TSG RAN Meeting #20 **RP-030335**
Hämeenlinna, Finland, 3 - 6 June, 2003

Title **CR (Rel-5 only) to TS 25.423 and 25.433 on Correction to HARQ Memory Partitioning**
Source **TSG RAN WG3**
Agenda Item **7.3.6**

RAN3 Tdoc	Spec	curr. Vers.	new Vers.	REL	CR	Rev	Cat	Title	Work item
R3-030732	25.423	5.5.0	5.6.0	REL-5	835	-	F	Correction to HARQ Memory Partitioning	HSDPA-Iublur
R3-030733	25.433	5.4.0	5.5.0	REL-5	854	-	F	Correction to HARQ Memory Partitioning	HSDPA-Iublur

3GPP TSG-RAN3 Meeting #36
Paris, France, 19th – 23rd May, 2003

Tdoc ⌘R3-030732

CR-Form-v7

CHANGE REQUEST

⌘ **25.423** **CR** **835** ⌘ **rev** **-** ⌘ Current version: **5.5.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title: ⌘	Correction to HARQ Memory Partitioning	
Source: ⌘	RAN WG3	
Work item code: ⌘	HSDPA-IuBIur	***Date:*** ⌘ 19/05/2003
Category: ⌘	**F**	***Release:*** ⌘ Rel-5

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

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

Reason for change: ⌘

The current assumption in RNSAP is that the *HARQ Memory Partitioning* IE is provided by the SRNC within the RL Setup/Rcfg procedure. Given that the HARQ entities are within the DRNS, the DRNS is in a much better position than the SRNC to decide on how many HARQ processes it will use for a particular UE and how should the overall soft memory be partitioned across individual HARQ processes.

It is further proposed to align RNSAP to RRC in that the RNC should signal the *HS-DSCH Physical Layer Category*, instead of signalling all the *UE Capabilities* separately.

In addition, it is proposed to introduce "implict" HARQ Memory Partitioning in order to align RNSAP to RRC.

Summary of change: ⌘

1. New reference to 25.306 is added.

2. The following HS-DSCH Physical Layer Capabilities:
   - *Max TrCH Bits Per HS-DSCH TTI*
   - *HS-DSCH Multi-Code Capability*, and
   - *Min Inter-TTI Arrival,*

   are replaced by:
   - *HS-DSCH Physical Layer Category*.

3. *HARQ Memory Partitioning* IE is moved from *HS-DSCH Information* IE to *HS-DSCH Information Response* IE, for both FDD and TDD and "implict" HARQ Memory Partitioning was introduced.

4. ASN.1 changes:

		• *HARQ-FDD-InfoItem* and *HARQ-TDD-InfoItem* replaced by *HARQ-InfoItem* • *UE-Capabilities-InfoFDD* and *UE-Capabilities-InfoTDD* replaced by *UE-Capabilities-Info* Impact assessment towards the previous version of the specification (same release): This CR has an isolated impact towards the previous version of the specification (same release). This CR has an impact under functional point of view. The impacted functionality is HSDPA.
Consequences if not approved:	⌘	A major error will remain in the spec yielding inefficient use of HSDPA resources in the DRNS.

Clauses affected:	⌘	2; 9.2.1.x (new); 9.2.1.y (new); 9.2.2.19a; 9.2.2.19b; 9.2.3.3aa; 9.2.3.3ab ; 9.3.4				
		Y	**N**			
Other specs Affected:	⌘	**X**		Other core specifications	⌘	CR854 on TS25.433v5.4.0
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

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

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

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TS 23.003: "Numbering, addressing and identification".

[2] 3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".

[3] 3GPP TS 25.426: "UTRAN Iur and Iub Interface Data Transport & Transport Layer Signalling for DCH Data Streams".

[4] 3GPP TS 25.427: "UTRAN Iur and Iub Interface User Plane Protocols for DCH Data Streams".

[5] 3GPP TS 25.435: "UTRAN Iub interface User Plane Protocols for Common Transport Channel Data Streams".

[6] 3GPP TS 25.104: "UTRA (BS) FDD; Radio transmission and Reception".

[7] 3GPP TS 25.105: "UTRA (BS) TDD; Radio Transmission and Reception".

[8] 3GPP TS 25.211: "Physical Channels and Mapping of Transport Channels onto Physical Channels (FDD)".

[9] 3GPP TS 25.212: "Multiplexing and Channel Coding (FDD)".

[10] 3GPP TS 25.214: "Physical Layer Procedures (FDD)".

[11] 3GPP TS 25.215: "Physical Layer – Measurements (FDD)".

[12] 3GPP TS 25.221: "Physical Channels and Mapping of Transport Channels onto Physical Channels (TDD)".

[13] 3GPP TS 25.223: "Spreading and Modulation (TDD)".

[14] 3GPP TS 25.225: "Physical Layer – Measurements (TDD)".

[15] 3GPP TS 25.304: "UE Procedures in Idle Mode"

[16] 3GPP TS 25.331: "RRC Protocol Specification".

