

TSG-RAN Meeting #27
Tokyo, Japan, 09-11 March 2005

RP-050074
Agenda item 9.2.1.1

Source: TSG-RAN WG2

Title: 25.302 and 25.331 CRs to Rel-6 on the introduction of F-DPCH

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem
25.302	149	-	Rel-6	Introduction of F-DPCH	B	6.2.0	6.3.0	R2-050634	RANimp-RABSE-CodeOptFDD
25.331	2528	-	Rel-6	Introduction of F-DPCH	B	6.4.0	6.5.0	R2-050635	RANimp-RABSE-CodeOptFDD

CR-Form-v7

CHANGE REQUEST

25.302 CR 149 # rev **-** # Current version: **6.2.0**

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

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	# Introduction of F-DPCH		
Source:	# RAN WG2		
Work item code:	# RANimp-RABSE-CodeOptFDD	Date:	# 14/02/2005
Category:	# B	Release:	# REL-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	# This CR introduces Fractional DPCH in the specifications		
Summary of change:	# F-DPCH is added in the relevant sections		
Consequences if not approved:	#		

Clauses affected:	# 3.2, 6.2, 8.2, 9.2.14, 10.2.1, 10.3.5.8a(new)										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td style="width: 20px;">X</td> <td style="width: 20px;"></td> </tr> <tr> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> <tr> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	Y	N	X						Other core specifications	# 25.211, 25.212, 25.213, 25.214, 25.215, 25.302, 25.401, 25.402, 25.420, 25.423, 25.427, 25.430, 25.433, 25.133
Y	N										
X											
		Test specifications									
		O&M Specifications									
Other comments:	#										

How to create CRs using this form:

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- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in [3] apply.

3.2 Abbreviations

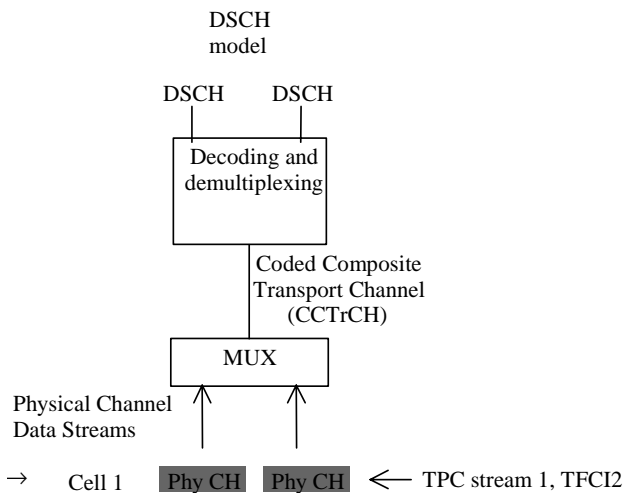
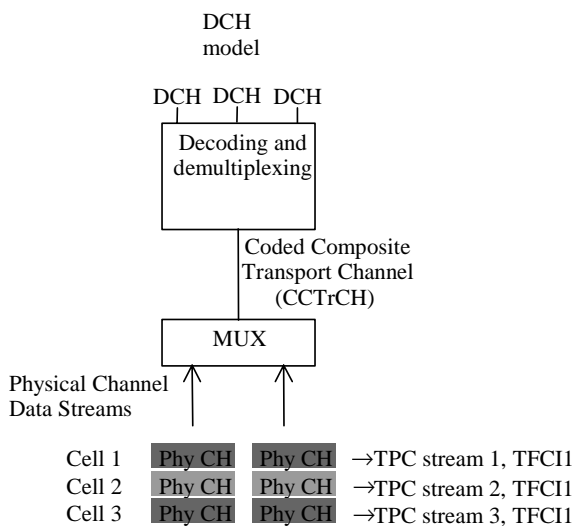
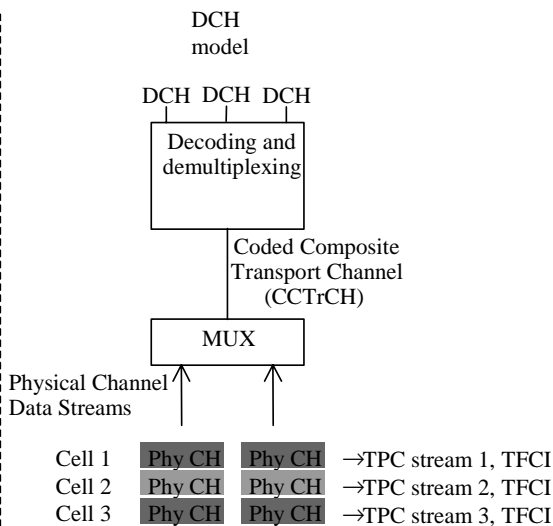
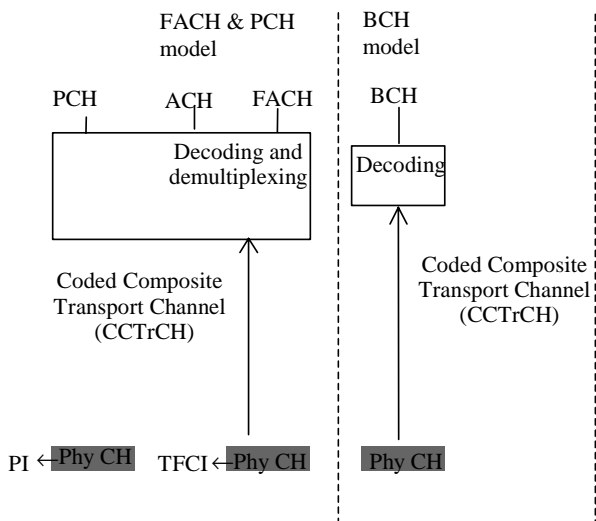
For the purposes of the present document, the following abbreviations apply:

ARQ	Automatic Repeat Request
BCCH	Broadcast Control Channel
BCH	Broadcast Channel
C-	Control-
CC	Call Control
CCC	CPCH Control Command
CCCH	Common Control Channel
CCH	Control Channel
CCTrCH	Coded Composite Transport Channel
CN	Core Network
CQI	Channel Quality Indicator
CRC	Cyclic Redundancy Check
DC	Dedicated Control (SAP)
DCA	Dynamic Channel Allocation
DCCH	Dedicated Control Channel
DCH	Dedicated Channel
DL	Downlink
DRNC	Drift Radio Network Controller
DSCH	Downlink Shared Channel
DTCH	Dedicated Traffic Channel
E-AGCH	E-DCH Absolute Grant Channel
E-DCH	Enhanced DCH
E-DPCCH	E-DCH Dedicated Physical Control Channel
E-DPDCH	E-DCH Dedicated Physical Data Channel
E-HICH	E-DCH HARQ Acknowledgement Indicator Channel
E-RGCH	E-DCH Relative Grant Channel
E-TFC	E-DCH Transport Format Combination
FACH	Forward Link Access Channel
FCS	Fame Check Sequence
FDD	Frequency Division Duplex
F-DPCH	Fractional Dedicated Physical Channel
GC	General Control (SAP)
HARQ	Hybrid Automatic Repeat Request
HS-DPCCH	High Speed Dedicated Physical Control Channel
HS-DSCH	High Speed Downlink Shared Channel
HS-SCCH	High Speed Shared Control Channel
HS-SICH	High Speed Shared Information Channel
HO	Handover
ITU	International Telecommunication Union
kbps	kilo-bits per second
L1	Layer 1 (physical layer)
L2	Layer 2 (data link layer)
L3	Layer 3 (network layer)
LAC	Link Access Control
LAI	Location Area Identity
MAC	Medium Access Control
MM	Mobility Management
Nt	Notification (SAP)
PCCH	Paging Control Channel

PCH	Paging Channel
PDU	Protocol Data Unit
PHY	Physical layer
PhyCH	Physical Channels
RACH	Random Access Channel
RLC	Radio Link Control
RNC	Radio Network Controller
RNS	Radio Network Subsystem
RNTI	Radio Network Temporary Identity
RRC	Radio Resource Control
SAP	Service Access Point
SDU	Service Data Unit
SRNC	Serving Radio Network Controller
SRNS	Serving Radio Network Subsystem
SS	Synchronisation Shift
TCH	Traffic Channel
TDD	Time Division Duplex
TFCI	Transport Format Combination Indicator
TFI	Transport Format Indicator
TFRI	Transport Format and Resource Indicator
TMSI	Temporary Mobile Subscriber Identity
TPC	Transmit Power Control
TSN	Transmission Sequence Number
U-	User-
UE	User Equipment
UL	Uplink
UMTS	Universal Mobile Telecommunications System
URA	UTRAN Registration Area
UTRA	UMTS Terrestrial Radio Access
UTRAN	UMTS Terrestrial Radio Access Network

6.2 Downlink models

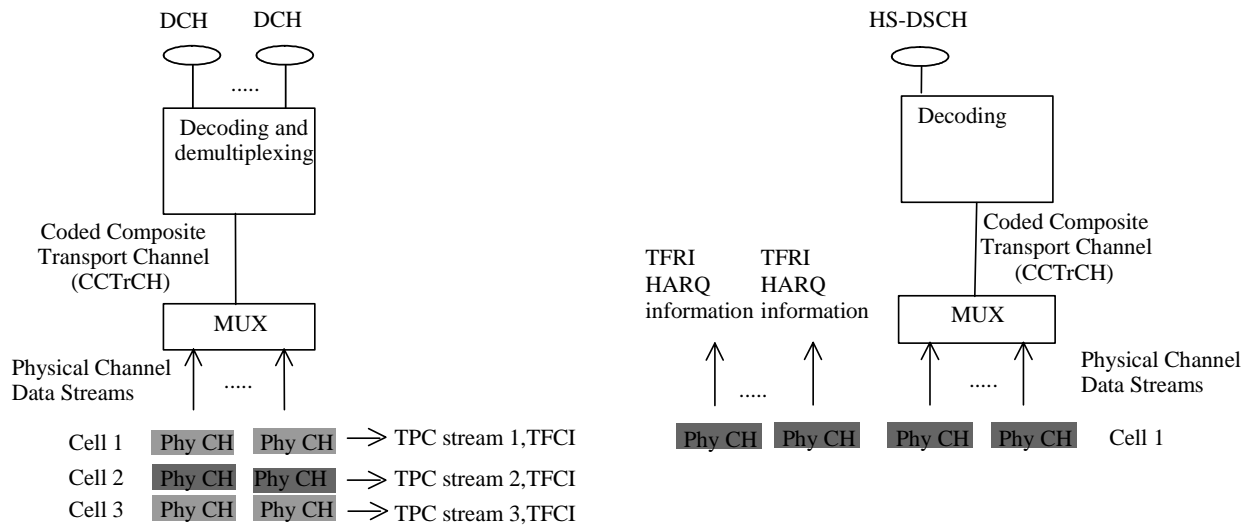
Figure 3 and figure 4 show the model of the UE's physical layer for the downlink in FDD and TDD mode, respectively. Note that there is a different model for each transport channel type.



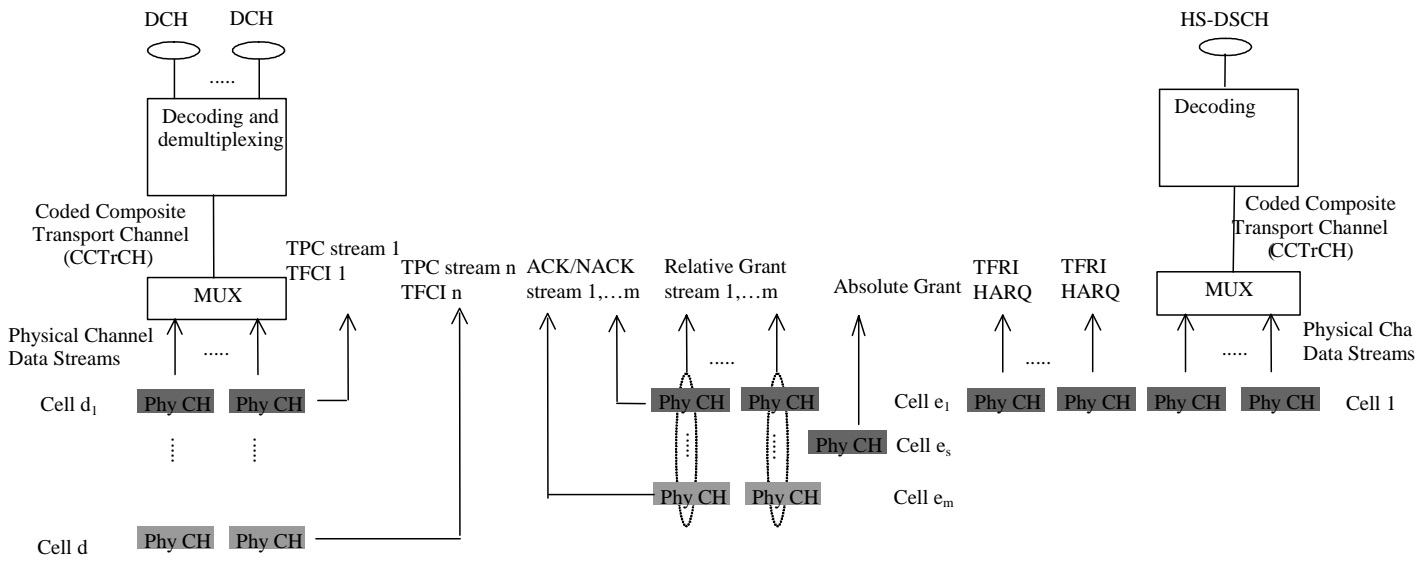
DCH associated with DSCH

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

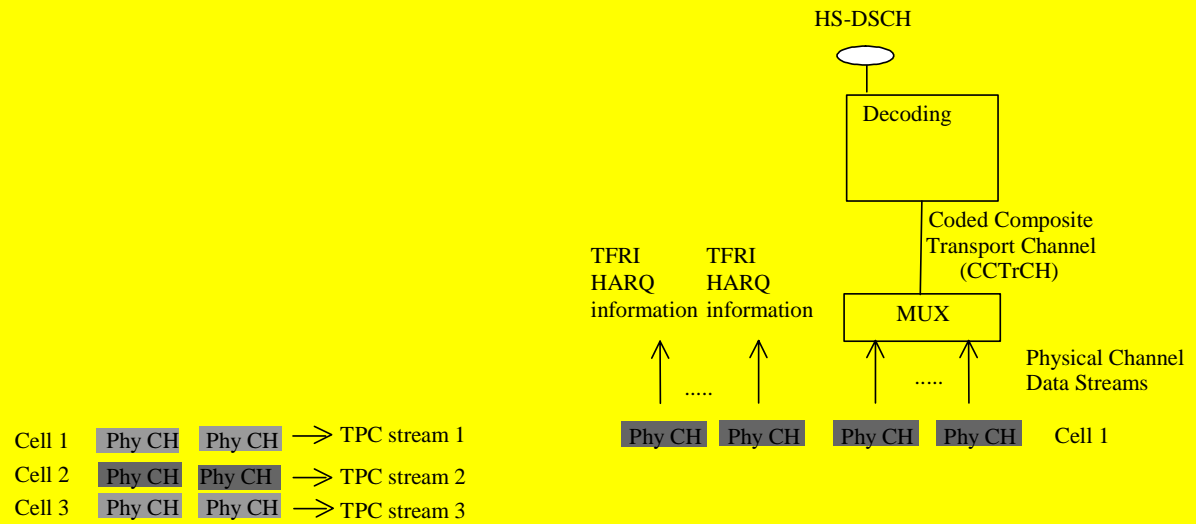
DCH model with HS-DSCH(s)



