configure itself in accordance with the TFC (sub)set defined in the most recently received message.

8.2.5.4 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set, the UE shall:

- keep the TFC subset as before the TRANSPORT FORMAT COMBINATION CONTROL message was received;

- transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC. The UE shall set the IE "failure cause" to "incompatible simultaneous reconfiguration". When the transmission of TRANSPORT FORMAT COMBINATION CONTROL FAILURE message has been confirmed by RLC the procedure ends.

8.2.5.5 Invalid TRANSPORT FORMAT COMBINATION CONTROL message

If the variable ORDERED_CONFIG is not set and the TRANSPORT FORMAT COMBINATION CONTROL message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- Transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error".

- Include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.

- When the transmission of the TRANSPORT FORMAT COMBINATION CONTROL FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid TRANSPORT FORMAT COMBINATION CONTROL message has not been received and the procedure ends.

8.2.6 Physical channel reconfiguration

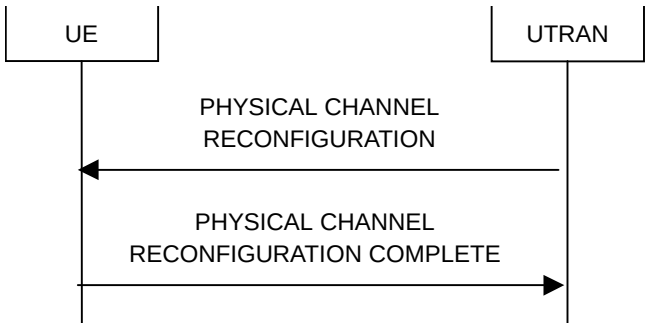

Figure 27: Physical channel reconfiguration, normal flow

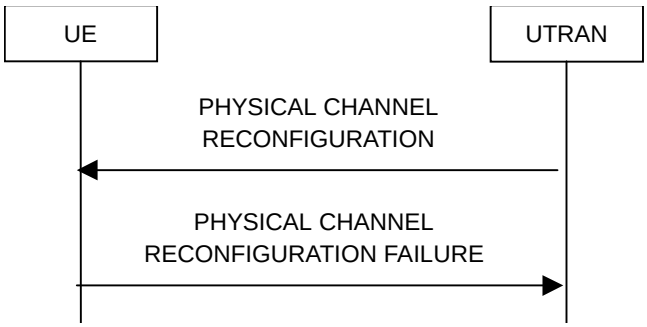

Figure 28: Physical channel reconfiguration, failure case

8.2.6.1 General

The physical channel reconfiguration procedure is used to establish, reconfigure and release physical channels. While doing so, the procedure may perform a hard handover, see 8.3.5.

8.2.6.2 Initiation

To initiate the procedure, the UTRAN should:

- Configure new radio links in any new physical channel configuration and start transmission and reception on the new radio links.
- transmit a PHYSICAL CHANNEL RECONFIGURATION message on the downlink DCCH using AM or UM RLC.

UTRAN should take the UE capabilities into account when setting the new configuration.

If the message is used to initiate a transition from CELL_DCH to CELL_FACH state, the UTRAN may assign a common channel configuration of a given cell and C-RNTI to be used in that cell to the UE.

8.2.6.3 Reception of a PHYSICAL CHANNEL RECONFIGURATION message by the UE in CELL_DCH state

Upon reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall perform the following actions.

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

The UE shall be able to receive an PHYSICAL CHANNEL RECONFIGURATION message and perform a hard handover, even if no prior UE measurements have been performed on the target cell and/or frequency.

The UE shall suspend data transmission on RB 3~~2~~ and upward, if RLC-AM or RLC-UM is used on those radio bearers.

If the IE "New C-RNTI" is included, the UE shall:

- Use that C-RNTI when using common physical channels of type RACH, FACH and CPCH in the current cell.

The UE should turn off the transmitter during the reconfiguration. The UE may first release the current physical channel configuration and shall then establish a new physical channel configuration according to 8.5.7 and the following.

If neither the IE "PRACH info" nor IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included and if the DCH has only one link in its active set then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted.

The UE shall use the physical channel(s) applicable for the physical channel types that is used. If IE "TFS" is neither included nor previously stored in the UE for that physical channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.

If the PHYSICAL CHANNEL RECONFIGURATION message is used to initiate a state transition to the CELL_FACH state and if an IE "Primary CCPCH info" and IE "New C-RNTI" to a given cell is included, the UE shall:

- Select the cell indicated by the IE "Primary CCPCH info".
- Use the C-RNTI when using common transport channels of type RACH, FACH and CPCH in that given cell after having completed the transition to that cell.

The UE shall enter a state according to 8.5.8.

The UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers and the procedure ends.

If the PHYSICAL CHANNEL RECONFIGURATION message is used to initiate a transition from CELL_DCH to CELL_FACH state, the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message shall be transmitted on the RACH after the UE has completed the state transition. The UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

8.2.6.4 Reception of PHYSICAL CHANNEL RECONFIGURATION by the UE in CELL_FACH state

The UE shall store the received physical channel configuration and the activation time in the variable ORDERED_CONFIG.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

If the IE "New C-RNTI" is included, the UE shall:

- Use that C-RNTI when using common physical channels of type RACH, FACH and CPCH in the current cell.

If neither the IE "PRACH info" nor IE "Uplink DPCH info" is included, the UE shall:

- Let the physical channel of type PRACH that is given in system information be the default in uplink.

If neither the IE "Secondary CCPCH info" nor IE "Downlink DPCH info" is included, the UE shall:

- Start to receive the physical channel of type Secondary CCPCH that is given in system information.

In FDD, if the IE 'PDSCH code mapping' is included but the IE 'PDSCH with SHO DCH Info' is not included then the UE shall act upon the 'PDSCH code mapping' IE as specified in subclause 8.5.7 and:

- Infer that the PDSCH will be transmitted from the BS from which the downlink DPCH is transmitted (there being only one link in the active set).

The UE shall use the physical channel(s) applicable for the physical channel types that is used. If neither the IE "TFS" is included or previously stored in the UE for that physical channel(s), the UE shall:

- Use the TFS given in system information.

If none of the TFS stored is compatible with the physical channel, the UE shall:

- Delete stored TFS and use the TFS given in system information.

The UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

If the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO is set, the UE shall include and set the IE "Radio bearer uplink ciphering activation time info" to the value of that variable.

When the transmission of the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message has been confirmed by RLC, the UE shall enter a state according to subclause 8.5.8 applied on the PHYSICAL CHANNEL RECONFIGURATION message. If the UE ends up in the CELL_PCH or URA_PCH state, it shall delete its C-RNTI. The UE shall clear the variable ORDERED_CONFIG, clear the variable RB_UPLINK_CIPHERING_ACTIVATION_TIME_INFO and the procedure ends.

8.2.6.5 Reception of a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message by the UTRAN

When UTRAN has received the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message, UTRAN may delete any old configuration and the procedure ends on the UTRAN side.

UTRAN may delete the C-RNTI of the UE if the procedure caused the UE to leave the CELL_FACH state.

If the IE "UL Timing Advance" is included, UTRAN shall evaluate the timing advance value that the UE has to use in the new cell after handover.

8.2.6.6 Unsupported configuration in the UE

If the UE instructs the UE to use a configuration that it does not support, the UE shall

- transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and shall set the cause value in IE "failure cause" to "configuration unacceptable".

When the transmission of the PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall clear the variable ORDERED_CONFIG and the procedure ends.

8.2.6.7 Physical channel failure

If the UE failed to establish the physical channel(s) indicated in the PHYSICAL CHANNEL RECONFIGURATION message the UE shall:

- Revert to the configuration prior to the reception of the PHYSICAL CHANNEL RECONFIGURATION message (old configuration) and transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and shall set the cause value in IE "failure cause" to "physical channel failure". The procedure ends and the UE resumes the normal operation as if no physical channel reconfiguration attempt had occurred.

A physical channel failure occurs in case the criteria as defined in 8.5.4 are not fulfilled . If the UE is unable to revert to the old configuration or if used, the activation time has expired, the UE shall:

- Initiate a RRC connection re-establishment procedure according to subclause 8.1.5

8.2.6.8 Reception of the PHYSICAL CHANNEL RECONFIGURATION FAILURE message by the UTRAN

When UTRAN has received the PHYSICAL CHANNEL RECONFIGURATION FAILURE message, UTRAN may delete the new configuration and the procedure ends on the UTRAN side. Upper layers should be notified of the failure.

8.2.6.9 Non-receipt of PHYSICAL CHANNEL RECONFIGURATION COMPLETE message or PHYSICL CHANNEL RECONFIGURATION FAILURE message in CELL_DCH state

If no PHYSICAL CHANNEL RECONFIGURATION COMPLETE message or PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been received, the UTRAN may delete the old and new configuration. If the UE requests a re-establishment of the RRC connection, before all UE dedicated resources have been cleared, the new configuration may be re-assigned in the re-establishment procedure.

During transition from CELL_DCH to CELL_FACH, the UTRAN may also receive a CELL UPDATE message if the UE cannot use the assigned physical channel.