DCH and HS-DSCH model with E-DCH support



HS-DSCH(s) with F-DPCH model



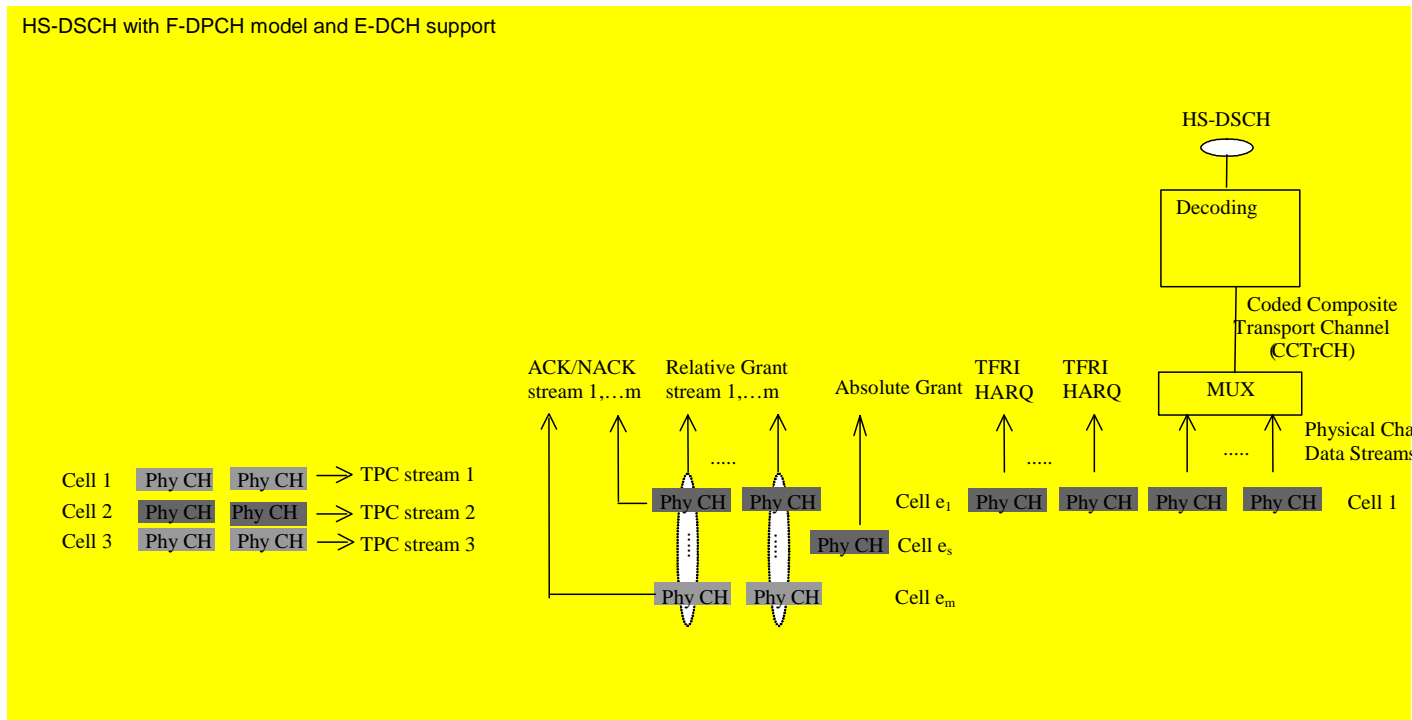
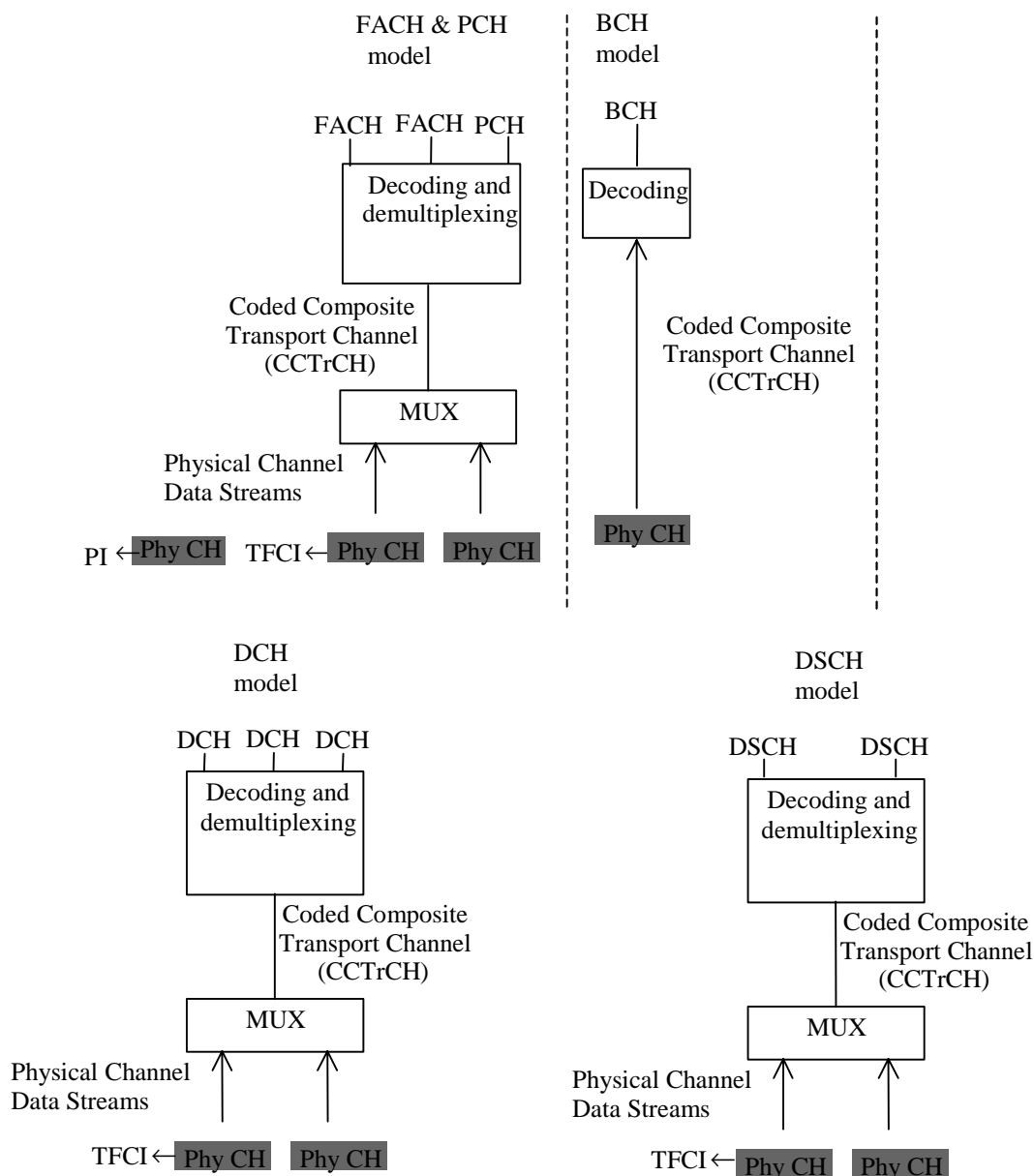


Figure 3: Model of the UE's physical layer - downlink FDD mode



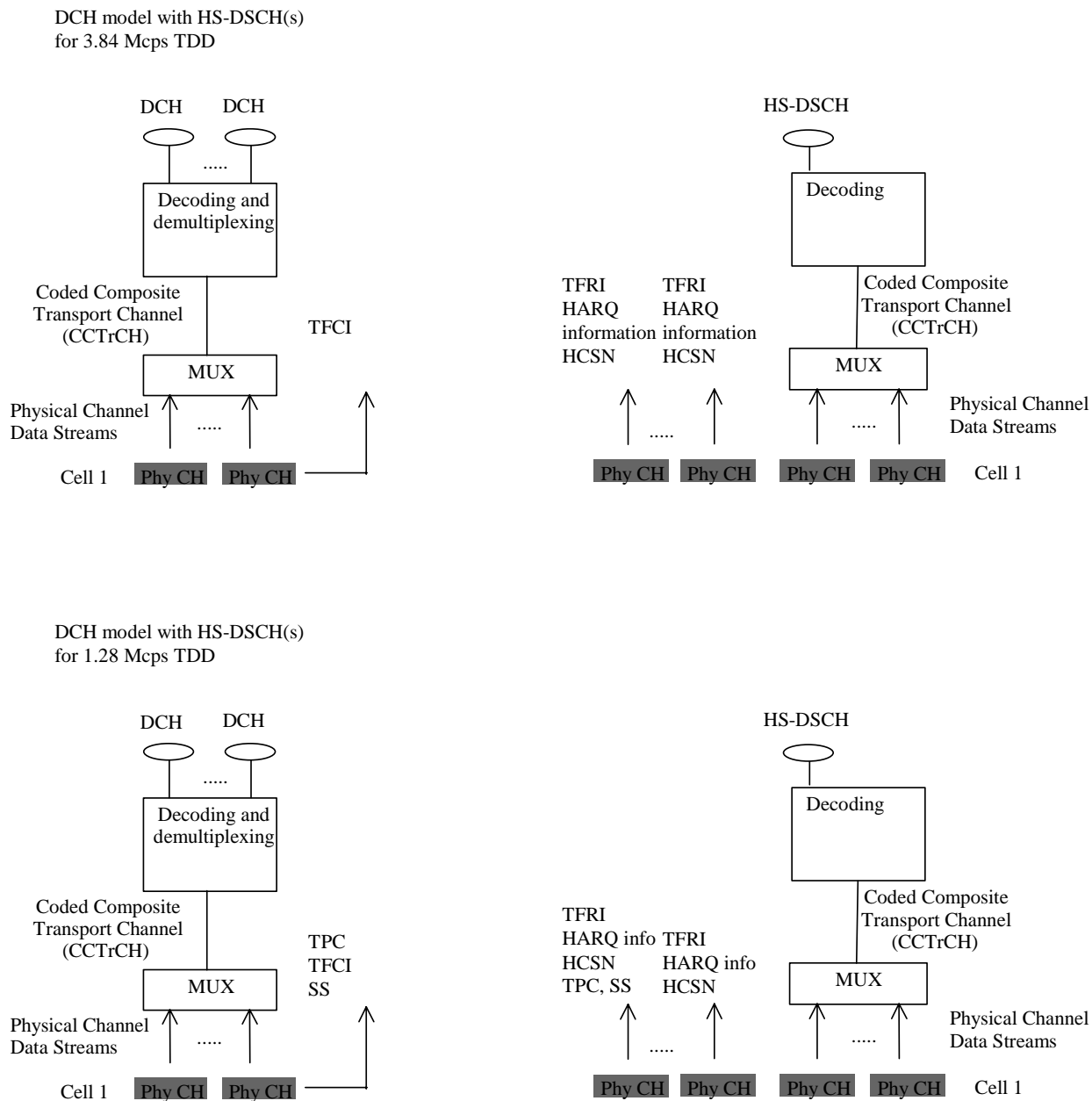


Figure 4: Model of the UE's physical layer – downlink TDD mode

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

In the FDD mode, the differences are mainly due to the soft and softer handover. Further, the pilot, TPC bits and TFCI are time multiplexed onto the same physical channel(s) as the DCHs, [in case of HS-DSCH\(s\) without a DCH in the DL TPC bits are carried onto F-DPCH\(s\)](#). Further, the definition of physical channel data stream is somewhat different from the uplink. In TDD mode the TFCI is time multiplexed onto the same physical channel(s) as the DCHs. The exact locations and coding of the TFCI are signalled by higher layers.

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

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

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

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

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

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

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

In FDD mode, the E-DCH active set can be identical or a subset of the DCH active set.

The E-DCH ACK/NACKs are transmitted by each cell of the E-DCH active set on a physical channel called E-HICH. The E-HICHs of the cells belonging to the same RLS (same MAC-e entity i.e. same Node B) shall have the same content and be combined by the UE. The set of cells transmitting identical ACK/NACK information is the same as the set of cells sending identical TPC bits (excluding the cells which are not in the E-DCH active set).

The E-DCH Absolute Grant is transmitted by a single cell, the Serving E-DCH cell (Cell e_s on figure 4) on a physical channel called E-AGCH. The relationship between the Serving E-DCH cell and the HS-DSCH Serving cell is FFS.

The E-DCH Relative Grants are transmitted by each cell of the E-DCH active set on a physical channel called E-RGCH. The E-RGCHs of the cells belonging to the same RLS shall have the same content and be combined by the UE. There is one Serving E-DCH RLS (containing the Serving E-DCH cell) and optionally one or several Non-serving E-DCH RLS

8.2 FDD Downlink

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

Table 2: FDD Downlink

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

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

	Physical Channel Combination	Transport Channel Combination	Mandatory dependent on UE radio access capabilities	Comment
18	DPCCH + one or more DPDCH + one or more HS-SCCH + zero, one or more HS-PDSCH+ one or more E-HICH + one E-AGCH + one or more E-RGCH	One HS-DSCH coded into a single CCTrCH + one or more DCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum number of DCHs and the maximum channel bit rate are dependent on UE radio access capabilities. In this combination E-DCH is configured in uplink. NOTE 2
19	PCCPCH (neighbour cell) + DPCCH + one or more DPDCH + one or more HS-SCCH + zero, one or more HS-PDSCH + one or more E-HICH + E-AGCH + one or more E-RGCH	BCH (neighbour cell) + one or more DCHs + one HS-DSCH	Depending on UE radio access capabilities	This combination is required by a UE in CELL_DCH state to be able to read the SFN of a neighbouring cell and support "SFN-CFN observed time difference" and "SFN-SFN observed time difference" measurements while HS-DSCH(s) are configured. In this combination E-DCH is configured in uplink. NOTE 2
20	F-DPCH + one or more HS-SCCH + zero, one or more HS-PDSCH	One HS-DSCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum channel bit rate are dependent on UE radio access capabilities. NOTE 2
21	PCCPCH (neighbour cell) + F-DPCH + one or more HS-SCCH + zero, one or more HS-PDSCH	BCH (neighbour cell) + one HS-DSCH	Depending on UE radio access capabilities	This combination is required by a UE in CELL_DCH state to be able to read the SFN of a neighbouring cell and support "SFN-CFN observed time difference" and "SFN-SFN observed time difference" measurements while HS-DSCH(s) are configured. NOTE 2
22	F-DPCH + one or more HS-SCCH + zero, one or more HS-PDSCH+ one or more E-HICH + one E-AGCH + one or more E-RGCH	One HS-DSCH coded into a single CCTrCH	Depending on UE radio access capabilities	The maximum channel bit rate are dependent on UE radio access capabilities. In this combination E-DCH is configured in uplink. NOTE 2
23	PCCPCH (neighbour cell) + F-DPCH + one or more HS-SCCH + zero, one or more HS-PDSCH+ one or more E-HICH + one E-AGCH + one or more E-RGCH	BCH (neighbour cell) + one HS-DSCH	Depending on UE radio access capabilities	This combination is required by a UE in CELL_DCH state to be able to read the SFN of a neighbouring cell and support "SFN-CFN observed time difference" and "SFN-SFN observed time difference" measurements while HS-DSCH(s) are configured. In this combination E-DCH is configured in uplink. NOTE 2

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

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

9.2.14 UE Rx-Tx time difference

This measure is mandatory for UE with FDD mode capability.

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

10.2.1 STATUS PRIMITIVES

10.2.1.1 CPHY-Sync-IND

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

Parameters:

- CCTrCH ID (TDD only).

10.2.1.2 CPHY-Out-of-Sync-IND

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

Parameters:

- CCTrCH ID (TDD only).

10.3.5.8 Downlink DPCH

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

10.3.5.8a F-DPCH (FDD only)

- Transmission Time offset value.
- DL scrambling code:
 - DL Channelisation code.

CHANGE REQUEST

25.331 CR 2528 # rev **-** # Current version: **6.4.0**

For [HELP](#) on using this form, see bottom of this page or look at the pop-up text over the # symbols.

Proposed change affects: UICC apps# ME Radio Access Network Core Network

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Category:	# B	Release:	# REL-6
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Consequences if not approved:	#

Clauses affected:	# 3.2, 8.2.2.3, 8.3.4.2, 8.3.4.5, 8.5.15, 8.6.6.14, 8.6.6.15, 8.6.6.21, 8.6.6.24, 8.6.6.27, 8.6.6.28xx (new), 10.3.6.18xx (new), 10.3.6.21xx(new), 10.3.6.24, 10.3.6.27, 10.3.6.33, 10.3.6.68, 10.3.7.83, 10.3.7.84, 11										
Other specs affected:	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table> Other core specifications	Y	N	X						#	25.211, 25.212, 25.213, 25.214, 25.215, 25.302, 25.401, 25.402, 25.420, 25.423, 25.427, 25.430, 25.433, 25.133
Y	N										
X											
	Test specifications										
	O&M Specifications										
Other comments:	# The ASN.1 proposed in this CR is conflicting with the CR 2534 introducing E-DCH R6 ASN.1.										
	The changes highlighted in "pink" are conflicting with E-DCH ASN.1. When merging the CRs the ASN.1 in E-DCH CR 2534 is correct.										
	The changes highlighted in "yellow" are specific to F-DPCH. When merging the CRs the ASN.1 in this CR is correct.										



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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACK	Acknowledgement
AICH	Acquisition Indicator CHannel
AM	Acknowledged Mode
AS	Access Stratum
ASC	Access Service Class
ASN.1	Abstract Syntax Notation.1
BCCH	Broadcast Control Channel
BCFE	Broadcast Control Functional Entity
BER	Bit Error Rate
BLER	BLock Error Rate
BSS	Base Station Sub-system
CCCH	Common Control Channel
CCPCH	Common Control Physical CHannel
CH	Conditional on history
CM	Connection Management
CN	Core Network
CPCH	Common Packet CHannel
C-RNTI	Cell RNTI
CTCH	Common Traffic CHannel
CTFC	Calculated Transport Format Combination
CV	Conditional on value
DCA	Dynamic Channel Allocation
DCCH	Dedicated Control Channel
DCFE	Dedicated Control Functional Entity
DCH	Dedicated Channel
DC-SAP	Dedicated Control SAP
DGPS	Differential Global Positioning System
DL	Downlink
DRAC	Dynamic Resource Allocation Control
DSCH	Downlink Shared Channel
DTCH	Dedicated Traffic Channel
F-DPCH	Fractional DPCH
FACH	Forward Access Channel
FDD	Frequency Division Duplex
GC-SAP	General Control SAP
GERAN	GSM/EDGE Radio Access Network
GRA	GERAN Registration Area
G-RNTI	GERAN Radio Network Temporary Identity
HCS	Hierarchical Cell Structure
HFN	Hyper Frame Number
H-RNTI	HS-DSCH RNTI
HS-DSCH	High Speed Downlink Shared Channel
ID	Identifier
IDNNS	Intra Domain NAS Node Selector
IE	Information element
IETF	Internet Engineering Task Force
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
ISCP	Interference on Signal Code Power
L1	Layer 1
L2	Layer 2
L3	Layer 3
LAI	Location Area Identity
MAC	Media Access Control
MCC	Mobile Country Code
MD	Mandatory default

MM	Mobility Management
MNC	Mobile Network Code
MP	Mandatory present
NACC	Network Assisted Cell Change
NAS	Non Access Stratum
Nt-SAP	Notification SAP
NW	Network
OP	Optional
PCCH	Paging Control Channel
PCH	Paging Channel
PDCP	Packet Data Convergence Protocol
PDSCH	Physical Downlink Shared Channel
PDU	Protocol Data Unit
PLMN	Public Land Mobile Network
PNFE	Paging and Notification Control Functional Entity
PRACH	Physical Random Access Channel
PSI	Packet System Information
P-TMSI	Packet Temporary Mobile Subscriber Identity
PUSCH	Physical Uplink Shared Channel
QoS	Quality of Service
RAB	Radio access bearer
RACH	Random Access Channel
RAI	Routing Area Identity
RAT	Radio Access Technology
RB	Radio Bearer
RFE	Routing Functional Entity
RL	Radio Link
RLC	Radio Link Control
RNC	Radio Network Controller
RNTI	Radio Network Temporary Identifier
RRC	Radio Resource Control
RSCP	Received Signal Code Power
RSSI	Received Signal Strength Indicator
SAP	Service Access Point
SCFE	Shared Control Function Entity
SCTD	Space Code Transmit Diversity
SF	Spreading Factor
SHCCH	Shared Control Channel
SI	System Information
SIR	Signal to Interference Ratio
S-RNTI	SRNC - RNTI
SSDT	Site Selection Diversity Transmission
TDD	Time Division Duplex
TF	Transport Format
TFCS	Transport Format Combination Set
TFS	Transport Format Set
TM	Transparent Mode
TME	Transfer Mode Entity
TMSI	Temporary Mobile Subscriber Identity
Tr	Transparent
Tx	Transmission
UE	User Equipment
UL	Uplink
UM	Unacknowledged Mode
URA	UTRAN Registration Area
U-RNTI	UTRAN-RNTI
USCH	Uplink Shared Channel
UTRAN	Universal Terrestrial Radio Access Network

8.2.2.3 Reception of RADIO BEARER SETUP or RADIO BEARER RECONFIGURATION or RADIO BEARER RELEASE or TRANSPORT CHANNEL RECONFIGURATION or PHYSICAL CHANNEL RECONFIGURATION message by the UE

The UE shall:

- 1> be able to receive any of the following messages:
 - 2> RADIO BEARER SETUP message; or
 - 2> RADIO BEARER RECONFIGURATION message; or
 - 2> RADIO BEARER RELEASE message; or
 - 2> TRANSPORT CHANNEL RECONFIGURATION message; or
 - 2> PHYSICAL CHANNEL RECONFIGURATION message;
- 1> be able to perform a hard handover and apply physical layer synchronisation procedure A as specified in [29], even if no prior UE measurements have been performed on the target cell and/or frequency.

In case the reconfiguration procedure is used to remove all existing RL(s) in the active set while new RL(s) are established the UE shall:

- 1> if the UE has a pending "TGPS reconfiguration CFN" at the activation time received in the reconfiguration message and the reconfiguration requests a timing re-initialised hard handover (see subclause 8.3.5.1), the UE may:
 - 2> abort the pending CM activation;
 - 2> set the CM_PATTERN_ACTIVATION_ABORTED to TRUE.
- 1> otherwise:
 - 2> set the CM_PATTERN_ACTIVATION_ABORTED to FALSE.

If the UE receives:

- a RADIO BEARER SETUP message; or
- a RADIO BEARER RECONFIGURATION message; or
- a RADIO BEARER RELEASE message; or
- a TRANSPORT CHANNEL RECONFIGURATION message; or
- a PHYSICAL CHANNEL RECONFIGURATION message:

it shall:

- 1> set the variable ORDERED_RECONFIGURATION to TRUE;
- 1> if the UE will enter the CELL_DCH state from any state other than CELL_DCH state at the conclusion of this procedure:
 - 2> perform the physical layer synchronisation procedure A as specified in [29] (FDD only).
- 1> act upon all received information elements as specified in subclause 8.6, unless specified in the following and perform the actions below.

The UE may:

- 1> maintain a list of the set of cells to which the UE has Radio Links if the IE "Cell ID" is present.

The UE may first release the physical channel configuration used at reception of the reconfiguration message. The UE shall then:

- 1> in FDD, if the IE "PDSCH code mapping" is included but the IE "PDSCH with SHO DCH Info" is not included and if the DCH has only one link in its active set:
 - 2> act upon the IE "PDSCH code mapping" as specified in subclause 8.6; and
 - 2> infer that the PDSCH will be transmitted from the cell from which the downlink DPCH is transmitted.
- 1> enter a state according to subclause 8.6.3.3.

In case the UE receives a RADIO BEARER RECONFIGURATION message including the IE "RB information to reconfigure" that only includes the IE "RB identity", the UE shall:

- 1> handle the message as if IE "RB information to reconfigure" was absent.

NOTE: The RADIO BEARER RECONFIGURATION message always includes the IE "RB information to reconfigure". UTRAN has to include it even if it does not require the reconfiguration of any RB.

If after state transition the UE enters CELL_DCH state, the UE shall, after the state transition:

- 1> in FDD; or
- 1> in TDD when "Primary CCPCH Info" is included indicating a new target cell and "New C-RNTI" is not specified:
 - 2> remove any C-RNTI from MAC;
 - 2> clear the variable C_RNTI.

If after state transition the UE leaves CELL_DCH state, the UE shall, after the state transition:

- 1> clear any stored IE "Downlink HS-PDSCH information";
- 1> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25.

In FDD, if after state transition the UE leaves CELL_DCH state, the UE shall, after the state transition:

- 1> remove any DSCH-RNTI from MAC;
- 1> clear the variable DSCH_RNTI.

If the UE was in CELL_DCH state upon reception of the reconfiguration message and remains in CELL_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> in TDD:
 - 2> if "Primary CCPCH Info" is included indicating a new target cell and "New C-RNTI" is not specified:
 - 3> remove any C-RNTI from MAC;
 - 3> clear the variable C_RNTI.
- 1> if "DPCH frame offset" is included for one or more RLs in the active set:
 - 2> use its value to determine the beginning of the DPCH or F-DPCH frame in accordance with the following:
 - 3> if the received IE "DPCH frame offset" is across the value range border compared to the DPCH or F-DPCH frame offset currently used by the UE:
 - 4> consider it to be a request to adjust the timing with 256 chips across the frame border (e.g. if the UE receives value 0 while the value currently used is 38144 consider this as a request to adjust the timing with +256 chips).
 - 3> if after taking into account value range borders, the received IE "DPCH frame offset" corresponds to a request to adjust the timing with a step exceeding 256 chips:

- 4> set the variable INVALID_CONFIGURATION to TRUE.
- 3> and the procedure ends.
- 2> adjust the radio link timing accordingly.

8.3.4 Active set update

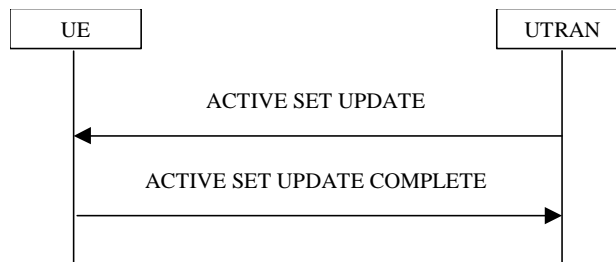


Figure 8.3.4-1: Active Set Update procedure, successful case

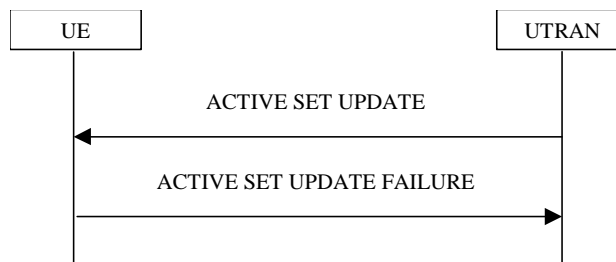


Figure 8.3.4-2: Active Set Update procedure, failure case

8.3.4.1 General

The purpose of the active set update procedure is to update the active set of the connection between the UE and UTRAN. This procedure shall be used in CELL_DCH state. The UE should keep on using the old RLs while configuring the new RLs. Also the UE should keep the transmitter turned on during the procedure. This procedure is only used in FDD mode.

8.3.4.2 Initiation

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

- a) Radio link addition;
- b) Radio link removal;
- c) Combined radio link addition and removal.

In case a) and c), UTRAN should:

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

In all cases, UTRAN should:

- 1> send an ACTIVE SET UPDATE message on downlink DCCH using AM or UM RLC;
- 1> create active sets that contain at least one common radio link across a DPCH or F-DPCH frame boundary as the result of one or multiple (parallel) active set update procedures.

UTRAN should include the following information:

- 1> IE "Radio Link Addition Information": Downlink DPCH information and other optional parameters relevant for the radio links to be added along with the IE "Primary CPICH info" used for the reference ID to indicate which radio link to add. This IE is needed in cases a) and c) listed above;
- 1> IE "Radio Link Removal Information": IE "Primary CPICH info" used for the reference ID to indicate which radio link to remove. This IE is needed in cases b) and c) listed above.

8.3.4.5 Invalid configuration

If any of the following conditions are valid:

- a radio link indicated by the IE "Downlink DPCH info for each RL" in the IE "Radio link addition information" has a different spreading factor than the spreading factor for the radio links in the active set that will be established at the time indicated by the IE "Activation time"; and/or
- a radio link in the IE "Radio link addition information" is also present in the IE "Radio Link Removal Information"; and/or
- the IE "Radio Link Removal Information" contains all the radio links which are part of or will be part of the active set at the time indicated by the IE "Activation time"; and/or
- the IE "TX Diversity Mode" is not set to "none" and it indicates a diversity mode that is different from the one currently used (<STTD>, <closed loop mode1>, or <closed loop mode2>) in all or part of the active set; and/or
- a radio link indicated by the IE "Radio Link Removal Information" does not exist in the active set; and/or
- after the removal of all radio links indicated by the IE "Radio Link Removal Information" and the addition of all radio links indicated by the IE "Radio Link Addition Information" the active set would contain more than the maximum allowed number of radio links; and/or
- after the addition of all radio links indicated by the IE "Radio Link Addition Information" the active set would contain radio links indicated by the IE "Downlink DPCH info for each RL" and radio links indicated by the IE "Downlink F-DPCH info for each RL"; and/or
- the variable INVALID_CONFIGURATION is set to TRUE:

the UE shall:

- 1> keep the active set as it was before the ACTIVE SET UPDATE message was received;
- 1> transmit an ACTIVE SET UPDATE FAILURE message on the DCCH using AM RLC;
- 1> set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE FAILURE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> set the IE "failure cause" to "Invalid configuration";
- 1> When the ACTIVE SET UPDATE FAILURE message has been submitted to lower layers for transmission:
 - 2> the procedure ends on the UE side.

If the following condition is valid:

- the active set update procedure results in active sets that do not contain at least one common radio link before and after a DPCH or F-DPCH frame boundary:

the UE behaviour is not specified.

8.5.15 CFN calculation

The DOFF used in the formulas in this clause concerns the value of IE "Default DPCH Offset Value" received in the message that instructs the UE to enter CELL_DCH state or to perform timing re-initialised hard handover.

8.5.15.1 Initialisation for CELL_DCH state after state transition

When the UE receives any of the messages causing the UE to perform a state transition to CELL_DCH, the UE shall set the CFN in relation to the SFN of the first radio link listed in the IE "Downlink information per radio link list" included in that message according to the following formula:

- for FDD:

$$\text{CFN} = (\text{SFN} - (\text{DOFF} \text{ div } 38400)) \text{ mod } 256$$

where the formula gives the CFN of the downlink DPCH [or F-DPCH](#) frame which starts at the same time as or which starts during the PCCPCH frame with the given SFN.