8.2.6.10 Non-receipt of PHYSICAL CHANNEL RECONFIGURATION COMPLETE message or PHYSICL CHANNEL RECONFIGURATION FAILURE message in CELL_FACH state

If no PHYSICAL CHANNEL RECONFIGURATION COMPLETE message or PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been received, the UTRAN may delete the old and new configuration. If the UE makes a cell update before all UE dedicated resources have been cleared, the configuration procedure can be restarted.

8.2.6.11 Physical channel failure during transition from CELL_DCH to CELL_FACH

If the UE fails to select the cell, which was assigned in the PHYSICAL CHANNEL RECONFIGURATION message initiating transition from CELL_DCH to CELL_FACH, the UE shall perform cell and initiate the cell update procedure.

8.2.6.12 Incompatible simultaneous reconfiguration

If the variable ORDERED_CONFIG is set upon the reception of the PHYSICAL CHANNEL RECONFIGURATION message, the UE shall

- keep the old configuration as before the PHYSICAL CHANNEL RECONFIGURATION message was received
- transmit an RRC STATUS message on the DCCH using AM RLC. The IE "Protocol error cause" shall be set to "Message not compatible with receiver state". When the transmission of RRC STATUS message has been confirmed by RLC the procedure ends and the UE shall clear the variable ORDERED_CONFIG and resume normal operation as if no PHYSICAL CHANNEL RECONFIGURATION message had been received.

8.2.6.13 Invalid PHYSICAL CHANNEL RECONFIGURATION message

If the variable ORDERED_CONFIG is not set and the PHYSICAL CHANNEL RECONFIGURATION message contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- Transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH using AM RLCand set the IE "failure cause" the cause value "protocol error".
- Include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- When the transmission of the PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been confirmed by RLC, the UE shall resume data transmission on RB 3~~2~~ and upwards if RLC-AM or RLC-UM is used on those radio bearers. The UE shall resume normal operation as if the invalid PHYSICAL CHANNEL RECONFIGURATION message has not been received and the procedure ends.

8.2.7 Physical Shared Channel Allocation [TDD only]

Figure 29: Physical Shared Channel Allocation

8.2.7.1 General

The purpose of this procedure is to allocate physical resources to USCH or DSCH transport channels in TDD mode, for temporary usage by a UE.

8.2.7.2 Initiation

The UE is in the CELL_FACH or CELL_DCH state, and at least one RB using USCH or DSCH has been established.

The UTRAN sends the "PHYSICAL SHARED CHANNEL ALLOCATION" message via the SHCCH, to allocate PUSCH or PDSCH resources to exactly one CCTrCH.

8.2.7.3 Reception of a PHYSICAL SHARED CHANNEL ALLOCATION message by the UE

The UE shall check the C-RNTI to see if the UE is addressed by the message. If so, the UE shall evaluate the message and use the IEs as specified below.

If the IE "PDSCH info" is included, the UE shall:

- decode the IE " Allocation Activation Time" and the IE "Allocation Duration", to determine the time interval for which the allocation shall be valid;
- configure Layer 1 according to the PDSCH information received in allocation message or in BCCH SIB#6 (as default if not specified in allocation message), for the specified time interval received in allocation message;
- start receiving the PDSCH where the TFCI is included;
- receive the PDSCHs, and decode and demultiplex them into the respective DSCH channels according to the TFCI.

If the IE "PUSCH info" is included, the UE shall:

- decode the IE " Allocation Activation Time" and the IE "Allocation Duration", to determine the time interval for which the allocation shall be valid;
- configure Layer 1 according to the PUSCH information received in allocation message or in BCCH SIB#6 (as default if not specified in allocation message), for the specified time interval received in allocation message;
- determine the TFCS subset and hence the TFCI values which are possible given the PUSCH allocation for that CCTrCH;
- configure the MAC-c/sh in the UE with this TFCS restriction if necessary;
- transmit USCH Transport Block Sets as required, within the TFCS limits given by the PUSCH allocation.

In addition, the UE shall evaluate the IE "PUSCH Allocation Pending" parameter: If its value is "pending", the UE starts a timer T311. As long as this timer is running, the UE is not allowed to use the RACH for potential USCH capacity requests. See the USCH CAPACITY REQUEST procedure.

In addition if the message contains an optional IE "Uplink Timing Advance" the UE shall configure the Layer 1 with the new Timing Advance.

NOTE: If UE has just entered a new cell and SIB#6 USCH or DSCH information has not yet been scheduled, USCH/DSCH information is specified in allocation message.

8.2.8 PUSCH capacity request [TDD only]

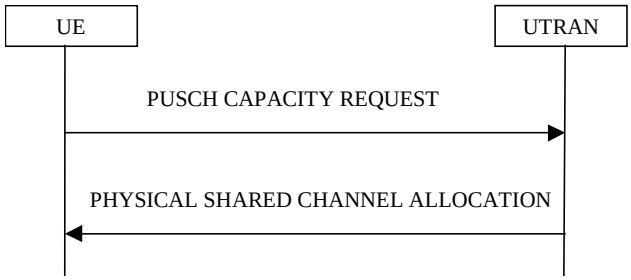

Figure 30: PUSCH Capacity request procedure

8.2.8.1 General

With this procedure, the UE transmits its request for PUSCH resources to the UTRAN. In the normal case, the UTRAN responds with a PHYSICAL SHARED CHANNEL ALLOCATION message, which either allocates the requested PUSCH resources, and/or allocates a PDSCH resource, or may just serve as an acknowledgement, indicating that PUSCH allocation is pending.

With the PUSCH CAPACITY REQUEST message, the UE can request capacity for one or more USCH.

NOTE: Triggering of the capacity request is controlled by the measurement control procedure.

8.2.8.2 Initiation

The UE is in the CELL_FACH or CELL_DCH state, and at least one RB using USCH has been established. The RRC in the UE sees the requirement to request physical resources (PUSCH) for an USCH channel.

The RRC decides to send a PUSCH capacity request on the SHCCH. This is possible if:

- Timer T311 is not running.
- The timer T310 (capacity request repetition timer) is not running.

So the UE sends a PUSCH CAPACITY REQUEST message on the uplink SHCCH, resets counter V310, and starts timer T310.

With one PUSCH CAPACITY REQUEST message, capacity for one or more USCH can be requested. It shall include these information elements:

- C-RNTI to be used as UE identity;
- Radio Bearer ID, for each radio bearer requiring capacity on USCH;
- RLC buffer payload for these radio bearers.

As an option, the message may include "Timeslot ISCP" and "Primary CCPCH RSCP".

The timeslots for which "Timeslot ISCP" may be reported shall have been configured with a previous PHYSICAL SHARED CHANNEL ALLOCATION message.

8.2.8.3 Reception of a PUSCH CAPACITY REQUEST message by the UTRAN

The UTRAN should send a PHYSICAL SHARED CHANNEL ALLOCATION message to the UE, either for allocating PUSCH or PDSCH resources, or just as an acknowledgement, announcing a pending PUSCH allocation.

8.2.8.4 Reception of a PHYSICAL SHARED CHANNEL ALLOCATION message by the UE

Once the UE receives this message with the correct C-RNTI included, it shall stop the timer T310 and shall evaluate the message as described in the Physical Shared Channel Allocation procedure. In particular, it shall take the IE "PUSCH Allocation Pending" into account: If this IE has the value "pending", the UE shall start the timer T311. As long as this timer is running, the UE is prohibited to send PUSCH Capacity Requests on the SHCCH.

If the IE "PUSCH Allocation Pending" indicates "not pending", the UE shall stop the timer T311, and is allowed to send PUSCH Capacity Requests on the SHCCH again.

If the PUSCH capacity allocated in this message is not sufficient for all the USCH transmission requests which the UE may have, the RRC in the UE may decide to issue further PUSCH Capacity Requests - provided timer T311 is not running.

8.2.8.5 T310 time out

Upon expiry of timer T310, the UE shall

- If V310 is equal to or smaller than N310, transmit a new PUSCH CAPACITY REQUEST message on the Uplink SHCCH, restart timer T310 and increase counter V310. The UE shall set the IEs in the PUSCH CAPACITY REQUEST message as specified above.

8.2.8.6 Maximum number of re-attempts exceeded

In this case the UE stops the procedure. It can start another PUSCH capacity request procedure if the UE-RRC sees the need for it.

8.2.9 Downlink outer loop control

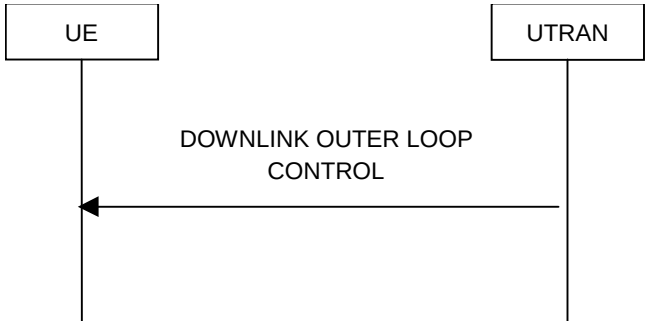

Figure 31: Downlink Outer Loop Control, normal flow

8.2.9.1 General

The downlink outer loop control procedure is used to control the downlink outer loop power control running in the UE.