- for TDD:

$$\text{CFN} = (\text{SFN} - \text{DOFF}) \text{ mod } 256.$$

8.5.15.2 Initialisation in CELL_DCH state at hard handover

When the UE is in CELL_DCH state and receives any of the messages causing the UE to perform a hard handover, the UE shall check the IE "Timing indication" in that message and:

- 1> if IE "Timing indication" has the value "initialise" (i.e. timing re-initialised hard handover):
 - 2> read SFN on target cell identified by the first radio link listed in the IE "Downlink information per radio link list" included in that message;
 - 2> set the CFN according to the following formula:
 - 3> for FDD:

$$\text{CFN} = (\text{SFN} - (\text{DOFF} \text{ div } 38400)) \text{ mod } 256$$

where the formula gives the CFN of the downlink DPCH [or F-DPCH](#) frame which starts at the same time as or which starts during the PCCPCH frame with the given SFN.

- 3> for TDD:

$$\text{CFN} = (\text{SFN} - \text{DOFF}) \text{ mod } 256.$$

- 1> if IE "Timing indication" has the value "maintain" (i.e. timing-maintained hard handover), the UE shall keep CFN with no change due to the hard handover, and only increase CFN (mod 256) by 1 every frame.

8.5.15.3 Initialisation for CELL_FACH

When the UE performs cell selection, re-selection or changes to CELL_FACH state the UE shall set CFN for all common or shared channels according to:

$$\text{CFN} = \text{SFN} \text{ mod } 256$$

where the formula gives the CFN of the downlink common or shared channel frame which starts at the same time as or which starts during the PCCPCH frame with the given SFN.

After the initialisation, the CFN in the UE is increased (mod 256) by 1 every frame.

8.5.15.4 Initialisation after intersystem handover to UTRAN

Upon inter RAT handover to UTRAN the UE shall, regardless of the value received within IE "Timing indication" (if received):

1> read SFN on target cell and set the CFN according to the following formula:

2> for FDD:

$$\text{CFN} = (\text{SFN} - (\text{DOFF} \text{ div } 38400)) \text{ mod } 256$$

where the formula gives the CFN of the downlink DPCH frame which starts at the same time as or which starts during the PCCPCH frame with the given SFN.

2> for TDD:

$$\text{CFN} = (\text{SFN} - \text{DOFF}) \text{ mod } 256.$$

8.6.6.3a Downlink information per radio link list

If the IE "Downlink information per radio link list" is included in a received message, the UE shall:

1> if the active set resulting after the reception of the IE "Downlink information per radio link list" would contain radio links indicated by the IE "Downlink DPCH info for each RL" and radio links indicated by the IE "Downlink F-DPCH info for each RL":

2> set the variable INVALID_CONFIGURATION to TRUE.

1> if the message was received in CELL_DCH state and the UE remains in CELL_DCH state according to subclause 8.6.3.3 applied on the received message:

2> if all radio links included in the IE "Downlink information per radio link list" are part of the current active set:

3> for radio links part of the current active set, and present in the IE "Downlink information per radio link list":

4> update the downlink physical channel configuration according to the IE "Downlink information for each radio link" as specified in subclause 8.6.6.4.

3> for radio links part of the current active set, and absent in the IE "Downlink information per radio link list":

4> not change its current downlink physical channel configuration.

2> if all radio links included in the IE "Downlink information per radio link list" are not part of the current active set:

3> replace all the radio links in the current active set with the radio links in the IE "Downlink information per radio link list", each with a downlink physical channel configuration according to the IE "Downlink information for each radio link" as specified in subclause 8.6.6.4.

NOTE: UTRAN should not mix radio links which are part of the current active set and radio links which are not part of the current active set in the same IE "Downlink information per radio link list". In such cases the UE behaviour is unspecified.

1> otherwise:

2> if the message was received in CELL_FACH state and the UE would transit to CELL_DCH state according to subclause 8.6.3.3 applied on the received message:

3> establish a downlink physical channel configuration for each of the included radio links according to the IE "Downlink information for each radio link" as specified in subclause 8.6.6.4.

8.6.6.4 Downlink information for each radio link

If the IE "Downlink information for each radio link" is included in a received message, the UE shall:

- 1> if the UE would enter CELL_DCH state according to subclause 8.6.3.3 applied on the received message:
 - 2> if the IE "SCCPCH Information for FACH" is included; and
 - 2> if the UE is in FDD mode and is not capable of simultaneous reception of DPCH and Secondary CCPCH:
 - 3> set the variable UNSUPPORTED_CONFIGURATION to TRUE;
 - 2> if the UE is in FDD mode and is capable of simultaneous reception of DPCH and SCCPCH:
 - 3> start to receive the indicated Secondary CCPCH.
 - 2> if the UE is in TDD mode and shared transport channels are assigned to the UE:
 - 3> start to receive the indicated Secondary CCPCH.
 - 2> if the UE is in TDD mode and no shared transport channels are assigned to the UE:
 - 3> set the variable UNSUPPORTED_CONFIGURATION to TRUE.
 - 2> if the IE "Serving HS-DSCH radio link indicator" is set to "TRUE":
 - 3> consider this radio link as the serving HS-DSCH radio link.
 - 2> if the IE "Serving E-DCH radio link indicator" is set to "TRUE":
 - 3> consider this radio link as the serving E-DCH radio link.
 - 2> if the IE "E-AGCH Info" is included:
 - 3> store the newly received E-AGCH configuration.
 - 2> if the IE "E-HICH information" is included:
 - 3> store this E-HICH configuration for the concerning radio link.
 - 2> if the IE "E-RGCH information" is included:
 - 3> store this E-RGCH configuration for the concerning radio link.
 - 2> determine the value for the E_DCH_TRANSMISSION variable and take the corresponding actions as described in subclause 8.5.28.
 - 2> act on the other IEs contained in the IE "Downlink information for each radio link" as specified in subclause 8.6 applied on this radio link.
- 1> in addition, if the message was received in CELL_DCH state and the UE remains in CELL_DCH state according to subclause 8.6.3.3 applied on the received message:
 - 2> if the IE "Serving HS-DSCH radio link indicator" is set to "TRUE":
 - 3> consider this radio link as the serving HS-DSCH radio link;
 - 3> if the serving HS-DSCH radio link was another radio link than this radio link prior to reception of the message and the IE "H-RNTI" is not included:
 - 4> clear the variable H_RNTI.
 - 2> if the IE "Serving HS-DSCH radio link indicator" is set to 'FALSE' and this radio link was considered the serving HS-DSCH radio link prior to reception of this message:

- 3> no longer consider this radio link as the serving HS-DSCH radio link.
 - 2> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25.
 - 2> if the IE "Serving E-DCH radio link indicator" is set to 'TRUE':
 - 3> if the serving E-DCH radio link was another radio link than this radio link prior to reception of the message and the IE "E-RNTI" is not included:
 - 4> clear the variable E_RNTI.
 - 2> if the IE "Serving E-DCH radio link indicator" is set to 'FALSE' and this radio link was considered the serving E-DCH radio link prior to reception of this message:
 - 3> no longer consider this radio link as the serving E-DCH radio link.
 - 2> for each optional IE part of the IE "Downlink information for each radio link" that is not present:
 - 3> do not change its current downlink physical channel configuration corresponding to the IE, which is absent, if not stated otherwise elsewhere.
- NOTE: The Release '99 RADIO BEARER RECONFIGURATION message always includes at least one IE "Downlink information for each radio link" containing the mandatory IEs, even if UTRAN does not require the reconfiguration of any radio link.
- 1> if the UE would enter either the CELL_FACH, CELL_PCH or URA_PCH state according to subclause 8.6.3.3 applied on the received message:
 - 2> if the received message is CELL UPDATE CONFIRM:
 - 3> ignore the IE "Downlink information for each radio link".
 - 2> if the received message is any other message than CELL UPDATE CONFIRM; and
 - 2> if IEs other than the IE "Primary CPICH info" (for FDD) or the IE "Primary CCPCH info" (for TDD) are included in the IE "Downlink information for each radio link":
 - 3> ignore these IEs.
 - 2> act on the other IEs contained in the IE "Downlink information for each radio link" as specified in subclause 8.6 applied on this radio link.

8.6.6.14 DPCH frame offset

If "DPCH frame offset" is included in a message that instructs the UE to enter CELL_DCH state:

1> UTRAN should:

2> if only one Radio Link is included in the message:

3> set "Default DPCH Offset Value" and "DPCH frame offset" respecting the following relation:

$$(\text{Default DPCH Offset Value}) \bmod 38400 = \text{DPCH frame offset}$$

- where the IE values used are the Actual Values of the IEs as defined in clause 11.

2> if more than one Radio Link are included in the message:

3> set "Default DPCH Offset Value" and "DPCH frame offset" respecting the following relation:

$$(\text{Default DPCH Offset Value}) \bmod 38400 = \text{DPCH frame offset}_j$$

- where j indicates the first radio link listed in the message and the IE values used are the Actual Values of the IEs as defined in clause 11.

1> The UE shall:

2> on reception of a message where the above relation between "Default DPCH Offset Value" and "DPCH frame offset" is not respected:

3> set the variable INVALID_CONFIGURATION to true.

If the IE "DPCH frame offset" is included the UE shall:

1> use its value to determine the beginning of the DPCH or F-DPCH frame.

8.6.6.15 DPCH Compressed mode info

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is included, the UE shall for each transmission gap pattern sequence perform the following consistency checks:

- 1> if the UE, according to its measurement capabilities, and for all supported bands of the UTRA mode or RAT associated with the measurement purpose indicated by IE "TGMP", requires UL compressed mode, and CHOICE 'UL/DL mode' indicates 'DL only':
 - 2> set the variable INVALID_CONFIGURATION to TRUE.
- 1> if the UE, according to its measurement capabilities, and for all supported bands of the UTRA mode or RAT associated with the measurement purpose indicated by IE "TGMP", requires DL compressed mode, and CHOICE 'UL/DL mode' indicates 'UL only':
 - 2> set the variable INVALID_CONFIGURATION to TRUE.
- 1> if the UE, according to its measurement capabilities, does not require UL compressed mode for any of supported band of the UTRA mode or RAT associated with the measurement purpose indicated by the IE "TGMP", and CHOICE 'UL/DL mode' indicates 'UL only' or 'UL and DL':
 - 2> set the variable INVALID_CONFIGURATION to TRUE.
- 1> if the UE, according to its measurement capabilities, does not require DL compressed mode for any supported band of the UTRA mode or RAT associated with the measurement purpose indicated by the IE "TGMP", and CHOICE 'UL/DL mode' indicates 'DL only' or 'UL and DL':
 - 2> set the variable INVALID_CONFIGURATION to TRUE.
- 1> if UE already has an active transmission gap pattern sequence that, according to IE "TGMP", has the same measurement purpose, and both patterns will be active (according to the IE "Current TGPS Status Flag" in variable TGPS_IDENTITY) after the new configuration has been taken into use:
 - 2> set the variable INVALID_CONFIGURATION to TRUE.
- 1> if there is any pending "TGPS reconfiguration CFN" or any pending "TGCFN":
 - 2> the UE behaviour is unspecified.

If variable INVALID_CONFIGURATION has value FALSE after UE has performed the checks above, the UE shall:

- 1> if pattern sequence corresponding to IE "TGPSI" is already active (according to "Current TGPS Status Flag") in the variable TGPS_IDENTITY):
 - 2> if the "TGPS Status Flag" in this message is set to "deactivate" for the corresponding pattern sequence:
 - 3> deactivate this pattern sequence at the beginning of the frame, indicated by IE "Activation time" (see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use.
 - 3> set the "Current TGPS Status Flag" for this pattern sequence in the variable TGPS_IDENTITY to "inactive" at the frame, indicated by IE "Activation time" (see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use.
 - 2> if the "TGPS Status Flag" in this message is set to "activate" for the corresponding pattern sequence:
 - 3> deactivate this pattern sequence at the beginning of the frame, indicated by IE "Activation time"(see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use.

NOTE1: The temporary deactivation of pattern sequences for which the status flag is set to "activate" can be used by the network to align the timing of already active patterns with newly activated patterns.

NOTE2: The deactivation of pattern sequences only occurs as a result of RRC messages received by the UE, i.e. the UE does not set the "Current TGPS Status Flag" to "inactive" after the final gap of a finite length pattern sequence.

1> update each pattern sequence to the variable TGPS_IDENTITY according to the IE "TGPSI";

1> update into the variable TGPS_IDENTITY the configuration information defined by IE group "transmission gap pattern sequence configuration parameters";

1> if a F-DPCH is configured

2> not use the IEs "Downlink compressed mode method", "Downlink frame type", "DeltaSIR1", "DeltaSIRafter1", and if included, the IEs "DeltaSIR2", "DeltaSIRafter2";

1> after the instant in which the message is to be executed, as specified in subclause 8.6.3.1:

2> activate the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" in the variable TGPS_IDENTITY is set to "activate" at the time indicated by IE "TGCFN"; and

2> set the "Current TGPS Status Flag" for this pattern sequence in the variable TGPS_IDENTITY to "active".

NOTE1: If the pattern is activated with a message that includes the IE "Activation time", and if the CFN value indicated by the IE "Activation Time" and the CFN value indicated by the TGCFN are included in the same TTI (but not at the TTI boundary) common to all the transport channels that are multiplexed onto the reference CCTrCh (as defined in subclause 8.6.3.1), and if the CFN value indicated by the TGCFN is equal or higher than the CFN value indicated by the IE "Activation Time" (as defined in subclause 8.6.3.1) value, the UE behaviour is not specified.

NOTE2: If the pattern is activated with a message used to perform timing re-initialised hard handover, the UE can start evaluating the activation of the pattern (i.e. compare the value of the CFN in the new configuration with the value of the TGCFN) at any time between the message activation time and the completion of the synchronisation procedure A.

2> if the IE "DPCH compressed mode info" is included in a message used to perform a Hard Handover with change of frequency (see subclause 8.3.5); or

2> if the IE "DPCH compressed mode info" is included in a message used to transfer the UE from Cell_FACH to Cell_DCH, and the cell in which the UE transited from CELL_FACH state is not included in the active set for the CELL_DCH state (see subclause 8.4.1.7.2):

3> not begin the inter-frequency measurement reporting corresponding to the pattern sequence measurement purpose of each activated pattern sequence.

2> else:

3> begin the inter-frequency measurement reporting corresponding to the pattern sequence measurement purpose of each activated pattern sequence.

2> begin the inter-RAT measurement reporting corresponding to the pattern sequence measurement purpose of each activated pattern sequence;

2> if the new configuration is taken into use at the same CFN as indicated by IE "TGCFN":

3> start the concerned pattern sequence immediately at that CFN.

1> monitor if the parallel transmission gap pattern sequences create an illegal overlap, and in case of overlap, take actions as specified in subclause 8.2.11.2.

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is not included, the UE shall:

1> if, as the result of this message, UE will have more than one transmission gap pattern sequence with the same measurement purpose active (according to IEs "TGMP" and "Current TGPS Status Flag" in variable TGPS_IDENTITY):

2> set the variable CONFIGURATION_INCOMPLETE to TRUE.

- 1> if there is any pending "TGPS reconfiguration CFN" or any pending "TGCFN":
 - 2> the UE behaviour is unspecified.
 - 1> if pattern sequence corresponding to IE "TGPSI" is already active (according to "Current TGPS Status Flag" in the variable TGPS_IDENTITY):
 - 2> if the "TGPS Status Flag" in this message is set to "deactivate" for the corresponding pattern sequence:
 - 3> deactivate this pattern sequence at the beginning of the frame, indicated by IE "Activation time"(see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use;
 - 3> set the "Current TGPS Status Flag" for this pattern sequence in the variable TGPS_IDENTITY to "inactive" at the frame, indicated by IE "Activation time"(see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use.
 - 2> if the "TGPS Status Flag" in this message is set to "activate" for the corresponding pattern sequence:
 - 3> deactivate this pattern sequence at the beginning of the frame, indicated by IE "Activation time"(see subclause 8.6.3.1) received in this message, when the new configuration received in this message is taken into use.
- NOTE1: The temporary deactivation of pattern sequences for which the status flag is set to "activate" can be used by the network to align the timing of already active patterns with newly activated patterns.
- NOTE2: The deactivation of pattern sequences only occurs as a result of RRC messages received by the UE, i.e. the UE does not set the "Current TGPS Status Flag" to "inactive" after the final gap of a finite length pattern sequence.
- 1> after the instant in which the message is to be executed, as specified in subclause 8.6.3.1:
 - 2> activate the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" at the time indicated by IE "TGCFN"; and
- NOTE1: If the pattern is activated with a message that includes the IE "Activation time", and if the CFN value indicated by the IE "Activation Time" and the CFN value indicated by the TGCFN are included in the same TTI (but not at the TTI boundary) common to all the transport channels that are multiplexed onto the reference CCTrCh (as defined in subclause 8.6.3.1), and if the CFN value indicated by the TGCFN is equal or higher than the CFN value indicated by the IE "Activation Time" (as defined in subclause 8.6.3.1) value, the UE behaviour is not specified.
- NOTE2: If the pattern is activated with a message used to perform timing re-initialised hard handover, the UE can start evaluating the activation of the pattern (i.e. compare the value of the CFN in the new configuration with the value of the TGCFN) at any time between the message activation time and the completion of the synchronisation procedure A.
- 2> set the "Current TGPS Status Flag" for this pattern sequence in the variable TGPS_IDENTITY to "active";
 - 2> if the IE "DPCH compressed mode info" is included in a message used to perform a Hard Handover with change of frequency (see subclause 8.3.5); or
 - 2> if the IE "DPCH compressed mode info" is included in a message used to transfer the UE from Cell_FACH to Cell_DCH, and the cell in which the UE transited from CELL_FACH state is not included in the active set for the CELL_DCH state (see subclause 8.4.1.7.2):
 - 3> not begin the inter-frequency measurement reporting corresponding to the pattern sequence measurement purpose of each activated pattern sequence.
 - 2> else:
 - 3> begin the inter-frequency measurement reporting corresponding to the pattern sequence measurement purpose of each activated pattern sequence.
 - 2> begin the inter-RAT measurement reporting corresponding to the pattern sequence measurement purpose of each activated pattern sequence;

- 2> if the new configuration is taken into use at the same CFN as indicated by IE "TGCFN":
 - 3> start the concerned pattern sequence immediately at that CFN.

For transmission gap pattern sequences stored in variable TGPS_IDENTITY, but not identified in IE "TGPSI" (either due to the absence of the IE "DPCH compressed mode info" in the received message or due to not receiving the corresponding TGPSI value in the IE "DPCH compressed mode info"), the UE shall:

- 1> if the received message implies a timing re-initialised hard handover (see subclause 8.3.5.1):
 - 2> deactivate such transmission gap pattern sequences at the beginning of the frame, indicated by IE "Activation time" (see subclause 8.6.3.1) received in this message; and
 - 2> set IE "Current TGPS Status Flag" in corresponding UE variable TGPS_IDENTITY to 'inactive'.
- 1> if the received message not implies a timing re-initialised hard handover (see subclause 8.3.5.1):
 - 2> continue such transmission gap pattern sequence according to IE "Current TGPS Status Flag" in the corresponding UE variable TGPS_IDENTITY.

Uplink and downlink compressed mode methods are described in [27]. For UL "higher layer scheduling" compressed mode method and transport format combination selection, see [15].

8.6.6.21 Default DPCH Offset Value

The UE shall:

1> if the IE "Default DPCH Offset Value" is included:

2> use its value to determine [the](#) Frame Offset and Chip Offset [of DPCH or F-DPCH](#) from the SFN timing in a cell.

8.6.6.24 Tx Diversity Mode

If the IE "Tx Diversity Mode" is included the UE shall:

- 1> if the value of the IE "Tx Diversity Mode" is STTD:
 - 2> configure the Layer 1 to use the Tx diversity mode indicated in the IE "Tx Diversity Mode" for the radio links for which the IE "Closed loop timing adjustment mode" is included, ignoring the actual value of IE "Closed loop timing adjustment mode".
- 1> if the value of the IE "Tx Diversity Mode" is closed loop mode 1 or closed loop mode 2:
 - 2> configure the Layer 1 to use the Tx diversity mode indicated in the IE "Tx Diversity Mode" for the radio links for which the IE "Closed loop timing adjustment mode" is included, using the actual value of the IE "Closed loop timing adjustment mode".
- 1> if the value of the IE "Tx Diversity Mode" is "none":
 - 2> configure the Layer 1 not to use Tx diversity for all radio links in the active set.

If the IE "Tx Diversity Mode" is not included, the UE shall:

- 1> continue to use the already configured Tx diversity mode;
- 1> in case no Tx diversity mode has been configured:
 - 2> do not apply Tx diversity.

For HS-SCCH, the UE shall:

- 1> if the DPCH associated with a HS-SCCH is using either open or closed loop transmit diversity on the radio link transmitted from the HS-DSCH serving cell:
 - 2> use STTD for this HS-SCCH;
- 1> if the F-DPCH associated with a HS-SCCH is using open loop transmit diversity on the radio link transmitted from the HS-DSCH serving cell:
 - 2> use STTD for this HS-SCCH;

1> otherwise:

- 2> not use Tx diversity for this HS-SCCH.

8.6.6.27 Downlink information common for all radio links

If the IE "Downlink information common for all radio links " is included the UE shall:

1> if the IE "Downlink DPCH info common for all RL" is included:

2> perform actions as specified in subclause 8.6.6.28.

1> if the IE "Downlink F-DPCH info common for all RL" is included:

2> perform actions as specified in subclause 8.6.6.28XX.

1> if the IE choice "mode" is set to 'FDD':

2> perform actions for the IE "DPCH compressed mode info" as specified in subclause 8.6.6.15;

2> perform actions for the IE "Tx Diversity mode" as specified in subclause 8.6.6.24;

2> if the IE "SSDT information" is included:

3> perform actions as specified in subclause 8.6.6.25.

1> if the IE "Default DPCH Offset value" is included:

2> perform actions as specified in the subclause 8.6.6.21.

1> if the IE "MAC-hs reset indicator" is included:

2> reset the MAC-hs entity [15].

8.6.6.28XX Downlink F-DPCH info common for all radio links

If the IE "Downlink F-DPCH info common for all RL" is included the UE shall:

1> if the IE "Downlink F-DPCH info common for all RL" is included in a message used to perform a hard handover:

2> perform actions for the IE "Timing indication" as specified in subclause 8.5.15.2, and subclause 8.3.5.1 or 8.3.5.2.

1> if the IE "Downlink DPCH power control information" is included:

2> perform actions for the IE "DPC Mode" according to [29].

10.3.6.18 Downlink DPCH info common for all RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Timing Indication	MP		Enumerated(Initialise, Maintain)	NOTE	
CFN-targetSFN frame offset	CV- <i>TimInd</i>		Integer(0..255)	In frame	
Downlink DPCH power control information	OP		Downlink DPCH power control information 10.3.6.23		
MAC-d HFN initial value	CV- <i>Message</i>		Bit string(24)		REL-4
CHOICE <i>mode</i>	MP				
>FDD					
>>Power offset $P_{Pilot-DPCH}$	MP		Integer(0..24)	Power offset equals $P_{Pilot} - P_{DPCH}$, range 0..6 dB, in steps of 0.25 dB	
>>Downlink rate matching restriction information	OP		Downlink rate matching restriction information 10.3.6.31	If this IE is set to "absent", no Transport CH is restricted in TFI.	
>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)		
>>Fixed or Flexible Position	MP		Enumerated (Fixed, Flexible)		
>>TFCI existence	MP		Boolean	TRUE indicates that TFCI is used. When spreading factor is less than or equal to 64, FALSE indicates that TFCI is not used and therefore DTX is used in the TFCI field.	
>>CHOICE <i>SF</i>	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). In ASN.1 choice "Otherwise" is not explicitly available as all values are available, it is implied by the use of any value other than 128 or 256.	
>TDD				(no data)	

CHOICE <i>SF</i>	Condition under which the given <i>SF</i> is chosen
SF=128	"Spreading factor" is set to 128
SF=256	"Spreading factor" is set to 256
Otherwise	"Spreading factor" is set to a value distinct from 128 and 256

Condition	Explanation
<i>TimInd</i>	This IE is optional if the IE "Timing Indication" is set to "Initialise". Otherwise it is not needed.
<i>Message</i>	This IE is not needed if the IE "Downlink DPCH info common for all RL" is included in RRC CONNECTION SETUP or HANDOVER TO UTRAN COMMAND messages. Otherwise it is optional.

NOTE: Within the HANDOVER TO UTRAN COMMAND message, only value "initialise" is applicable.

10.3.6.18XX Downlink F-DPCH info common for all RL

NOTE: For FDD only.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>	<u>Version</u>
<u>Timing Indication</u>	<u>MP</u>		<u>Enumerated (Initialise, Maintain)</u>		<u>REL-6</u>
<u>CFN-targetSFN frame offset</u>	<u>CV- <i>TimInd</i></u>		<u>Integer(0..255)</u>	<u>In frame</u>	<u>REL-6</u>
<u>Downlink F-DPCH power control information</u>	<u>OP</u>		<u>Downlink DPCH power control information 10.3.6.23</u>		<u>REL-6</u>
<u>TPC command error rate target</u>	<u>OP</u>		<u>Real (0.005..0.1 by step of 0.005)</u>		<u>REL-6</u>

<u>Condition</u>	<u>Explanation</u>
<u><i>TimInd</i></u>	<u>This IE is optional if the IE "Timing Indication" is set to "Initialise". Otherwise it is not needed.</u>

10.3.6.21 Downlink DPCH info for each RL

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE mode	MP				
>FDD					
>>Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62		
>>DPCH frame offset	MP		Integer(0..38144 by step of 256)	Offset (in number of chips) between the beginning of the P-CCPCH frame and the beginning of the DPCH frame. This is called $\tau_{DPCH,n}$ in [26]	
>>Secondary CPICH info	OP		Secondary CPICH info 10.3.6.73		
>>DL channelisation code	MP	1 to <maxDPCH-DLchan>		For the purpose of physical channel mapping [27] the DPCHs are numbered, starting from DPCH number 1, according to the order that they are contained in this IE.	
>>>Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH	
>>>Spreading factor	MP		Integer(4, 8, 16, 32, 64, 128, 256, 512)	Defined in CHOICE SF512-AndCodenumbr with "code number" in ASN.1	
>>>Code number	MP		Integer(0..Spreading factor - 1)		
>>>Scrambling code change	CH-SF/2		Enumerated (code change, no code change)	Indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'.	
>>TPC combination index	MP		TPC combination index 10.3.6.85		
>>Power offset $P_{TPC-DPDCH}$	OP		Integer (0..24)	Power offset equals $P_{TPC-DPDCH}$, range 0..6 dB, in steps of 0.25 dB	REL-5
>>SSDT Cell Identity	OP		SSDT Cell Identity 10.3.6.76		
>>Closed loop	CH-		Integer(1, 2)	It is present if Tx	

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
timing adjustment mode	<i>TxDiversity Mode</i>			Diversity is used in the radio link.	
>TDD					
>>DL CCTrCh List	OP	1..<maxCCTrCH>		DL physical channels to establish or reconfigure list.	
>>>TFCS ID	MD		Integer(1..8)	Identity of this CCTrCh. Default value is 1	
>>>Time info	MP		Time Info 10.3.6.83		
>>>Common timeslot info	MD		Common Timeslot Info 10.3.6.10	Default is the current Common timeslot info	
>>>Downlink DPCH timeslots and codes	MD		Downlink Timeslots and Codes 10.3.6.32	Default is to use the old timeslots and codes.	
>>>UL CCTrCH TPC List	MD	0..<maxCCTrCH>		UL CCTrCH identities for TPC commands associated with this DL CCTrCH. Default is previous list or all defined UL CCTrCHs. This list is not required for 1.28 Mcps TDD and is to be ignored by the UE.	
>>>>UL TPC TFCS Identity	MP		Transport Format Combination Set Identity 10.3.5.21		
>>DL CCTrCH List to Remove	OP	1..<maxCCTrCH>		DL physical channels to remove list.	
>>>TFCS ID	MP		Integer(1..8)		

Condition	Explanation
<i>SF/2</i>	The information element is mandatory present if the UE has a compressed mode pattern sequence configured in variable TGPS_IDENTITY or included in the message including IE "Downlink DPCH info for each RL", which is using compressed mode method "SF/2". Otherwise the IE is not needed.
<i>TxDiversity Mode</i>	This IE is mandatory present if any TX Diversity Mode is used on the radio link, i.e. if STTD, "closed loop mode 1" or "closed loop mode 2" is used on the radio link. Otherwise the IE is not needed.

10.3.6.21XX Downlink F-DPCH info for each RL

NOTE: For FDD only.

<u>Information Element/Group name</u>	<u>Need</u>	<u>Multi</u>	<u>Type and reference</u>	<u>Semantics description</u>	<u>Version</u>
Primary CPICH usage for channel estimation	MP		Primary CPICH usage for channel estimation 10.3.6.62		REL-6
F-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 F-DPCH frame. This is called $\tau_{F-DPCH,n}$ in [26]	REL-6
Secondary CPICH info	OP		Secondary CPICH info 10.3.6.73		REL-6
Secondary scrambling code	MD		Secondary scrambling code 10.3.6.74	Default is the same scrambling code as for the Primary CPICH	REL-6
Code number	MP		Integer (0..255)		REL-6
TPC combination index	MP		TPC combination index 10.3.6.85		REL-6

10.3.6.24 Downlink information common for all radio links

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE DPCH info	OP				REL-6
>Downlink DPCH info common for all RL	MP OP		Downlink DPCH info common for all RL 10.3.6.18		
>Downlink F-DPCH info common for all RL	MP		Downlink F-DPCH info common for all RL 10.3.6.18XX		REL-6
CHOICE mode	MP				
>FDD					
>>DPCH compressed mode info	OP		DPCH compressed mode info 10.3.6.33		
>>>TX Diversity Mode	MD		TX Diversity Mode 10.3.6.86	Default value is the existing value of TX Diversity mode	
>>>SSDT information	OP		SSDT information 10.3.6.77		
>TDD				(no data)	
>>CHOICE TDD option	MP				REL-4
>>>3.84 Mcps TDD				(no data)	REL-4
>>>1.28 Mcps TDD					REL-4
>>>>TSTD indicator	MP		TSTD indicator 10.3.6.85a		REL-4
Default DPCH Offset Value	OP		Default DPCH Offset Value, 10.3.6.16		
MAC-hs reset indicator	CV- messageType		Enumerated (true)	TRUE Indicates the MAC-hs entity needs to be reset.	REL-5

Condition	Explanation
Message Type	The IE is not needed in the HANDOVER TO UTRAN COMMAND and the RRC CONNECTION SETUP messages. Otherwise, it is optional.