8.2.9.2 Initiation

The UTRAN may transmit the DOWNLINK OUTER LOOP CONTROL message on the downlink DCCH using AM or UM RLC.

To prevent the UE from increasing its DL SIR target value above its current value, the UTRAN should set the "Downlink Outer Loop Control" IE to "Increase not allowed".

To remove the previous restriction on the downlink outer loop power control, the UTRAN should set the "Downlink Outer Loop Control" IE to "Increase allowed".

8.2.9.3 Reception of DOWNLINK OUTER LOOP CONTROL message by the UE

Upon reception of the DOWNLINK OUTER LOOP CONTROL message, the UE shall perform actions specified in 8.5.7 unless otherwise specified below.

The UE shall read the IE "Downlink Outer Loop Control".

If the IE "Downlink Outer Loop Control" is set to "Increase not allowed", the UE shall prevent its DL SIR target value from increasing above the current value.

If the IE "Downlink Outer Loop Control" is set to "Increase allowed", the UE shall remove the above restriction.

8.2.9.4 Invalid DOWNLINK OUTER LOOP CONTROL message

If the UE receives a DOWNLINK OUTER LOOP CONTROL message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

- Transmit an RRC STATUS message on the uplink DCCH using AM RLC and include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL_ERROR_INFORMATION.
- When the transmission of the RRC STATUS message has been confirmed by RLC, the UE shall resume normal operation as if the invalid DOWNLINK OUTER LOOP CONTROL message has not been received.

8.2.10 Uplink Physical Channel Control

Figure 32: Uplink Physical Channel Control

8.2.10.1 General

The uplink physical channel control procedure is used to control the uplink outer loop power control and timing advance running in the UE in TDD.

8.2.10.2 Initiation

The UTRAN initiates the procedure by transmitting the UPLINK PHYSICAL CHANNEL CONTROL message on the downlink DCCH using AM or UM RLC in order to update parameters for uplink open loop power control in the UE for one CCTrCH or to inform the UE about a new timing advance value to be applied. Especially, uplink interference information measured by the UTRAN can be included for the uplink timeslots used for the CCTrCH.

8.2.10.3 Reception of UPLINK PHYSICAL CHANNEL CONTROL message by the UE

Upon reception of the UPLINK PHYSICAL CHANNEL CONTROL message, the UE shall act upon all received information elements as specified in 8.5.7.

If Uplink DPCH Power Control Info, Constant Value, or list of UL Timeslot Interference IE's are transmitted, this information shall be taken into account by the UE for uplink open loop power control as specified in 8.5.9.

8.3.1 Cell update

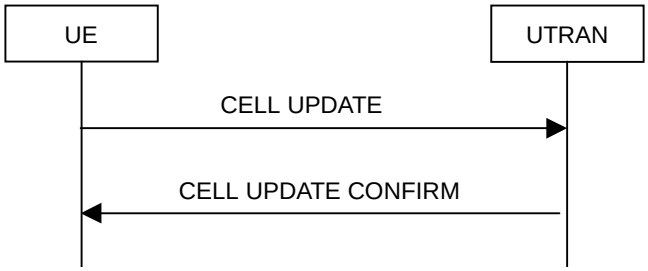

Figure 33: Cell update procedure, basic flow

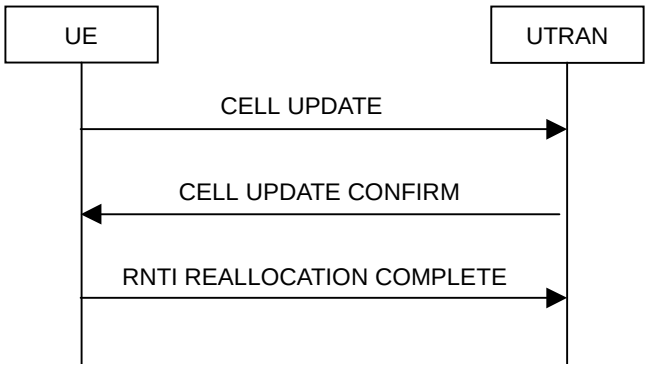

Figure 34: Cell update procedure with RNTI reallocation

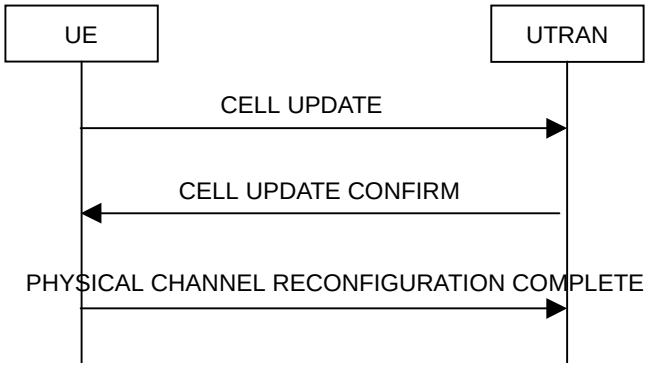

Figure 35: Cell update procedure with physical channel reconfiguration

8.3.1.1 General

The main purpose of the cell update procedure is to update UTRAN with the current cell of the UE after cell reselection in CELL_FACH or CELL_PCH state. It may also be used for supervision of the RRC connection, even if no cell reselection takes place. The cell update procedure can also be used to re-configure the AM RLC entities for the signalling link and the u-plane link. The UE can use a CELL UPDATE message to notify the unrecoverable error in an AM RLC entity for the signalling link (see note).

NOTE: PHYSICAL CHANNEL RECONFIGURATION COMPLETE message is only used when common channels are configured (doesn't apply to dedicated channels)

8.3.1.2 Initiation

A UE in CELL_FACH, CELL_PCH or URA_PCH state may apply the cell update procedure for a number of purposes. The specific requirements the UE shall take into account for each case are specified in the following:

- Upon initiation of the procedure, the UE shall set the variable PROTOCOL_ERROR_INDICATOR to FALSE.

- In CELL_FACH or CELL_PCH state, the UE shall perform the cell update procedure when selecting another cell (cell reselection).
- In CELL_FACH and CELL_PCH state, the UE shall perform the cell update procedure upon expiry of T305 while the UE is in the service area. The UE shall only perform this periodic cell updating if configured by means of the IE "Information for periodical cell and URA update" in System Information Block Type 2. The UE shall initially start timer T305 upon entering CELL_FACH or CELL_PCH state.
- In CELL_PCH state and URA_PCH state, the UE shall initiate the cell update procedure if it wants to transmit UL data.
- In CELL_PCH and URA_PCH state, the UE shall perform the cell update procedure when receiving a PAGING TYPE 1 message as in subclause 8.1.2.3.
- moving to CELL_FACH state, if not already in that state.
- delete any C-RNTI and suspend data transmission on RB 3~~2~~ and upward, if RLC-AM or RLC-UM is used on those radio bearers.
- sending a CELL UPDATE message on the uplink CCCH.
- starting timer T302 and resetting counter V302.

The IE "cell update cause" shall be used as follows:

- In case of cell reselection: "cell reselection";
- In case of periodic cell updating: "periodic cell update";
- In case of UL data transmission: "UL data transmission";
- In case of paging response: "paging response".

If the value of the variable PROTOCOL_ERROR_INDICATOR is TRUE, the UE shall set the IE "Protocol error indicator" to TRUE and include the IE "Protocol error information" set to the value of the variable PROTOCOL_ERROR_INFORMATION.

If the value of the variable PROTOCOL_ERROR_INDICATOR is FALSE, the UE shall set the IE "Protocol error indicator" to FALSE.

The IE "AM_RLC error indication" shall be set when the UE detects unrecoverable error in an AM RLC entity for the signalling link.

The UE shall include an intra-frequency measurement report in the CELL UPDATE message, as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in system information block type 12.

8.3.1.3 T305 expiry and the UE detects that it is out of service area

When the T305 expires and the UE detects that it is out of service area that is specified in subclause 8.5.5, the UE shall

- start timer T307;
- search for cell to camp.

8.3.1.3.1 Re-entering of service area

When the UE detects that it is no longer out of service area before the expiry of T307, the UE shall:

- transmit a CELL UPDATE message on the uplink CCCH

8.3.1.3.2 Expiry of timer T307

When the T307 expires, the UE shall:

- move to idle mode;
- release all dedicated resources;

- indicate a RRC connection failure to the non-access stratum.

Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2.

8.3.1.4 Reception of an CELL UPDATE message by the UTRAN

When the UTRAN receives a CELL UPDATE message, it should transmit a CELL UPDATE CONFIRM message on the downlink DCCH.

When the UTRAN detects AM_RLC error, it waits for CELL UPDATE message from the UE and when the UTRAN receives it, UTRAN commands the UE to re-configure AM_RLC by sending CELL UPDATE CONFIRM message. This procedure can be used not only in the case of AM_RLC error but also in the case that UTRAN wants to re-configure AM_RLC for other reasons such as in the case when SRNC Relocation is initiated without keeping RLC status (current counters) from old SRNC to new SRNC.

8.3.1.5 Reception of the CELL UPDATE CONFIRM message by the UE

Upon receiving the CELL UPDATE CONFIRM message, the UE shall stop timer T302.

The UE shall act upon all received information elements as specified in 8.5.7, unless specified otherwise in the following.

If the CELL UPDATE CONFIRM message includes the IE "CN domain identity" and the IE "NAS system information", the UE shall forward the content of the IE "NAS system information" to the non-access stratum entity of the UE identified by the IE "CN domain identity".

If the CELL UPDATE CONFIRM message includes the IE "URA-Id" the UE shall store this URA identity.

If the CELL UPDATE CONFIRM message does not include IE "new C-RNTI", IE "new U-RNTI", IE "PRACH info" nor IE "Secondary CCPCH info", no RRC response message is sent to the UTRAN.

If the CELL UPDATE CONFIRM message includes the IE "new C-RNTI" and optionally the IE "new U-RNTI" but does not include IE "PRACH info" or IE "Secondary CCPCH info", the UE shall update its identities and transmit an RNTI REALLOCATION COMPLETE message on the uplink DCCH using the PRACH indicated in the broadcast system information.

If the CELL UPDATE CONFIRM message includes the IE "RLC re-configuration indicator (for C-plane)" the UE shall reconfigure the AM RLC entities on C-plane.

If the CELL UPDATE CONFIRM message includes the IE "RLC re-configuration indicator (for U-plane)" the UE shall reconfigure the AM RLC entities on U-plane.

If the CELL UPDATE CONFIRM message includes the IE "PRACH info" and/or the IE "Secondary CCPCH info", the UE shall

- Perform the actions stated in subclauses 8.5.7.6.2 and 8.5.7.6.3.
- update its identities if the CELL UPDATE CONFIRM message includes the IE new C-RNTI" and optionally the IE "new U-RNTI".
- transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using the PRACH indicated in CELL UPDATE CONFIRM message.

The UE shall enter a state according to subclause 8.5.8 applied on the CELL UPDATE CONFIRM message, unless specified otherwise below.

If the IE "Cell update cause" in CELL UPDATE message was set to "UL data transmission" or "paging response", the UE shall remain in CELL_FACH state.

If the IE "Cell update cause" in CELL UPDATE message was set to "periodic cell update" or "cell reselection", the UE shall return to the state it was in before initiating the cell update procedure.

In case none of the above conditions apply, the UE shall return to the state it was in before initiating the cell update procedure.

In case the UE ends in CELL_FACH or CELL_PCH state and periodic cell updating is configured, it shall reset timer T305.

In case the UE does not end in CELL_FACH state, it shall delete its C-RNTI.

If the UE remains in CELL_FACH state and the CELL UPDATE CONFIRM message includes the IE "New C-RNTI" the UE shall then resume data transmission on RB 3~~2~~ and upward, if RLC-AM or RLC-UM is used on those radio bearers.

8.3.1.6 Invalid CELL UPDATE CONFIRM message

If the UE receives an CELL UPDATE CONFIRM message, which contains a protocol error causing the variable PROTOCOL_ERROR_REJECT to be set to TRUE according to clause 16, the UE shall perform procedure specific error handling as follows:

The UE shall check the value of V302 and

- If V302 is smaller or equal than N302, the UE shall set the variable PROTOCOL_ERROR_INDICATOR to TRUE, retransmit a CELL UPDATE message on the uplink CCCH, restart timer T302 and increase counter V302. The IE "Cell update cause" shall be set to the event causing the transmission of the CELL UPDATE message, see subclause 8.3.1.2.

- If V302 is greater than N302, the UE shall enter idle mode. The procedure ends and a connection failure may be indicated to the non-access stratum. Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2.

8.3.1.7 T302 expiry or cell reselection

- Upon expiry of timer T302; and/or

- upon reselection of another UTRA cell when waiting for the CELL UPDATE CONFIRM message,

the UE shall check the value of V302 and:

- If V302 is smaller or equal than N302, the UE shall retransmit a CELL UPDATE message on the uplink CCCH, restart timer T302 and increase counter V302. The IE "Cell update cause" shall be set to the event causing the transmission of the CELL UPDATE message, see subclause 8.3.1.2.

- If V302 is greater than N302, the UE shall enter idle mode. The procedure ends and a connection failure may be indicated to the non-access stratum. Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause 8.5.2

8.3.1.8 Reception of the RNTI REALLOCATION COMPLETE message by the UTRAN

See subclause 8.3.3.4.

8.3.1.9 Reception of the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message by the UTRAN

When the UTRAN receives PHYSICAL CHANNEL RECONFIGURATION message, the procedure ends.

8.5.11 Integrity protection

Integrity protection shall be performed independently on the RRC messages sent on each signalling radio bearer.

For each signalling radio bearer, the UE shall use two integrity protection hyper frame numbers,

- "Uplink HFN";
- "Downlink HFN".

and two message sequence numbers,

- "Uplink RRC Message sequence number";
- "Downlink RRC Message sequence number".

The above information is stored in the variable INTEGRITY_PROTECTION_INFO per signalling radio bearer (RB 0-~~43~~).

8.5.11.1 Integrity protection in downlink

If the UE receives an RRC message on signalling radio bearer with RB identity n, the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" and the IE 'Integrity check info' is present the UE shall:

- check the value of the IE "RRC message sequence number" included in the IE "Integrity check info". If the RRC message sequence number is lower than or equal to the "Downlink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO, the UE shall increment "Downlink HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO with one.
- calculate an expected message authentication code in accordance with 8.5.11.3.
- compare the expected message authentication code with the value of the received IE "message authentication code" contained in the IE 'Integrity check info'.
    - If the expected message authentication code and the received message authentication code are the same, the integrity check is successful.
    - If the calculated expected message authentication code and the received message authentication code differ, the message shall be discarded.

If the UE receives an RRC message on signalling radio bearer with identity n, the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" and the IE 'Integrity check info' is not present the UE shall discard the message.

8.5.11.2 Integrity protection in uplink

Upon transmitting an RRC message using the signalling radio bearer with radio bearer identity n, and the "Status" in the variable INTEGRITY_ PROTECTION_INFO has the value "Started" the UE shall:

- increment "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO with 1. When "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO becomes 0, the UE shall increment "Uplink HFN" for RB#n in the variable INTEGRITY_PROTECTION_INFO with 1;
- calculate a message authentication code in accordance with 8.5.11.3;
- include the IE "Integrity check info" in the message with contents set to the new value of the "Uplink RRC Message sequence number" for RB#n in the variable INTEGRITY_PROTECTION_INFO and the calculated message authentication code.

8.5.11.3 Calculation of message authentication code

The UE shall calculate the message authentication code in accordance with 3G TS 33.102. The UE shall apply all the information elements in the message except the IE "Integrity check info", after encoding, as the signalling data (MESSAGE in TS 33.102). Further details are specified in clause 12.

10.2 Radio Resource Control messages

In connected mode, RB 0,1,2,3 and optionally 4~~3~~ are available for usage by RRC messages using RLC-TM, RLC-UM and RLC-AM on the DCCH and CCCH. The UE and UTRAN shall select radio bearer for RRC messages using RLC-TM, RLC-UM or RLC-AM on the DCCH and CCCH, according to the following:

- RB 0 shall be used for all messages sent on the CCCH.
- RB 1~~0~~ shall be used for all messages sent on the DCCH, when using RLC unacknowledged mode (RLC-UM).
- RB 2~~1~~ shall be used for all messages sent on the DCCH, when using RLC acknowledged mode (RLC-AM), except for the DOWNLINK DIRECT TRANSFER and UPLINK DIRECT TRANSFER messages.
- RB 3~~2~~ or 4~~3~~ shall be used by the DOWNLINK DIRECT TRANSFER and UPLINK DIRECT TRANSFER messages sent on the DCCH in RLC acknowledged mode (RLC-AM), as specified in subclause 8.1.8.
- For RRC messages on the DCCH using RLC transparent mode (RLC-TM), the transparent signalling DCCH shall be used.

10.2.42 RRC CONNECTION SETUP

This message is used by the network to accept the establishment of an RRC connection for an UE, including assignment of signalling link information, transport channel information and optionally physical channel information.