10.3.6.27 Downlink information for each radio link

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Choice mode	MP				
>FDD					
>>Primary CPICH info	MP		Primary CPICH info 10.3.6.60		
>>Cell ID	OP		Cell ID 10.3.2.2		REL-4
>>PDSCH with SHO DCH Info	OP		PDSCH with SHO DCH Info 10.3.6.47		
>>PDSCH code mapping	OP		PDSCH code mapping 10.3.6.43		
>>Serving HS-DSCH radio link indicator	CV- <i>not_rrcConnectionSetup</i>		Boolean	The value "TRUE" indicates that this radio link is the serving HS-DSCH radio link	REL-5
>> Serving E-DCH radio link	CV- <i>not_rrcConnectionSetup</i>		Boolean	The value "TRUE" indicates that this radio link is the serving E-DCH radio link	REL-6
>TDD					
>>Primary CCPCH info	MP		Primary CCPCH info 10.3.6.57		
CHOICE DPCH info	OP				REL-6
>Downlink DPCH info for each RL	MP OP		Downlink DPCH info for each RL 10.3.6.21		
>Downlink F-DPCH info for each RL	MP		Downlink F-DPCH info for each RL 10.3.6.21XX		REL-6
SCCPCH Information for FACH	OP		SCCPCH Information for FACH 10.3.6.70		
E-AGCH Info	OP		E-AGCH Info 10.3.6.100		REL-6
E-HICH Information	OP		E-HICH Info 10.3.6.101		REL-6
E-RGCH Information	OP		E-RGCH Info 10.3.6.102		REL-6

Condition	Explanation
<i>not_rrcConnectionSetup</i>	This IE is not needed in the RRC CONNECTION SETUP message. Otherwise it is mandatory present.

10.3.6.33 DPCH compressed mode info

NOTE: Only for FDD.

This information element indicates the parameters of the compressed mode to be used by the UE in order to perform inter-frequency and inter-RAT measurements.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Transmission gap pattern sequence	MP	1 to <maxTGPS>		
>TGPSI	MP		TGPSI 10.3.6.82	
>TGPS Status Flag	MP		Enumerated(activate, deactivate)	This flag indicates whether the Transmission Gap Pattern Sequence shall be activated or deactivated.
>TGCFN	CV-Active		Integer (0..255)	Connection Frame Number of the first frame of the first pattern within the Transmission Gap Pattern Sequence.
>Transmission gap pattern sequence configuration parameters	OP			
>>TGMP	MP		Enumerated(TDD measurement, FDD measurement, GSM carrier RSSI measurement, GSM Initial BSIC identification, GSM BSIC re-confirmation, Multi-carrier measurement)	Transmission Gap pattern sequence Measurement Purpose.
>>TGPRC	MP		Integer (1..511, Infinity)	The number of transmission gap patterns within the Transmission Gap Pattern Sequence.
>>TGSN	MP		Integer (0..14)	Transmission Gap Starting Slot Number The slot number of the first transmission gap slot within the TGCFN.
>>TGL1	MP		Integer(1..14)	The length of the first Transmission Gap within the transmission gap pattern expressed in number of slots
>>TGL2	MD		Integer (1..14)	The length of the second Transmission Gap within the transmission gap pattern. If omitted, then TGL2=TGL1. The value of TGL2 shall be ignored if TGD is set to "undefined"
>>TGD	MP		Integer(15..269, undefined)	Transmission gap distance indicates the number of slots between starting slots of two consecutive transmission gaps within a transmission gap pattern. If there is only one transmission gap in the transmission gap pattern,

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				this parameter shall be set to undefined.
>>TGPL1	MP		Integer (1..144)	The duration of transmission gap pattern 1.
>>TGPL2	MD		Integer (1..144)	The duration of transmission gap pattern 2. If omitted, then TGPL2=TGPL1.
>>RPP	MP		Enumerated (mode 0, mode 1).	Recovery Period Power control mode during the frame after the transmission gap within the compressed frame. Indicates whether normal PC mode or compressed PC mode is applied
>>ITP	MP		Enumerated (mode 0, mode 1).	Initial Transmit Power is the uplink power control method to be used to compute the initial transmit power after the compressed mode gap.
>>CHOICE <i>UL/DL mode</i>	MP			
>>>DL only				Compressed mode used in DL only
>>>>Downlink compressed mode method	MP		Enumerated (puncturing, SF/2, higher layer scheduling)	Method for generating downlink compressed mode gap If F-DPCH is configured this IE shall not be used by the UE
>>>UL only				Compressed mode used in UL only
>>>>Uplink compressed mode method	MP		Enumerated (SF/2, higher layer scheduling)	Method for generating uplink compressed mode gap
>>>UL and DL				Compressed mode used in UL and DL
>>>>Downlink compressed mode method	MP		Enumerated (puncturing, SF/2, higher layer scheduling)	Method for generating downlink compressed mode gap If F-DPCH is configured this IE shall not be used by the UE
>>>>Uplink compressed mode method	MP		Enumerated (SF/2, higher layer scheduling)	Method for generating uplink compressed mode gap
>>Downlink frame type	MP		Enumerated (A, B)	If F-DPCH is configured this IE shall not be used by the UE
>>DeltaSIR1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the frame containing the start of the first transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase) If F-DPCH is configured this IE shall not be used by the UE
>>DeltaSIRafter1	MP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame

Information Element/Group name	Need	Multi	Type and reference	Semantics description
				containing the start of the first transmission gap in the transmission gap pattern. If F-DPCH is configured this IE shall not be used by the UE
>>DeltaSIR2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE during the frame containing the start of the second transmission gap in the transmission gap pattern (without including the effect of the bit-rate increase) When omitted, DeltaSIR2 = DeltaSIR1. If F-DPCH is configured this IE shall not be used by the UE
>>DeltaSIRafter2	OP		Real(0..3 by step of 0.1)	Delta in DL SIR target value to be set in the UE one frame after the frame containing the start of the second transmission gap in the transmission gap pattern. When omitted, DeltaSIRafter2 = DeltaSIRafter1. If F-DPCH is configured this IE shall not be used by the UE
>>N Identify abort	<i>CV-Initial BSIC</i>		Integer(1..128)	Indicates the maximum number of repeats of patterns that the UE shall use to attempt to decode the unknown BSIC of the GSM cell in the initial BSIC identification procedure
>>T Reconfirm abort	<i>CV-Re-confirm BSIC</i>		Real(0.5..10.0 by step of 0.5)	Indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure. The time is given in steps of 0.5 seconds.

Condition	Explanation
<i>Active</i>	This IE is mandatory present when the value of the IE "TGPS Status Flag" is "Activate" and not needed otherwise.
<i>Initial BSIC</i>	This IE is mandatory present when the value of the IE "TGMP" is set to "GSM Initial BSIC identification" and not needed otherwise.
<i>Re-confirm BSIC</i>	This IE is mandatory present when the value of the IE "TGMP" is set to "GSM BSIC re-confirmation" and not needed otherwise.

10.3.6.68 Radio link addition information

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Primary CPICH info	MP		Primary CPICH info 10.3.6.60		
Cell ID	OP		Cell ID 10.3.2.2		REL-4
CHOICE DPCH info	MP				REL-6
>Downlink DPCH info for each RL	MP		Downlink DPCH info for each RL 10.3.6.21		
>Downlink F-DPCH info for each RL	MP		Downlink F-DPCH info for each RL 10.3.6.21XX		REL-6
TFCI combining indicator	MP		TFCI combining indicator 10.3.6.81		
SCCPCH Information for FACH	OP		SCCPCH Information for FACH 10.3.6.70	Note 1	

NOTE 1: These IEs are present when the UE needs to listen to system information on FACH in CELL_DCH state.

10.3.7.83 UE Rx-Tx time difference type 1

The difference in time between the UE uplink DPCCH/DPDCH frame transmission and the first detected path (in time), of the downlink DPCH [or F-DPCH](#) frame from the measured radio link, as defined in [7]. This measurement is for FDD only.

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE Rx-Tx time difference type 1	MP		Integer(768..1280)	In chips. 511 spare values are needed.

10.3.7.84 UE Rx-Tx time difference type 2

The difference in time between the UE uplink DPCCH/DPDCH frame transmission and the first detected path (in time), of the downlink DPCH [or F-DPCH](#) frame from the measured radio link, as defined in [7].

Information Element/Group name	Need	Multi	Type and reference	Semantics description
UE Rx-Tx time difference type 2	MP		Integer (0..8191)	According to [19].

11 Message and Information element abstract syntax (with ASN.1)

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

/./
|
-- Physical Channel IEs :
/./
|
DL-CommonInformation,
DL-CommonInformation-r4,
DL-CommonInformation-r5,
DL-CommonInformation-r6,
DL-CommonInformationPost,
DL-HSPDSCH-Information,
DL-InformationPerRL-List,
DL-InformationPerRL-List-r4,
DL-InformationPerRL-List-r5,
DL-InformationPerRL-List-r5bis,
DL-InformationPerRL-List-r6,
DL-InformationPerRL-ListPostFDD,
DL-InformationPerRL-PostTDD,
DL-InformationPerRL-PostTDD-LCR-r4,
DL-PDSCH-Information,
/./
|
RL-AdditionInformationList-r6,
/./
|
SSDT-Information-r4,
-- *****
--
-- ACTIVE SET UPDATE (FDD only)
--
-- *****

ActiveSetUpdate ::= CHOICE {
    r3
        SEQUENCE {
            activeSetUpdate-r3
                ActiveSetUpdate-r3-IEs,
            laterNonCriticalExtensions
                SEQUENCE {
                    -- Container for additional R99 extensions
                    activeSetUpdate-r3-add-ext
                        BIT STRING OPTIONAL,
                    v4b0NonCriticalExtensions
                        SEQUENCE {
                            activeSetUpdate-v4b0ext
                                ActiveSetUpdate-v4b0ext-IEs,
                            v590NonCriticalExtensions
                                SEQUENCE {
                                    activeSetUpdate-v590ext
                                        ActiveSetUpdate-v590ext-IEs,
                                    nonCriticalExtensions
                                        SEQUENCE {} OPTIONAL
                                } OPTIONAL
                        } OPTIONAL
                } OPTIONAL
        },
    later-than-r3
        SEQUENCE {

```

```

rrc-TransactionIdentifier      RRC-TransactionIdentifier,
criticalExtensions             CHOICE {
    r6                         SEQUENCE {
        activeSetUpdate-r6    ActiveSetUpdate-r6-IEs,
        nonCriticalExtensions SEQUENCE {} OPTIONAL
    },
    criticalExtensions        SEQUENCE {}
} SEQUENCE {}
}

```

```

ActiveSetUpdate-r3-IEs ::= SEQUENCE {
-- User equipment IEs
rrc-TransactionIdentifier      RRC-TransactionIdentifier,
-- dummy and dummy2 are not used in this version of the specification, they should
-- not be sent and if received they should be ignored.
dummy                          IntegrityProtectionModeInfo      OPTIONAL,
dummy2                          CipheringModeInfo          OPTIONAL,
activationTime                  ActivationTime            OPTIONAL,
newU-RNTI                       U-RNTI                  OPTIONAL,
-- Core network IEs
cn-InformationInfo              CN-InformationInfo      OPTIONAL,
-- Radio bearer IEs
-- dummy3 is not used in this version of the specification, it should
-- not be sent and if received it should be ignored.
dummy3                          DL-CounterSynchronisationInfo  OPTIONAL,
-- Physical channel IEs
maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power   OPTIONAL,
rl-AdditionInformationList       RL-AdditionInformationList  OPTIONAL,
rl-RemovalInformationList        RL-RemovalInformationList  OPTIONAL,
tx-DiversityMode                 TX-DiversityMode         OPTIONAL,
ssdt-Information                 SSDT-Information        OPTIONAL
}

```

```

ActiveSetUpdate-v4b0ext-IEs ::= SEQUENCE {
-- Physical channel IEs
-- ssdt-UL extends SSDD-Information. FDD only.
ssdt-UL-r4                      SSDD-UL                  OPTIONAL,
-- The order of the RLs in IE cell-id-PerRL-List is the same as
-- in IE RL-AdditionInformationList included in this message
cell-id-PerRL-List               CellIdentity-PerRL-List  OPTIONAL
}

```

```

ActiveSetUpdate-v590ext-IEs ::= SEQUENCE {
-- Physical channel IEs
dpc-Mode                         DPC-Mode,
dl-TPC-PowerOffsetPerRL-List     DL-TPC-PowerOffsetPerRL-List  OPTIONAL
}

```

```

ActiveSetUpdate-r6-IEs ::= SEQUENCE {
-- User equipment IEs
activationTime                    ActivationTime            OPTIONAL,
newU-RNTI                         U-RNTI                  OPTIONAL,
-- Core network IEs
cn-InformationInfo                CN-InformationInfo      OPTIONAL,
-- Physical channel IEs
maxAllowedUL-TX-Power             MaxAllowedUL-TX-Power   OPTIONAL,
rl-AdditionInformationList         RL-AdditionInformationList-r6  OPTIONAL,
rl-RemovalInformationList          RL-RemovalInformationList  OPTIONAL,
tx-DiversityMode                   TX-DiversityMode         OPTIONAL,
ssdt-Information                  SSDD-Information-r4     OPTIONAL,
dpc-Mode                           DPC-Mode
}

```

/.../

```

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

```

```

CellUpdateConfirm ::= CHOICE {
    r3                      SEQUENCE {
        cellUpdateConfirm-r3      CellUpdateConfirm-r3-IEs,

```



```

-- UTRAN mobility IEs
ura-Identity          URA-Identity          OPTIONAL,
-- Radio bearer IEs
rb-InformationReleaseList  RB-InformationReleaseList  OPTIONAL,
rb-InformationReconfigList  RB-InformationReconfigList-r5  OPTIONAL,
rb-InformationAffectedList  RB-InformationAffectedList-r5  OPTIONAL,
dl-CounterSynchronisationInfo  DL-CounterSynchronisationInfo-r5  OPTIONAL,
-- Transport channel IEs
ul-CommonTransChInfo      UL-CommonTransChInfo-r4      OPTIONAL,
ul-deletedTransChInfoList  UL-DeletedTransChInfoList     OPTIONAL,
ul-AddReconfTransChInfoList  UL-AddReconfTransChInfoList  OPTIONAL,
modeSpecificTransChInfo    CHOICE {
    fdd                      SEQUENCE {
        cpch-SetID          CPCH-SetID          OPTIONAL,
        addReconfTransChDRAC-Info  DRAC-StaticInformationList  OPTIONAL
    },
    tdd                      NULL
},
dl-CommonTransChInfo      DL-CommonTransChInfo-r4      OPTIONAL,
dl-DeletedTransChInfoList  DL-DeletedTransChInfoList-r5  OPTIONAL,
dl-AddReconfTransChInfoList  DL-AddReconfTransChInfoList-r5  OPTIONAL,
-- Physical channel IEs
frequencyInfo            FrequencyInfo            OPTIONAL,
maxAllowedUL-TX-Power    MaxAllowedUL-TX-Power    OPTIONAL,
ul-ChannelRequirement    UL-ChannelRequirement    OPTIONAL,
modeSpecificPhysChInfo    CHOICE {
    fdd                      SEQUENCE {
        dl-PDSCH-Information  DL-PDSCH-Information    OPTIONAL
    },
    tdd                      NULL
},
dl-HSPDSCH-Information    DL-HSPDSCH-Information    OPTIONAL,
dl-CommonInformation      DL-CommonInformation-r6     OPTIONAL,
dl-InformationPerRL-List  DL-InformationPerRL-List-r6  OPTIONAL,
-- MBMS IEs
mbms-FLCApPLICABILITYInfo  MBMS-FLCApPLICABILITYInfo-r6
}

```

/.../