RLC-SAP: UM

Logical channel: CCCH

Direction: UTRAN → UE

Information Element	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
UE Information Elements				
Initial UE identity	MP		Initial UE identity 10.3.3.15	
Activation time	MD		Activation time 10.3.3.1	Default value is "now"
New U-RNTI	MP		U-RNTI 10.3.3.45	
New C-RNTI	OP		C-RNTI 10.3.3.7	
UTRAN DRX cycle length coefficient	MP		DRX cycle length coefficient 10.3.3.9	
Re-establishment timer	MD		Re-establishment timer 10.3.3.31	Default value is the existing value of the re-establishment timer
Capability update requirement	MD		Capability update requirement 10.3.3.2	Default value is defined in subclause 10.3.3.3
RB Information Elements				
Signalling RB information to setup list	MP	~~4~~3 to ~~5~~4		Information for signalling radio bearers, in the order RB 0 up to ~~4~~3.
>Signalling RB information to setup	MP		Signalling RB information to setup 10.3.4.19	
TrCH Information Elements				
Uplink transport channels				
UL Transport channel information common for all transport channels	OP		UL Transport channel information common for all transport channels 10.3.5.21	
Added or Reconfigured TrCH information list	MP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured UL TrCH information	MP		Added or Reconfigured UL TrCH information 10.3.5.2	
Downlink transport channels				
DL Transport channel information common for all transport channels	OP		DL Transport channel information common for	

Information Element	Need	Multi	Type and reference	Semantics description
			all transport channels 10.3.5.7	
Added or Reconfigured TrCH information list	MP	1 to <MaxReconfAddTrCHCount>		
>Added or Reconfigured DL TrCH information	MP		Added or Reconfigured DL TrCH information 10.3.5.1	
PhyCH information elements				
Frequency info	MD		Frequency info 10.3.6.24	Default value is the existing value of frequency information
Uplink radio resources				
Maximum allowed UL TX power	MD		Maximum allowed UL TX power 10.3.6.27	Default value is the existing maximum UL TX power
CHOICE *channel requirement*	OP			At least one spare choice (criticality = reject) required
>Uplink DPCH info			Uplink DPCH info 10.3.6.65	
>PRACH Info (for RACH)			PRACH Info (for RACH) 10.3.6.36	
Downlink radio resources				
Downlink information common for all radio links	OP		Downlink information common for all radio links 10.3.6.17	
Downlink information per radio link list	OP	1 to <MaxRLcount>		Send downlink information for each radio link to be set-up
>Downlink information for each radio link	MP		Downlink information for each radio link 10.3.6.18	

Multi Bound	Explanation
MaxReconfAddTrCHCount	Maximum number of new transport channels to set
MaxRLcount	Maximum number of radio links to be set up

10.3.3.17 Integrity protection activation info

This IE contains the time, in terms of RRC sequence numbers, when a new integrity protection configuration shall be activated for the signalling radio bearers.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RRC message sequence number list	MP	4~~2~~ to 5~~3~~		The RRC sequence number when a new integrity protection configuration shall be applied, for signalling radio bearers in the order RB0, RB1, RB2, RB3, RB4.
>RRC message sequence number	MP		Integer (0..15)	

10.3.4.11 RB identity

An identification number for the radio bearer affected by a certain message.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
RB identity	MP		Integer(0..31)	Values 0-43 shall only be used for signalling radio bearers

10.3.10 Multiplicity values and type constraint values

The following table includes constants that are either used as multi bounds (name starting with “max”) or as high or low value in a type specification (name starting with “lo” or “hi”). Constants are specified only for values appearing more than once in the RRC specification. In case a constant is related to one or more other constants, an expression is included in the “value” column instead of the actual value.

Constant	Explanation	Value
CN information		
maxCNdomains	Maximum number of CN domains	4
maxSignallingFlow	Maximum number of flow identifiers	16
UTRAN mobility information		
maxRAT	Maximum number or Radio Access Technologies	maxOtherRAT + 1
maxOtherRAT	Maximum number or other Radio Access Technologies	15
maxURA	Maximum number of URAs in a cell	8
maxInterSysMessages	Maximum number of Inter System Messages	4
maxRABsetup	Maximum number of RABs to be established	16
UE information		
maxPDCPalgoType	Maximum number of PDCP algorithm types	8
maxDRACclasses	Maximum number of UE classes which would require different DRAC parameters	8
maxFrequencybands	Maximum number of frequency bands supported by the UE as defined in 25.102	4
maxPage1	Number of Ues paged in the Paging Type 1 message	8
maxSystemCapability	Maximum number of system specific capabilities that can be requested in one message.	16
RB information		
maxPredefConfig	Maximum number of predefined configurations	16
maxRB	Maximum number of RBs	32
maxSRBsetup	Maximum number of signalling RBs to be established	8
maxRBperRAB	Maximum number of RBs per RAB	8
maxRBallRABs	Maximum number of non signalling RBs	27
maxRBMuxOptions	Maximum number of RB multiplexing options	8
MaxLoCHperRLC	Maximum number of logical channels per RLC entity	2
TrCH information		
maxTrCH	Maximum number of transport channels used in one direction (UL or DL)	32
maxTrCHpreconf	Maximum number of preconfigured Transport channels, per direction	16
maxCCTrCH	Maximum number of CCTrCHs	8
maxTF	Maximum number of different transport formats that can be included in the Transport format set for one transport channel	32
maxTF-CPCH	Maximum number of TFs in a CPCH set	16
maxTFC	Maximum number of Transport Format Combinations	1024
maxTFCI-1-Combs	Maximum number of TFCI (field 1) combinations	512
maxTFCI-2-Combs	Maximum number of TFCI (field 2) combinations	512
maxCPCHsets	Maximum number of CPCH sets per Node B	16
maxSIBsegm	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		
hiDPCHCode	Highest value of the channelisation code at a given spreading factor on DPCH	Spreading factor - 1
hiPDSCHcode	Highest value of the channelisation code at a given spreading factor on PDSCH	Spreading factor - 1
MaxSubCh	Maximum number of sub-channels on PRACH	12
MaxSubCh	Maximum number of sub-channels on PRACH and PCPCH	12
MaxPCPCH-APsubCH	Maximum number of available sub-channels for AP signature on PCPCH	12
MaxPCPCH-CDsubCH	Maximum number of available sub-channels for CD signature on PCPCH	12
MaxSig	Maximum number of signatures on PRACH	16
MaxPCPCH-APsig	Maximum number of available signatures for AP on PCPCH	16
MaxPCPCH-CDsig	Maximum number of available signatures for CD on PCPCH	16
maxAC	Maximum number of access classes	16
maxASC	Maximum number of access service classes	8
maxASCmap	Maximum number of access class to access service classes mappings	7
maxASCpersist	Maximum number of access service classes for which	6

	persistence scaling factors are specified	
MaxPRACH	Maximum number of PRACHs in a cell	16
MaxFACH	Maximum number of FACHs mapped onto one secondary CCPCHs	8
MaxRL	Maximum number of radio links	8
MaxSCCPCH	Maximum number of secondary CCPCHs per cell	16
MaxDPDCH-UL	Maximum number of DPDCHs per cell	6
MaxDPCH-DLchan	Maximum number of channelisation codes used for DL DPCH	8
MaxDPCHcodesPerTS	Maximum number of codes for one timeslots (TDD)	16
MaxPUSCH	Maximum number of PUSCHs	(8)
MaxPDSCH	Maximum number of PDSCHs	8
MaxPDSCHcodes	Maximum number of codes for PDSCH	16
MaxPDSCH-TFCIgroups	Maximum number of TFCI groups for PDSCH	256
MaxPDSCHcodeGroups	Maximum number of code groups for PDSCH	256
MaxPCPCHs	Maximum number of PCPCH channels in a CPCH Set	64
MaxPCPCH-SF	Maximum number of available SFs on PCPCH	7
MaxTS	Maximum number of timeslots used in one direction (UL or DL)	14
Measurement information		
MaxAdditionalMeas	Maximum number of additional measurements for a given measurement identity	4
MaxMeasEvent	Maximum number of events that can be listed in measurement reporting criteria	8
MaxMeasParEvent	Maximum number of measurement parameters (e.g. thresholds) per event	2
MaxMeasIntervals	Maximum number of intervals that define the mapping function between the measurements for the cell quality Q of a cell and the representing quality value	1
MaxCellMeas	Maximum number of cells to measure	32
MaxFreq	Maximum number of frequencies to measure	8
MaxSat	Maximum number of satellites to measure	16
HiRM	Maximum number that could be set as rate matching attribute for a transport channel	256

11.3.3 User equipment information elements

```
RRC-MessageSequenceNumberList ::=   SEQUENCE (SIZE (42..53)) OF
                                        RRC-MessageSequenceNumber
```

11.3.4 Radio bearer information elements

```
SRB-InformationSetupList2 ::=       SEQUENCE (SIZE (43..54)) OF
                                        SRB-InformationSetup
```

11.4 Constant definitions

```
maxRBallRABs                INTEGER ::= 27
```

13.4.3 INTEGRITY_PROTECTION_INFO

This variable contains information about the current status of the integrity protection in the UE.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Status	M		Enumerated(Not started, Started)	
Failure count	M		Integer(0..N316)	
Signalling radio bearer specific integrity protection information		54		Status information for RB#0-43 in that order
> Uplink HFN	M		Integrity protection hyper frame number	
> Downlink HFN	M		Integrity protection hyper frame number	
> Uplink RRC Message sequence number	M		Integer (0..15)	
> Downlink RRC Message sequence number	M		Integer (0..15)	

14.10.1 RRC Initialisation Information, source RNC to target RNC

When relocation of SRNS is decided to be executed, the RRC shall build the state information, which contains the RRC, RLC and MAC related RRC message information elements, which currently specify the state of the RRC including the radio bearer and transport channel configuration. This "RRC initialisation information, source RNC to target RNC" shall be sent by the source RNC to the target RNC to enable transparent relocation of the RRC and lower layer protocols. Correspondingly, the RRC in the target RNC shall receive the "RRC initialisation information, source RNC to target RNC" and update its state parameters accordingly to facilitate a transparent relocation of SRNS for the UE.

Information Element	Need	Multi	Type and reference	Semantics description
Non RRC IEs				
State of RRC	M		Enumerated (CELL_DCH, CELL_FACH,CELL_PCH, URA_PCH)	
State of RRC procedure	M		Enumerated (await no RRC message, await RRC Connection Re-establishment Complete, await RB Setup Complete, await RB Reconfiguration Complete, await RB Release Complete, await Transport CH Reconfiguration Complete, await Physical CH Reconfiguration Complete, await Active Set Update Complete, await Handover Complete, others)	
Variable RLC parameters	M		?????	
Ciphering related information				
Ciphering status	M		Enumerated(Not started, Started)	
Ciphering info per radio bearer		0 to < numberOfRadioBearers>		
>RB identity	M		RB identity	
>Downlink HFN	M		Ciphering hyperframe number	
>Uplink HFN	M		Ciphering hyperframe number	
>Downlink RLC sequence Number	O		Integer(0..4095)	RLC SN [TS 25.322]
>Uplink RLC sequence number	O		Integer(0..4095)	RLC SN [TS 25.322]
Integrity protection related information				
Integrity protection status	M		Enumerated(Not started, Started)	
Integrity protection failure count	M		Integer(0..N316)	
Signalling radio bearer specific integrity protection information		~~43~~ to <maxSRBcount>		Status information for RB#0-~~43~~ in that order
> Uplink HFN	M		Integrity protection hyper frame number	
> Downlink HFN	M		Integrity protection hyper frame number	
> Uplink RRC Message sequence number	M		Integer (0.. 15)	
> Downlink RRC Message sequence number	M		Integer (0.. 15)	
Implementation specific parameters	O		Bitstring (1..512)	
RRC IEs				
UE Information elements				
U-RNTI	M			
C-RNTI	O			
UE radio access Capability	M			
Other Information elements				
Inter System message (inter system classmark)	O			
UTRAN Mobility Information				

Information Element	Need	Multi	Type and reference	Semantics description
elements				
URA Identifier	O			
CN Information Elements				
CN common GSM-MAP NAS system information	M		GSM-MAP NAS system information	
CN domain related information		0 to <MaxNoCNdomains>		CN related information to be provided for each CN domain
>CN domain identity	O			
>CN domain specific GSM-MAP NAS system info	O		GSM-MAP NAS system information	
Measurement Related Information elements				
For each ongoing measurement reporting		0 to <maxNoOfMeas>		
Measurement Identity Number	M			
Measurement Command	M			
Measurement Type	C Setup			
Measurement Reporting Mode	O			
Additional Measurement Identity number				
CHOICE Measurement				
Intra-frequency				
Intra-frequency cell info		0 to <MaxIntraCells>		
Intra-frequency measurement quantity	O			
Intra-frequency reporting quantity	O			
Reporting cell status	O			
Measurement validity	O			
CHOICE report criteria	O			
Intra-frequency measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Inter-frequency				
Inter-frequency cell info		0 to <MaxInterCells>		
Inter-frequency measurement quantity	O			
Inter-frequency reporting quantity	O			
Reporting cell status	O			
Measurement validity	O			
CHOICE report criteria	O			
Inter-frequency measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Inter-system				
Inter-system cell info		0 to <MaxInterSysCells>		
Inter-system measurement quantity	O			
Inter-system reporting quantity	O			
Reporting cell status	O			
Measurement validity				
CHOICE report criteria				
Inter-system measurement reporting criteria				

Information Element	Need	Multi	Type and reference	Semantics description
Periodical reporting				
No reporting			NULL	
Traffic Volume				
Traffic volume measurement Object	O			
Traffic volume measurement quantity	O			
Traffic volume reporting quantity	O			
CHOICE report criteria	O			
Traffic volume measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Quality				
Quality measurement Object	O			
Quality measurement quantity	O			
Quality reporting quantity	O			
CHOICE report criteria	O			
Quality measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
UE internal				
UE internal measurement quantity	O			
UE internal reporting quantity	O			
CHOICE report criteria	O			
UE internal measurement reporting criteria				
Periodical reporting				
No reporting			NULL	
Radio Bearer Information Elements				
Signalling radio bearer information		43 to <maxSRBcount>		For each signalling radio bearer
>RB identity	M			
>RLC info	M			
>RB mapping info	M			
RAB information		0 to <maxRABcount>		Information for each RAB
>RAB info	M			
>For each Radio Bearer		0 to <maxRBcount>		Information for each radio bearer belonging to this RAB
>>RB Identity	M			
>>RLC Info	M			
>>PDCP Info	O			Absent ifPDCP is not configured for RB
>>PDCP SN Info	C PDCP			
>>RB mapping info	M			
Transport Channel Information Elements				
TFCS (UL DCHs)	O			
TFCS (DL DCHs)	O			
TFC subset (UL DCHs)	O			
TFCS (USCHs)	O			
TFCS (DSCHs)	O			
TFC subset (USCHs)	O			
Uplink transport channels				
For each uplink transport channel		0 to <MaxTrC		

Information Element	Need	Multi	Type and reference	Semantics description
		H>		
>Transport channel identity	M			
>TFS	M			
Downlink transport channels				
For each downlink transport channel		0 to <MaxTrCH>		
>Transport channel identity	M			
>TFS	M			
Measurement report	O			MEASUREMENT REPORT 10.1.15

Condition	Explanation
PDCP	The IE is only present when PDCP Info IE is present

3GPP TSG RAN WG2 #13
Oahu, HI, US, 22nd – 26th of May, 2000

Document R2-001253
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.331	CR	397r1	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN #8	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source:	TSG-RAN WG2
Date:	24.05.2000
Subject:	ASN.1 definitions for RRC information between network nodes
Work item:	

Category: *(only one category shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	X
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:

ASN.1 definitions for RRC information sent between network nodes has been added. Also, the tabular format in clause 14.10 has been updated according to the latest methodology defined in TR 25.921.

There are still some open questions regarding clause 14.10. The upper limit for Integrity protection failure count (N316) has not been defined. Also, the IE Variable RLC parameters has not been defined and hence has not been included in the ASN.1 definitions.