```

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

```

```

PhysicalChannelReconfiguration ::= CHOICE {
    r3          SEQUENCE {
        physicalChannelReconfiguration-r3
        PhysicalChannelReconfiguration-r3-IEs,
        v3a0NonCriticalExtensions          SEQUENCE {
            physicalChannelReconfiguration-v3a0ext  PhysicalChannelReconfiguration-v3a0ext,
            laterNonCriticalExtensions          SEQUENCE {
                -- Container for additional R99 extensions
                physicalChannelReconfiguration-r3-add-ext          BIT STRING          OPTIONAL,
                v4b0NonCriticalExtensions          SEQUENCE {
                    physicalChannelReconfiguration-v4b0ext
                    PhysicalChannelReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtensions          SEQUENCE {
                        physicalChannelReconfiguration-v590ext
                        PhysicalChannelReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions          SEQUENCE {
                            physicalChannelReconfiguration-v6xyext
                            PhysicalChannelReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions          SEQUENCE {} OPTIONAL
                        } OPTIONAL
                    } OPTIONAL
                } OPTIONAL
            } OPTIONAL
        } OPTIONAL
    },
    later-than-r3          SEQUENCE {
        rrc-TransactionIdentifier          RRC-TransactionIdentifier,
        criticalExtensions          CHOICE {
            r4          SEQUENCE {
                physicalChannelReconfiguration-r4
            }
        }
    }
}

```



```

mbms-FLCApplcabilityInfo      MBMS-FLCApplcabilityInfo-r6
}

/.../

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

RadioBearerReconfiguration ::= CHOICE {
  r3
    SEQUENCE {
      radioBearerReconfiguration-r3  RadioBearerReconfiguration-r3-IEs,
      -- Prefix "v3ao" is used (in one instance) to keep alignment with R99
      v3aoNonCriticalExtensions      SEQUENCE {
        radioBearerReconfiguration-v3a0ext  RadioBearerReconfiguration-v3a0ext,
        laterNonCriticalExtensions        SEQUENCE {
          -- Container for additional R99 extensions
          radioBearerReconfiguration-r3-add-ext  BIT STRING      OPTIONAL,
          v4b0NonCriticalExtensions          SEQUENCE {
            radioBearerReconfiguration-v4b0ext
          }
          RadioBearerReconfiguration-v4b0ext-IEs,
          v590NonCriticalExtensions          SEQUENCE {
            radioBearerReconfiguration-v590ext
          }
          RadioBearerReconfiguration-v590ext-IEs,
          v6xyNonCriticalExtensions          SEQUENCE {
            radioBearerReconfiguration-v6xyext
          }
          RadioBearerReconfiguration-v6xyext-IEs,
          nonCriticalExtensions              SEQUENCE {} OPTIONAL
        }
      } OPTIONAL
    } OPTIONAL
  },
  later-than-r3
    SEQUENCE {
      rrc-TransactionIdentifier          RRC-TransactionIdentifier,
      criticalExtensions                  CHOICE {
        r4
          SEQUENCE {
            radioBearerReconfiguration-r4  RadioBearerReconfiguration-r4-IEs,
            v4d0NonCriticalExtensions      SEQUENCE {
              -- Container for adding non critical extensions after freezing REL-5
              radioBearerReconfiguration-r4-add-ext  BIT STRING      OPTIONAL,
              v590NonCriticalExtensions          SEQUENCE {
                radioBearerReconfiguration-v590ext
              }
              RadioBearerReconfiguration-v590ext-IEs,
              v6xyNonCriticalExtensions          SEQUENCE {
                radioBearerReconfiguration-v6xyext
              }
              RadioBearerReconfiguration-v6xyext-IEs,
              nonCriticalExtensions              SEQUENCE {}      OPTIONAL
            }
          } OPTIONAL
        }
      } OPTIONAL
    },
  criticalExtensions
    CHOICE {
      r5
        SEQUENCE {
          radioBearerReconfiguration-r5  RadioBearerReconfiguration-r5-IEs,
          -- Container for adding non critical extensions after freezing REL-6
          radioBearerReconfiguration-r5-add-ext  BIT STRING      OPTIONAL,
          v6xyNonCriticalExtensions          SEQUENCE {
            radioBearerReconfiguration-v6xyext
          }
          RadioBearerReconfiguration-v6xyext-IEs,
          nonCriticalExtensions              SEQUENCE {}      OPTIONAL
        }
      }
    },
  criticalExtensions
    CHOICE {
      r6
        SEQUENCE {
          radioBearerReconfiguration-r6  RadioBearerReconfiguration-r6-IEs,
          -- Container for adding non critical extensions after freezing REL-7
          radioBearerReconfiguration-r6-add-ext  BIT STRING      OPTIONAL,
          nonCriticalExtensions              SEQUENCE {}      OPTIONAL
        }
      }
    },
  criticalExtensions
    SEQUENCE {}
}

```

```

}
}
}

/.../

RadioBearerReconfiguration-r6-IEs ::= SEQUENCE {
  -- User equipment IEs
  integrityProtectionModeInfo IntegrityProtectionModeInfo OPTIONAL,
  cipheringModeInfo CipheringModeInfo OPTIONAL,
  activationTime ActivationTime OPTIONAL,
  new-U-RNTI U-RNTI OPTIONAL,
  new-C-RNTI C-RNTI OPTIONAL,
  new-DSCH-RNTI DSCH-RNTI OPTIONAL,
  new-H-RNTI H-RNTI OPTIONAL,
  rrc-StateIndicator RRC-StateIndicator,
  utran-DRX-CycleLengthCoeff UTRAN-DRX-CycleLengthCoefficient OPTIONAL,
  -- Core network IEs
  cn-InformationInfo CN-InformationInfo OPTIONAL,
  plmn-Identity PLMN-Identity OPTIONAL,
  -- UTRAN mobility IEs
  ura-Identity URA-Identity OPTIONAL,
  -- Specification mode information
  specificationMode CHOICE {
    complete SEQUENCE {
      -- Radio bearer IEs
      rab-InformationReconfigList RAB-InformationReconfigList OPTIONAL,
      rb-InformationReconfigList RB-InformationReconfigList-r5 OPTIONAL,
      rb-InformationAffectedList RB-InformationAffectedList-r5 OPTIONAL,
      rb-PDCPContextRelocationList RB-PDCPContextRelocationList OPTIONAL,
      -- Transport channel IEs
      ul-CommonTransChInfo UL-CommonTransChInfo-r4 OPTIONAL,
      ul-deletedTransChInfoList UL-DeletedTransChInfoList OPTIONAL,
      ul-AddReconfTransChInfoList UL-AddReconfTransChInfoList OPTIONAL,
      modeSpecificTransChInfo CHOICE {
        fdd SEQUENCE {
          cpch-SetID CPCH-SetID OPTIONAL,
          addReconfTransChDRAC-Info DRAC-StaticInformationList OPTIONAL
        },
        tdd NULL
      }
      dl-CommonTransChInfo DL-CommonTransChInfo-r4 OPTIONAL,
      dl-DeletedTransChInfoList DL-DeletedTransChInfoList-r5 OPTIONAL,
      dl-AddReconfTransChInfoList DL-AddReconfTransChInfoList-r5 OPTIONAL
    },
    preconfiguration SEQUENCE {
      -- All IEs that include an FDD/TDD choice are split in two IEs for this message,
      -- one for the FDD only elements and one for the TDD only elements, so that one
      -- FDD/TDD choice in this level is sufficient.
      preConfigMode CHOICE {
        predefinedConfigIdentity PredefinedConfigIdentity,
        defaultConfig SEQUENCE {
          defaultConfigMode DefaultConfigMode,
          defaultConfigIdentity DefaultConfigIdentity-r5
        }
      }
    }
  },
  -- Physical channel IEs
  frequencyInfo FrequencyInfo OPTIONAL,
  maxAllowedUL-TX-Power MaxAllowedUL-TX-Power OPTIONAL,
  ul-ChannelRequirement UL-ChannelRequirement OPTIONAL,
  modeSpecificPhysChInfo CHOICE {
    fdd SEQUENCE {
      dl-PDSCH-Information DL-PDSCH-Information OPTIONAL
    },
    tdd NULL
  },
  dl-HSPDSCH-Information DL-HSPDSCH-Information OPTIONAL,
  dl-CommonInformation DL-CommonInformation-r6 OPTIONAL,
  dl-InformationPerRL-List DL-InformationPerRL-List-r6 OPTIONAL,
  -- MBMS IEs
  mbms-FLCApPLICabilityInfo MBMS-FLCApPLICabilityInfo-r6
}

/.../

```

```

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

RadioBearerRelease ::= CHOICE {
  r3
    SEQUENCE {
      radioBearerRelease-r3          RadioBearerRelease-r3-IEs,
      v3a0NonCriticalExtensions      SEQUENCE {
        radioBearerRelease-v3a0ext   RadioBearerRelease-v3a0ext,
        laterNonCriticalExtensions    SEQUENCE {
          -- Container for additional R99 extensions
          radioBearerRelease-r3-add-ext BIT STRING OPTIONAL,
          v4b0NonCriticalExtensions    SEQUENCE {
            radioBearerRelease-v4b0ext RadioBearerRelease-v4b0ext-IEs,
            v590NonCriticalExtensions SEQUENCE {
              radioBearerRelease-v590ext RadioBearerRelease-v590ext-IEs,
              v6xyNonCriticalExtensions SEQUENCE {
                radioBearerRelease-v6xyext RadioBearerRelease-v6xyext-IEs,
                nonCriticalExtensions    SEQUENCE {} OPTIONAL
              } OPTIONAL
            } OPTIONAL
          } OPTIONAL
        } OPTIONAL
      } OPTIONAL
    },
  later-than-r3
    SEQUENCE {
      rrc-TransactionIdentifier RRC-TransactionIdentifier,
      criticalExtensions        CHOICE {
        r4
          SEQUENCE {
            radioBearerRelease-r4          RadioBearerRelease-r4-IEs,
            v4d0NonCriticalExtensions      SEQUENCE {
              -- Container for adding non critical extensions after freezing REL-5
              radioBearerRelease-r4-add-ext BIT STRING OPTIONAL,
              v590NonCriticalExtensions    SEQUENCE {
                radioBearerRelease-v590ext RadioBearerRelease-v590ext-IEs,
                v6xyNonCriticalExtensions SEQUENCE {
                  radioBearerRelease-v6xyext RadioBearerRelease-v6xyext-IEs,
                  nonCriticalExtensions    SEQUENCE {} OPTIONAL
                } OPTIONAL
              } OPTIONAL
            } OPTIONAL
          } OPTIONAL
        },
        criticalExtensions        CHOICE {
          r5
            SEQUENCE {
              radioBearerRelease-r5          RadioBearerRelease-r5-IEs,
              -- Container for adding non critical extensions after freezing REL-6
              radioBearerRelease-r5-add-ext BIT STRING OPTIONAL,
              v6xyNonCriticalExtensions    SEQUENCE {
                radioBearerRelease-v6xyext RadioBearerRelease-v6xyext-IEs,
                nonCriticalExtensions    SEQUENCE {} OPTIONAL
              } OPTIONAL
            },
            criticalExtensions        CHOICE {
              r6
                SEQUENCE {
                  radioBearerRelease-r6          RadioBearerRelease-r6-IEs,
                  -- Container for adding non critical extensions after freezing REL-7
                  radioBearerRelease-r6-add-ext BIT STRING OPTIONAL,
                  nonCriticalExtensions    SEQUENCE {} OPTIONAL
                },
                criticalExtensions        SEQUENCE {}
            }
          }
        }
      }
    }
  }
}
/.../

RadioBearerRelease-r6-IEs ::= SEQUENCE {
  -- User equipment IEs
  integrityProtectionModeInfo IntegrityProtectionModeInfo OPTIONAL,
  cipheringModeInfo          CipheringModeInfo          OPTIONAL,
  activationTime              ActivationTime             OPTIONAL,
  new-U-RNTI                  U-RNTI                    OPTIONAL,
}

```



```

new-C-RNTI          C-RNTI          OPTIONAL,
new-DSCH-RNTI      DSCH-RNTI       OPTIONAL,
new-H-RNTI         H-RNTI        OPTIONAL,
rrc-StateIndicator RRC-StateIndicator,
utran-DRX-CycleLengthCoeff UTRAN-DRX-CycleLengthCoefficient OPTIONAL,
-- Core network IEs
cn-InformationInfo CN-InformationInfo OPTIONAL,
plmn-Identity      PLMN-Identity   OPTIONAL,
signallingConnectionRelIndication CN-DomainIdentity OPTIONAL,
-- UTRAN mobility IEs
ura-Identity       URA-Identity     OPTIONAL,
-- Radio bearer IEs
rab-InformationReconfigList RAB-InformationReconfigList OPTIONAL,
rb-InformationReleaseList  RB-InformationReleaseList,
rb-InformationAffectedList RB-InformationAffectedList-r5 OPTIONAL,
dl-CounterSynchronisationInfo DL-CounterSynchronisationInfo-r5 OPTIONAL,
-- Transport channel IEs
ul-CommonTransChInfo UL-CommonTransChInfo-r4 OPTIONAL,
ul-deletedTransChInfoList UL-DeletedTransChInfoList OPTIONAL,
ul-AddReconfTransChInfoList UL-AddReconfTransChInfoList OPTIONAL,
modeSpecificTransChInfo CHOICE {
    fdd SEQUENCE {
        cpch-SetID CPCH-SetID OPTIONAL,
        addReconfTransChDRAC-Info DRAC-StaticInformationList OPTIONAL
    },
    tdd NULL
}
dl-CommonTransChInfo DL-CommonTransChInfo-r4 OPTIONAL,
dl-DeletedTransChInfoList DL-DeletedTransChInfoList-r5 OPTIONAL,
dl-AddReconfTransChInfoList DL-AddReconfTransChInfoList-r5 OPTIONAL,
-- Physical channel IEs
frequencyInfo FrequencyInfo OPTIONAL,
maxAllowedUL-TX-Power MaxAllowedUL-TX-Power OPTIONAL,
ul-ChannelRequirement UL-ChannelRequirement OPTIONAL,
modeSpecificPhysChInfo CHOICE {
    fdd SEQUENCE {
        dl-PDSCH-Information DL-PDSCH-Information OPTIONAL
    },
    tdd NULL
},
dl-HSPDSCH-Information DL-HSPDSCH-Information OPTIONAL,
dl-CommonInformation DL-CommonInformation-r5 OPTIONAL,
dl-InformationPerRL-List DL-InformationPerRL-List-r6 OPTIONAL,
-- MBMS IEs
mbms-FLCApPLICABILITYInfo MBMS-FLCApPLICABILITYInfo-r6,
mbms-RB-ListReleasedToChangeTransferMode
RB-InformationReleaseList OPTIONAL
}
}

```

/.../