Clauses affected: 11.x (new), 14.10

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

11.4 Constant definitions

```
maxNoOfMeas                    INTEGER ::= 16
```

11.x RRC information between network nodes

```
Internode-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

    HandoverToUTRANCommand,
    MeasurementReport,
    PhysicalChannelReconfiguration,
    RadioBearerReconfiguration,
    RadioBearerRelease,
    RadioBearerSetup,
    TransportChannelReconfiguration,
    UECapabilityInformation
FROM PDU-definitions

    CN-DomainInformationList,
    NAS-SystemInformationGSM-MAP
FROM CoreNetwork-IEs

    URA-Identity
FROM UTRANMobility-IEs

    C-RNTI,
    HyperFrameNumber,
    RRC-MessageSequenceNumber,
    U-RNTI,
    UE-RadioAccessCapability
FROM UserEquipment-IEs

    PDCP-InfoReconfig,
    RAB-Info,
    RB-Identity,
    RB-MappingInfo,
    RLC-Info,
    RLC-SequenceNumber,
    SRB-InformationSetup
FROM RadioBearer-IEs

    TFC-Subset,
    TFCS,
    TransportChannelIdentity,
    TransportFormatSet
FROM TransportChannel-IEs

    MeasurementIdentityNumber,
    MeasurementReportingMode,
    MeasurementType,
    AdditionalMeasurementID-List
FROM Measurement-IEs

    InterSystemMessage
FROM Other-IEs

    maxNoOfMeas,
    maxRABcount,
    maxRBcount,
    maxSRBcount,
    maxTrCH
FROM Constant-definitions;

CipheringInfoPerRB ::=              SEQUENCE {
    dl-HFN                              HyperFrameNumber,
    ul-HFN                              HyperFrameNumber,
    dl-RLC-SequenceNumber               RLC-SequenceNumber,
    ul-RLC-SequenceNumber               RLC-SequenceNumber
}

-- TABULAR: Multiplicity value numberOfRadioBearers has been replaced
```

```
-- with maxRBcount.
CipheringInfoPerRB-List ::=         SEQUENCE (SIZE (1..maxRBcount)) OF
                                        CipheringInfoPerRB

CipheringStatus ::=                 ENUMERATED {
                                        started, notStarted }

ImplementationSpecificParams ::=    BIT STRING (SIZE (1..512))

-- **TODO** Upper limit N316 is undefined! An arbitrary upper limit of
-- 7 has been used here instead.
IntegrityProtectionFailureCount ::= INTEGER (0..7)

IntegrityProtectionStatus ::=       ENUMERATED {
                                        started, notStarted }

MeasurementCommandWithType ::=      CHOICE {
    setup                               MeasurementType,
    modify                              NULL,
    release                             NULL
}

OngoingMeasRep ::=                  SEQUENCE {
    measurementIdentityNumber           MeasurementIdentityNumber,
    measurementCommandWithType          MeasurementCommandWithType,
    -- TABULAR: The CHOICE Measurement in the tabular description is included
    -- in the IE above.
    measurementReportingMode            MeasurementReportingMode            OPTIONAL,
    additionalMeasurementID-List        AdditionalMeasurementID-List        OPTIONAL
}

OngoingMeasRepList ::=              SEQUENCE (SIZE (1..maxNoOfMeas)) OF
                                        OngoingMeasRep

RAB-Information ::=                 SEQUENCE {
    rab-Info                            RAB-Info,
    rb-InformationList                  RB-InformationList                  OPTIONAL
}

RAB-InformationList ::=             SEQUENCE (SIZE (1..maxRABcount)) OF
                                        RAB-Information

RB-Information ::=                  SEQUENCE {
    rb-Identity                         RB-Identity,
    rlc-Info                            RLC-Info,
    pdcp-Info                           PDCP-InfoReconfig                   OPTIONAL,
    rb-MappingInfo                      RB-MappingInfo
}

RB-InformationList ::=              SEQUENCE (SIZE (1..maxRBcount)) OF
                                        RB-Information

-- ************************************************
--
-- Source RNC to target RNC
--
-- ************************************************

SourceRNCToTargetRNC ::=            SEQUENCE {
    -- Non-RRC IEs
        stateOfRRC                      StateOfRRC,
        stateOfRRC-Procedure            StateOfRRC-Procedure,
        cipheringStatus                 CipheringStatus,
        cipheringInfoPerRB-List         CipheringInfoPerRB-List             OPTIONAL,
        integrityProtectionStatus       IntegrityProtectionStatus,
        integrityProtectionFailureCount IntegrityProtectionFailureCount,
        srb-SpecificIntegrityProtInfo   SRB-SpecificIntegrityProtInfoList,
        implementationSpecificParams    ImplementationSpecificParams        OPTIONAL,
    -- User equipment IEs
        u-RNTI                          U-RNTI,
        c-RNTI                          C-RNTI                              OPTIONAL,
        ue-RadioAccessCapability        UE-RadioAccessCapability,
    -- Other IEs
        interSystemMessage              InterSystemMessage                  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
        srb-InformationList             SRB-InformationList,
        rab-InformationList             RAB-InformationList                 OPTIONAL,
    -- Transport channel IEs
        ul-DCH-TFCS                     TFCS                                OPTIONAL,
        dl-DCH-TFCS                     TFCS                                OPTIONAL,
        ul-DCH-TFC-Subset               TFC-Subset                          OPTIONAL,
        usch-TFCS                       TFCS                                OPTIONAL,
        dsch-TFCS                       TFCS                                OPTIONAL,
        usch-TFC-Subset                 TFC-Subset                          OPTIONAL,
        ul-TransChInfoList              TransChInfoList                     OPTIONAL,
        dl-TransChInfoList              TransChInfoList                     OPTIONAL,
    -- Measurement report
        measurementReport               MeasurementReport                   OPTIONAL
}

-- **************************************************
--
-- Source system to target RNC
--
-- **************************************************

SourceSystemToTargetRNC ::=         CHOICE {
    ueCapabilityInformation             UECapabilityInformation,
    spare                               NULL
}

SRB-InformationList ::=             SEQUENCE (SIZE (3..maxSRBcount)) OF
                                        SRB-InformationSetup

SRB-SpecificIntegrityProtInfo ::=   SEQUENCE {
    ul-HFN                              HyperFrameNumber,
    dl-HFN                              HyperFrameNumber,
    ul-RRC-SequenceNumber               RRC-MessageSequenceNumber,
    dl-RRC-SequenceNumber               RRC-MessageSequenceNumber
}

SRB-SpecificIntegrityProtInfoList ::= SEQUENCE (SIZE (3..maxSRBcount)) OF
                                        SRB-SpecificIntegrityProtInfo

StateOfRRC ::=                      ENUMERATED {
                                        cell-DCH, cell-FACH,
                                        cell-PCH, ura-PCH }

StateOfRRC-Procedure ::=            ENUMERATED {
                                        awaitNoRRC-Message,
                                        awaitRRC-ConnectionRe-establishmentComplete,
                                        awaitRB-SetupComplete,
                                        awaitRB-ReconfigurationComplete,
                                        awaitTransportCH-ReconfigurationComplete,
                                        awaitPhysicalCH-ReconfigurationComplete,
                                        awaitActiveSetUpdateComplete,
                                        awaitHandoverComplete,
                                        otherStates }

-- **************************************************
--
-- Target system to source RNC
--
-- **************************************************

TargetSystemToSourceRNC ::=         CHOICE {
    radioBearerSetup                    RadioBearerSetup,
    radioBearerReconfiguration          RadioBearerReconfiguration,
    radioBearerRelease                  RadioBearerRelease,
    transportChannelReconfiguration     TransportChannelReconfiguration,
    physicalChannelReconfiguration      PhysicalChannelReconfiguration,
    handoverToUTRANCommand              HandoverToUTRANCommand
}

TransChInfo ::=                     SEQUENCE {
    transportChannelIdentity            TransportChannelIdentity,
    transportFormatSet                  TransportFormatSet
}
```

```
TransChInfoList ::=                 SEQUENCE (SIZE (1..maxTrCH)) OF
                                        TransChInfo

END
```

14.10 Provision and reception of RRC information between network nodes

14.10.1 RRC Initialisation Information, source RNC to target RNC

When relocation of SRNS is decided to be executed, the RRC shall build the state information, which contains the RRC, RLC and MAC related RRC message information elements, which currently specify the state of the RRC including the radio bearer and transport channel configuration. This "RRC initialisation information, source RNC to target RNC" shall be sent by the source RNC to the target RNC to enable transparent relocation of the RRC and lower layer protocols. Correspondingly, the RRC in the target RNC shall receive the "RRC initialisation information, source RNC to target RNC" and update its state parameters accordingly to facilitate a transparent relocation of SRNS for the UE.

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
Non RRC IEs				
State of RRC	MP		Enumerated (CELL_DCH, CELL_FACH,CELL_PCH, URA_PCH)	
State of RRC procedure	MP		Enumerated (await no RRC message, await RRC Connection Re-establishment Complete, await RB Setup Complete, await RB Reconfiguration Complete, await RB Release Complete, await Transport CH Reconfiguration Complete, await Physical CH Reconfiguration Complete, await Active Set Update Complete, await Handover Complete, others)	
Variable RLC parameters	MP		?????	
Ciphering related information				
Ciphering status	MP		Enumerated(Not started, Started)	
Ciphering info per radio bearer	OP	1~~0~~ to < maxRB~~numberOfRadioBearers~~>		
>RB identity	MP		RB identity 10.3.4.11	
>Downlink HFN	MP		~~Ciphering h~~Hyperframe number 10.3.3.13	
>Uplink HFN	MP		~~Ciphering h~~Hyperframe number 10.3.3.13	
>Downlink RLC sequence Number	OP		Integer(0..4095)	RLC SN [TS 25.322]
>Uplink RLC sequence number	OP		Integer(0..4095)	RLC SN [TS 25.322]
Integrity protection related information				
Integrity protection status	MP		Enumerated(Not started, Started)	
Integrity protection failure count	MP		Integer(0..N316)	
Signalling radio bearer specific integrity protection information	MP	3 to <maxSRBsetup~~co unt~~>		Status information for RB#0-3 in that order
> Uplink HFN	MP		~~Integrity protection h~~Hyper frame number 10.3.3.13	
> Downlink HFN	MP		~~Integrity protection h~~Hyper frame number 10.3.3.13	
> Uplink RRC Message sequence number	MP		Integer (0..15)	
> Downlink RRC Message sequence number	MP		Integer (0..15)	
Implementation specific parameters	OP		Bitstring (1..512)	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
RRC IEs				
UE Information elements				
U-RNTI	MP		U-RNTI 10.3.3.45	
C-RNTI	OP		C-RNTI 10.3.3.7	
UE radio access Capability	MP		UE radio access capability 10.3.3.41	
Other Information elements				
Inter System message (inter system classmark)	OP		Inter-system message 10.8.6	
UTRAN Mobility Information elements				
URA Identifier	OP		URA identity 10.3.2.5	
CN Information Elements				
CN common GSM-MAP NAS system information	MP		~~GSM-MAP~~ NAS system information (GSM-MAP) 10.3.1.9	
CN domain related information	OP	1~~0~~ to <Max~~No~~ CNdomains>		CN related information to be provided for each CN domain
>CN domain identity	~~O~~MP			
>CN domain specific GSM-MAP NAS system info	~~O~~MP		~~GSM-MAP~~ NAS system information (GSM-MAP) 10.3.1.9	
Measurement Related Information elements				
For each ongoing measurement reporting	OP	1~~0~~ to <M~~m~~axNoOfMeas>		
>Measurement Identity Number	MP		Measurement identity number 10.3.7.73	
>Measurement Command	MP		Measurement command 10.3.7.71	
>Measurement Type	CV Setup		Measurement type 10.3.7.75	
>Measurement Reporting Mode	OP		Measurement reporting mode 10.3.7.74	
>Additional Measurements list ~~Identity number~~	OP		Additional measurements list 10.3.7.1	
>CHOICE Measurement				
>>Intra-frequency				
>>>Intra-frequency cell info	OP	~~0 to <MaxIntraCells>~~	Intra-frequency cell info list 10.3.7.33	
>>>Intra-frequency measurement quantity	OP		Intra-frequency measurement quantity 10.3.7.38	
>>>Intra-frequency reporting quantity	OP		Intra-frequency reporting quantity 10.3.7.41	
>>>Reporting cell status	OP		Reporting cell status 10.3.7.88	
>>>Measurement validity	OP		Measurement validity 10.3.7.76	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
>>>CHOICE report criteria	OP			
>>>>Intra-frequency measurement reporting criteria			Intra-frequency measurement reporting criteria 10.3.7.39	
>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>No reporting			NULL	
>>Inter-frequency				
>>>Inter-frequency cell info	OP	~~0 to <MaxInterCells>~~	Inter-frequency cell info list 10.3.7.13	
>>>Inter-frequency measurement quantity	OP		Inter-frequency measurement quantity 10.3.7.18	
>>>Inter-frequency reporting quantity	OP		Inter-frequency reporting quantity 10.3.7.21	
>>>Reporting cell status	OP		Reporting cell status 10.3.7.88	
>>>Measurement validity	OP		Measurement validity 10.3.7.76	
>>>CHOICE report criteria	OP			
>>>>Inter-frequency measurement reporting criteria			Inter-frequency measurement reporting criteria 10.3.7.19	
>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>No reporting			NULL	
>>Inter-system				
>>>Inter-system cell info	OP	~~0 to <MaxInterSysCells>~~	Inter-system cell info list 10.3.7.23	
>>>Inter-system measurement quantity	OP		Inter-system measurement quantity 10.3.7.29	
>>>Inter-system reporting quantity	OP		Inter-system reporting quantity 10.3.7.32	
>>>Reporting cell status	OP		Reporting cell status 10.3.7.88	
>>>Measurement validity	OP		Measurement validity 10.3.7.76	
>>>CHOICE report criteria	OP			
>>>>Inter-system measurement reporting criteria			Inter-system measurement reporting criteria 10.3.7.30	
>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>No reporting			NULL	
>>Traffic Volume				
>>>Traffic volume measurement Object	OP		Traffic volume measurement object 10.3.7.96	
>>>Traffic volume measurement quantity	OP		Traffic volume measurement quantity 10.3.7.97	
>>>Traffic volume reporting quantity	OP		Traffic volume reporting quantity	

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
			10.3.7.100	
>>>CHOICE report criteria	OP			
>>>>Traffic volume measurement reporting criteria			Traffic volume measurement reporting criteria 10.3.7.98	
>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>No reporting			NULL	
>>Quality				
>>>Quality measurement Object	OP		Quality measurement object 10.3.7.82	
>>>Quality measurement quantity	OP		Quality measurement quantity 10.3.7.83	
>>>Quality reporting quantity	OP		Quality reporting quantity 10.3.7.86	
>>>CHOICE report criteria	OP			
>>>>Quality measurement reporting criteria			Quality measurement reporting criteria 10.3.7.84	
>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>No reporting			NULL	
>>UE internal				
>>>UE internal measurement quantity	OP		UE internal measurement quantity 10.3.7.105	
>>>UE internal reporting quantity	OP		UE internal reporting quantity 10.3.7.108	
>>>CHOICE report criteria	OP			
>>>>UE internal measurement reporting criteria			UE internal measurement reporting criteria 10.3.7.106	
>>>>Periodical reporting			Periodical reporting criteria 10.3.7.78	
>>>>No reporting			NULL	
Radio Bearer Information Elements				
Signalling radio bearer information	MP	3 to <maxSRBsetup~~co unt~~>		For each signalling radio bearer
>RB identity	MP		RB identity 10.3.4.11	
>RLC info	MP		RLC info 10.3.4.18	
>RB mapping info	MP		RB mapping info 10.3.4.16	
RAB information	OP	1~~0~~ to <maxRABsetup~~co unt~~>		Information for each RAB
>RAB info	MP		RAB info 10.3.4.8	
>For each Radio Bearer	OP	1~~0~~ to <maxRB ~~count~~>		Information for each radio bearer belonging to this

Information Element/Group Name	Need	Multi	Type and reference	Semantics description
				RAB
>>RB Identity	MP		RB identity 10.3.4.11	
>>RLC Info	MP		RLC info 10.3.4.18	
>>PDCP Info	OP		PDCP info 10.3.4.2	Absent ifPDCP is not configured for RB
>>PDCP SN Info	CV PDCP		PDCP SN info 10.3.4.3	
>>RB mapping info	MP		RB mapping info 10.3.4.16	
Transport Channel Information Elements				
TFCS (UL DCHs)	OP		Transport format combination set 10.3.5.17	
TFCS (DL DCHs)	OP		Transport format combination set 10.3.5.17	
TFC subset (UL DCHs)	OP		Transport format combination subset 10.3.5.19	
TFCS (USCHs)	OP		Transport format combination set 10.3.5.17	
TFCS (DSCHs)	OP		Transport format combination set 10.3.5.17	
TFC subset (USCHs)	OP		Transport format combination subset 10.3.5.19	
Uplink transport channels				
For each uplink transport channel	OP	1~~0~~ to <MaxTrCH>		
>Transport channel identity	MP		Transport channel identity 10.3.5.16	
>TFS	MP		Transport format set 10.3.5.20	
Downlink transport channels				
For each downlink transport channel	OP	1~~0~~ to <MaxTrCH>		
>Transport channel identity	MP		Transport channel identity 10.3.5.16	
>TFS	MP		Transport format set 10.3.5.20	
Measurement report	OP		Measurement report 10.2.15	MEASUREMENT REPORT 10.1.15

Multi Bound	Explanation
MaxNoOfMeas	Maximum number of active measurements, upper limit 16

Condition	Explanation
Setup	The IE is mandatory when the IE Measurement command has the value "Setup", otherwise the IE is not needed.
PDCP	The IE is ~~only present~~mandatory when the PDCP Info IE is present, otherwise the IE is not needed.

14.10.2 RRC initialisation information, source system to target RNC

Information Element	Need	Multi	Type and reference	Semantics description
CHOICE *RRC message*	MP			
>UE CAPABILITY INFORMATION			UE capability information 10.2.57	NOTE: ~~—~~is assumed to contain HFNs as well. At least one spare value with criticality:reject is needed.
~~>Spare~~			~~NULL~~	~~Reserved for future protocol versions~~
				~~NOTE: Other information, such as a list of predefined configurations in the source system, is FFS.~~

NOTE: Other information, such as a list of predefined configurations in the source system, is FFS.

14.10.3 RRC information, target RNC to source system

There are 2 possible cases for RNC relocation:

1. The UE is already under control of target RNC; and
2. The SRNC Relocation with Hard Handover (UE still under control of SRNC), but UE is moving to a location controlled by the target RNC (based on measurement information).

In case 1 the relocation is transparent to the UE and there is no "reverse" direction container. The SRNC just assigns the 'serving' function to the target RNC which then becomes the Serving RNC.

In case 2 the relocation is initiated by SRNC which also provides the RRC Initialization Information to the target RNC. Base on this information, the target RNC prepares the Hard Handover Message ("Physical channel reconfiguration" (subclause 8.2.6), "radio bearer establishment" (subclause 8.2.1), "Radio bearer reconfiguration" (subclause 8.2.2), "Radio bearer release" (subclause 8.2.3) or "Transport channel reconfiguration" (subclause 8.2.4). In addition to this it may be "Handover To Utran Command" fromanother system e.g. GSM. One of these messages is transmitted using a transparent target RNC to source system direction RANAP container to the SRNC. This message is labeled as XXX.

The source RNC then transmits the Handover Message to the UE which then performs the handover.

In the successful case, the UE transmits an XXX COMPLETE message, using the new configuration, to the target RNC.

In case of failure, the UE transmits an XXX FAILURE, using the old configuration, to the source RNC and the RRC context remains unchanged (has to be confirmed and checked with the SRNS relocation procedure).

Information Element	Need	Multi	Type and reference	Semantics description
CHOICE *RRC message*	MP			
> RADIO BEARER SETUP			Radio bearer setup 10.2.29	
> RADIO BEARER RECONFIGURATION			Radio bearer reconfiguration 10.2.23	
>RADIO BEARER RELEASE			Radio bearer release 10.2.26	
> TRANSPORT CHANNEL RECONFIGURATION			Transport channel reconfiguration 10.2.51	
> PHYSICAL CHANNEL RECONFIGURATION			Physical channel reconfiguration 10.2.18	
> HANDOVER TO UTRAN COMMAND			Handover to UTRAN command 10.2.8	