```

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

```

```

RadioBearerSetup ::= CHOICE {
    r3 SEQUENCE {
        radioBearerSetup-r3 RadioBearerSetup-r3-IEs,
        v3a0NonCriticalExtensions SEQUENCE {
            radioBearerSetup-v3a0ext RadioBearerSetup-v3a0ext,
            laterNonCriticalExtensions SEQUENCE {
                -- Container for additional R99 extensions
                radioBearerSetup-r3-add-ext BIT STRING OPTIONAL,
                v4b0NonCriticalExtensions SEQUENCE {
                    radioBearerSetup-v4b0ext RadioBearerSetup-v4b0ext-IEs,
                    v590NonCriticalExtensions SEQUENCE {
                        radioBearerSetup-v590ext RadioBearerSetup-v590ext-IEs,
                        v6xyNonCriticalExtensions SEQUENCE {
                            radioBearerSetup-v6xyext RadioBearerSetup-v6xyext-IEs,
                            nonCriticalExtensions SEQUENCE {} OPTIONAL
                        } OPTIONAL
                    } OPTIONAL
                } OPTIONAL
            } OPTIONAL
        } OPTIONAL
    } OPTIONAL
} OPTIONAL

```

```

    } OPTIONAL
  },
  later-than-r3 SEQUENCE {
    rrc-TransactionIdentifier RRC-TransactionIdentifier,
    criticalExtensions CHOICE {
      r4 SEQUENCE {
        radioBearerSetup-r4 RadioBearerSetup-r4-IEs,
        v4d0NonCriticalExtensions SEQUENCE {
          -- Container for adding non critical extensions after freezing REL-5
          radioBearerSetup-r4-add-ext BIT STRING OPTIONAL,
          v590NonCriticalExtensions SEQUENCE {
            radioBearerSetup-v590ext RadioBearerSetup-v590ext-IEs,
            v6xyNonCriticalExtensions SEQUENCE {
              radioBearerSetup-v6xyext RadioBearerSetup-v6xyext-IEs,
              nonCriticalExtensions SEQUENCE {} OPTIONAL
            } OPTIONAL
          } OPTIONAL
        } OPTIONAL
      } OPTIONAL
    },
    criticalExtensions CHOICE {
      r5 SEQUENCE {
        radioBearerSetup-r5 RadioBearerSetup-r5-IEs,
        -- Container for adding non critical extensions after freezing REL-6
        radioBearerSetup-r5-add-ext BIT STRING OPTIONAL,
        v6xyNonCriticalExtensions SEQUENCE {
          radioBearerSetup-v6xyext RadioBearerSetup-v6xyext-IEs,
          nonCriticalExtensions SEQUENCE {} OPTIONAL
        } OPTIONAL
      },
      criticalExtensions CHOICE {
        r6 SEQUENCE {
          radioBearerSetup-r6 RadioBearerSetup-r6-IEs,
          -- Container for adding non critical extensions after freezing REL-7
          radioBearerSetup-r6-add-ext BIT STRING OPTIONAL,
          nonCriticalExtensions SEQUENCE {} OPTIONAL
        },
        criticalExtensions SEQUENCE {}
      }
    }
  }
}

```

/.../

```

RadioBearerSetup-r6-IEs ::= SEQUENCE {
  -- User equipment IEs
  integrityProtectionModeInfo IntegrityProtectionModeInfo OPTIONAL,
  cipheringModeInfo CipheringModeInfo OPTIONAL,
  activationTime ActivationTime OPTIONAL,
  new-U-RNTI U-RNTI OPTIONAL,
  new-C-RNTI C-RNTI OPTIONAL,
  new-DSCH-RNTI DSCH-RNTI OPTIONAL,
  new-H-RNTI H-RNTI OPTIONAL,
  rrc-StateIndicator RRC-StateIndicator,
  utran-DRX-CycleLengthCoeff UTRAN-DRX-CycleLengthCoefficient OPTIONAL,
  -- UTRAN mobility IEs
  ura-Identity URA-Identity OPTIONAL,
  -- Core network IEs
  cn-InformationInfo CN-InformationInfo OPTIONAL,
  plmn-Identity PLMN-Identity OPTIONAL,
  -- Radio bearer IEs
  srb-InformationSetupList SRB-InformationSetupList-r5 OPTIONAL,
  rab-InformationSetupList RAB-InformationSetupList-r5 OPTIONAL,
  rb-InformationAffectedList RB-InformationAffectedList-r5 OPTIONAL,
  dl-CounterSynchronisationInfo DL-CounterSynchronisationInfo-r5 OPTIONAL,
  -- Transport channel IEs
  ul-CommonTransChInfo UL-CommonTransChInfo-r4 OPTIONAL,
  ul-deletedTransChInfoList UL-DeletedTransChInfoList OPTIONAL,
  ul-AddReconfTransChInfoList UL-AddReconfTransChInfoList OPTIONAL,
  modeSpecificTransChInfo CHOICE {
    fdd SEQUENCE {
      cpch-SetID CPCH-SetID OPTIONAL,
      addReconfTransChDRAC-Info DRAC-StaticInformationList OPTIONAL
    },
    tdd NULL
  }
}

```

dl-CommonTransChInfo	DL-CommonTransChInfo-r4	OPTIONAL,
dl-DeletedTransChInfoList	DL-DeletedTransChInfoList-r5	OPTIONAL,
dl-AddReconfTransChInfoList	DL-AddReconfTransChInfoList-r5	OPTIONAL,
-- Physical channel IEs		
frequencyInfo	FrequencyInfo	OPTIONAL,
maxAllowedUL-TX-Power	MaxAllowedUL-TX-Power	OPTIONAL,
ul-ChannelRequirement	UL-ChannelRequirement	OPTIONAL,
modeSpecificPhysChInfo	CHOICE {	
fdd	SEQUENCE {	
dl-PDSCH-Information	DL-PDSCH-Information	OPTIONAL
},		
tdd	NULL	
},		
dl-HSPDSCH-Information	DL-HSPDSCH-Information	OPTIONAL,
dl-CommonInformation	DL-CommonInformation-r6	OPTIONAL,
dl-InformationPerRL-List	DL-InformationPerRL-List-r6	OPTIONAL,
-- MBMS IEs		
mbms-FLCApPLICABILITYInfo	MBMS-FLCApPLICABILITYInfo-r6	
}		

/.../

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

```
TransportChannelReconfiguration ::= CHOICE {
  r3 SEQUENCE {
    transportChannelReconfiguration-r3
    TransportChannelReconfiguration-r3-IEs,
    v3a0NonCriticalExtensions SEQUENCE {
      transportChannelReconfiguration-v3a0ext
      TransportChannelReconfiguration-v3a0ext,
      laterNonCriticalExtensions SEQUENCE {
        -- Container for additional R99 extensions
        transportChannelReconfiguration-r3-add-ext BIT STRING OPTIONAL,
        v4b0NonCriticalExtensions SEQUENCE {
          transportChannelReconfiguration-v4b0ext
          TransportChannelReconfiguration-v4b0ext-IEs,
          v590NonCriticalExtensions SEQUENCE {
            transportChannelReconfiguration-v590ext
            TransportChannelReconfiguration-v590ext-IEs,
            v6xyNonCriticalExtensions SEQUENCE {
              transportChannelReconfiguration-v6xyext
              TransportChannelReconfiguration-v6xyext-IEs,
              nonCriticalExtensions SEQUENCE {} OPTIONAL
            } OPTIONAL
          } OPTIONAL
        } OPTIONAL
      } OPTIONAL
    } OPTIONAL
  },
  later-than-r3 SEQUENCE {
    rrc-TransactionIdentifier RRC-TransactionIdentifier,
    criticalExtensions CHOICE {
      r4 SEQUENCE {
        transportChannelReconfiguration-r4
        TransportChannelReconfiguration-r4-IEs,
        v4d0NonCriticalExtensions SEQUENCE {
          -- Container for adding non critical extensions after freezing REL-5
          transportChannelReconfiguration-r4-add-ext BIT STRING OPTIONAL,
          v590NonCriticalExtensions SEQUENCE {
            transportChannelReconfiguration-v590ext
            TransportChannelReconfiguration-v590ext-IEs,
            v6xyNonCriticalExtensions SEQUENCE {
              transportChannelReconfiguration-v6xyext
              TransportChannelReconfiguration-v6xyext-IEs,
              nonCriticalExtensions SEQUENCE {} OPTIONAL
            } OPTIONAL
          } OPTIONAL
        } OPTIONAL
      } OPTIONAL
    },
    criticalExtensions CHOICE {
      r5 SEQUENCE {
        transportChannelReconfiguration-r5
```


/.../

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

```
DL-CommonInformation-r5 ::= SEQUENCE {
  dl-DPCH-InfoCommon          DL-DPCH-InfoCommon-r4          OPTIONAL,
  modeSpecificInfo            CHOICE {
    fdd                        SEQUENCE {
      defaultDPCH-OffsetValue  DefaultDPCH-OffsetValueFDD  OPTIONAL,
      dpch-CompressedModeInfo  DPCH-CompressedModeInfo  OPTIONAL,
      tx-DiversityMode          TX-DiversityMode          OPTIONAL,
      ssdt-Information          SSDT-Information-r4          OPTIONAL
    },
    tdd                        SEQUENCE {
      tddOption                 CHOICE {
        tdd384                  NULL,
        tdd128                  SEQUENCE {
          tstd-Indicator        BOOLEAN
        }
      },
      defaultDPCH-OffsetValue  DefaultDPCH-OffsetValueTDD  OPTIONAL
    }
  },
  mac-hsResetIndicator        ENUMERATED { true }            OPTIONAL
}
```

```
DL-CommonInformation-r6 ::= SEQUENCE {
  dl-dpchInfoCommon          CHOICE {
    dl-DPCH-InfoCommon        DL-DPCH-InfoCommon-r4,
    dl-FDPCH-InfoCommon        DL-FDPCH-InfoCommon-r6
  } OPTIONAL,
  modeSpecificInfo            CHOICE {
    fdd                        SEQUENCE {
      defaultDPCH-OffsetValue  DefaultDPCH-OffsetValueFDD  OPTIONAL,
      dpch-CompressedModeInfo  DPCH-CompressedModeInfo  OPTIONAL,
      tx-DiversityMode          TX-DiversityMode          OPTIONAL,
      ssdt-Information          SSDT-Information-r4          OPTIONAL
    },
    tdd                        SEQUENCE {
      tddOption                 CHOICE {
        tdd384                  NULL,
        tdd128                  SEQUENCE {
          tstd-Indicator        BOOLEAN
        }
      },
      defaultDPCH-OffsetValue  DefaultDPCH-OffsetValueTDD  OPTIONAL
    }
  },
  mac-hsResetIndicator        ENUMERATED { true }            OPTIONAL
}
```

/.../

```
DL-DPCH-InfoCommon-r4 ::= SEQUENCE {
  cfnHandling                 CHOICE {
    maintain                   NULL,
    initialise                  SEQUENCE {
      cfnTargetsfnframeoffset  CfnTargetsfnframeoffset  OPTIONAL
    }
  },
  modeSpecificInfo            CHOICE {
    fdd                        SEQUENCE {
      dl-DPCH-PowerControlInfo  DL-DPCH-PowerControlInfo  OPTIONAL,

```

```

        powerOffsetPilot-pdpdch          PowerOffsetPilot-pdpdch,
        dl-rate-matching-restriction      Dl-rate-matching-restriction      OPTIONAL,
        -- TABULAR: The number of pilot bits is nested inside the spreading factor.
        spreadingFactorAndPilot           SF512-AndPilot,
        positionFixedOrFlexible           PositionFixedOrFlexible,
        tfci-Existence                     BOOLEAN
    },
    tdd                                     SEQUENCE {
        dl-DPCH-PowerControlInfo           DL-DPCH-PowerControlInfo           OPTIONAL
    }
},
-- The IE mac-d-HFN-initial-value should be absent in the RRCConnectionSetup-r4-IEs or
-- RRCConnectionSetup-r5-IEs or HandoverToUTRANCommand-r4-IEs or HandoverToUTRANCommand-r5-IEs and
-- if the IE is included, the general error handling for conditional IEs applies.
    mac-d-HFN-initial-value               MAC-d-HFN-initial-value               OPTIONAL
}

```

```

DL-FDPCH-InfoCommon-r6 ::= SEQUENCE {
    cfnHandling CHOICE {
        maintain NULL,
        initialise SEQUENCE {
            cfnTargetsfnframeoffset CfnTargetsfnframeoffset OPTIONAL
        }
    }
    dl-FDPCH-PowerControlInfo DL-DPCH-PowerControlInfo OPTIONAL,
    -- Actual value dl-FDPCH-TPCcommandErrorRate = IE value * 0.005
    -- dl-FDPCH-TPCcommandErrorRate values 21..32 are spare and shall not be used in this version of
    -- the protocol
    dl-FDPCH-TPCcommandErrorRate INTEGER (1..32) OPTIONAL
}

```

/.../

```

DL-InformationPerRL-r6 ::= SEQUENCE {
    modeSpecificInfo CHOICE {
        fdd SEQUENCE {
            primaryCPICH-Info PrimaryCPICH-Info,
            pdsch-SHO-DCH-Info PDSCH-SHO-DCH-Info OPTIONAL,
            pdsch-CodeMapping PDSCH-CodeMapping OPTIONAL,
            servingHSDSCH-RL-indicator BOOLEAN,
        },
        tdd PrimaryCCPCH-Info-r4
    },
    dl-dpchsInfo CHOICE {
        dl-DPCH-InfoPerRL DL-DPCH-InfoPerRL-r5,
        dl-FDPCH-InfoPerRL DL-FDPCH-InfoPerRL-r6
    }
    sccpchsInfoForFACH SCCPCH-InfoForFACH-r4 OPTIONAL,
    cell-id CellIdentity OPTIONAL
}

```

```

DL-DPCH-InfoPerRL-r5 ::= CHOICE {
    fdd SEQUENCE {
        pCPICH-UsageForChannelEst PCPICH-UsageForChannelEst,
        dpchs-FrameOffset DPCH-FrameOffset,
        secondaryCPICH-Info SecondaryCPICH-Info OPTIONAL,
        dl-ChannelisationCodeList DL-ChannelisationCodeList,
        tpc-CombinationIndex TPC-CombinationIndex,
        powerOffsetTPC-pdpdch PowerOffsetTPC-pdpdch OPTIONAL,
        ssdt-CellIdentity SSDT-CellIdentity OPTIONAL,
        closedLoopTimingAdjMode ClosedLoopTimingAdjMode OPTIONAL
    },
    tdd SEQUENCE {
        dl-CCTrChListToEstablish DL-CCTrChList-r4 OPTIONAL,
        dl-CCTrChListToRemove DL-CCTrChListToRemove OPTIONAL
    }
}

```

```

}
}

```

```

DL-FDPCH-InfoPerRL-r6 ::= SEQUENCE {
  pCPICH-UsageForChannelEst PCPICH-UsageForChannelEst,
  fdpch-FrameOffset DPCH-FrameOffset,
  secondaryCPICH-Info SecondaryCPICH-Info OPTIONAL,
  secondaryScramblingCode SecondaryScramblingCode OPTIONAL,
  dl-ChannelisationCode INTEGER (0..255),
  tpc-CombinationIndex TPC-CombinationIndex
}

```

```

/.../

```

```

RL-AdditionInformationList-r6 ::= SEQUENCE (SIZE (1..maxRL-1)) OF
  RL-AdditionInformation-r6

```

```

RL-AdditionInformation-r6 ::= SEQUENCE {
  primaryCPICH-Info PrimaryCPICH-Info,
  dl-dpchInfo CHOICE {
    dl-DPCH-InfoPerRL DL-DPCH-InfoPerRL-r5,
    dl-FDPCH-InfoPerRL DL-FDPCH-InfoPerRL-r6
  }
  tfci-CombiningIndicator BOOLEAN,
  sccpch-InfoForFACH SCCPCH-InfoForFACH OPTIONAL
}

```