[17] 3GPP TS 25.402: "Synchronisation in UTRAN, Stage 2".

[18] ITU-T Recommendation X.680 (12/97): "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".

[19] ITU-T Recommendation X.681 (12/97): "Information technology - Abstract Syntax Notation One (ASN.1): Information object specification".

[20] ITU-T Recommendation X.691 (12/97): "Information technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER)".

[21] 3GPP TS 25.213: "Spreading and modulation (FDD)".

[22] 3GPP TS 25.224: "Physical Layer Procedures (TDD)".

[23] 3GPP TS 25.133: "Requirements for support of Radio Resource management (FDD)".

[24] 3GPP TS 25.123: "Requirements for support of Radio Resource management (TDD)".

[25] 3GPP TS 23.032: "Universal Graphical Area Description (GAD)".

[26] 3GPP TS 25.302: "Services Provided by the Physical Layer".

[27] 3GPP TS 25.213: "Spreading and modulation (FDD)".

[28] 3GPP TR 25.921: "Guidelines and Principles for Protocol Description and Error Handling".

[29] GSM TS 05.05: "Digital cellular telecommunications system (Phase 2+); Radio transmission and reception".

[30] ICD-GPS-200: "Navstar GPS Space Segment/Navigation User Interface".

[31] RTCM-SC104: "RTCM Recommended Standards for Differential GNSS Service (v.2.2)".

[32] 3GPP TS 25.425: "UTRAN Iur and Iub Interface User Plane Protocols for Common Transport Channel data streams ".

[33] IETF RFC 2460 "Internet Protocol, Version 6 (IPv6) Specification".

[34] IETF RFC 768 "User Datagram Protocol", (8/1980)

[35] 3GPP TS 25.424: " UTRAN Iur Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams ".

[36] 3GPP TS 44.118: "Mobile radio interface layer 3 specification; Radio Resource Control (RRC) Protocol Iu mode".

[37] 3GPP TR 43.930: "Iur-g interface; Stage 2".

[38] 3GPP TS 48.008: "Mobile-services Switching Centre - Base Station System (MSC - BSS) interface; Layer 3 specification".

[39] 3GPP TS 43.051: "GSM/EGDE Radio Access Network; Overall description - Stage 2".

[40] 3GPP TS 25.401: "UTRAN Overall Description".

[41] 3GPP TS 25.321: "MAC protocol specification".

[42] 3GPP TS 25.306: "UE Radio Access capabilities".

<Not affected part is omitted>

9.2.1.x Process Memory Size

The *Process Memory Size* IE is the size of an HARQ process in the DRNS expressed in bits.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Process Memory Size			ENUMERATED (800, 1600, 2400, 3200, 4000, 4800, 5600, 6400, 7200, 8000, 8800, 9600, 10400, 11200, 12000, 12800, 13600, 14400, 15200, 16000, 17600, 19200, 20800, 22400, 24000, 25600, 27200, 28800, 30400, 32000, 36000, 40000, 44000, 48000, 52000, 56000, 60000, 64000, 68000, 72000, 76000, 80000, 88000, 96000, 104000, 112000, 120000, 128000, 136000, 144000, 152000, 160000, 176000, 192000, 208000, 224000, 240000, 256000, 272000, 288000, 304000,…)	

9.2.1.y HS-DSCH Physical Layer Category

The *HS-DSCH Physical Layer Category* IE defines a set of UE radio access capabilities related to HSDPA, as defined in [42].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
HS-DSCH Physical Layer Category			INTEGER (1..64,…)	

<Not affected part is omitted>

9.2.2.19a HS-DSCH FDD Information

The *HS-DSCH FDD Information* IE provides information for HS-DSCH MAC-d flows to be established.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
HS-DSCH MAC-d Flow Specific Information		*1..<maxnoofMACdFlows>*			–	
>HS-DSCH MAC-d Flow ID	M		9.2.1.30O		–	
>Allocation/Retention Priority	M		9.2.1.1A		–	
>Traffic Class	M		9.2.1.58A		–	
>Binding ID	O		9.2.1.3	Shall be ignored if bearer establishment with ALCAP.	–	
>Transport Layer Address	O		9.2.1.62	Shall be ignored if bearer establishment with ALCAP.	–	
>Priority Queue Information		*1..<maxnoofPrioQueues>*			–	
>>Priority Queue ID	M		9.2.1.45A		–	
>>Scheduling Priority Indicator	M		9.2.1.51A		–	
>>T1	M		9.2.1.54A		–	
>>MAC-hs Window Size	M		9.2.1.34C		–	
>>MAC-hs Guaranteed Bit Rate	O		9.2.1.34Aa		–	
>>MAC-d PDU Size Index		*1..<maxnoofMACdPDUindexes>*			–	
>>>SID	M		9.2.1.52D		–	
>>>MAC-d PDU Size	M		9.2.1.34A		–	
UE Capabilities information		*1*			–	
~~>HS-DSCH TrCH Bits per HS-DSCH TTI~~	~~M~~		~~ENUMERATED (7300, 14600, 20456, 28800,…)~~		~~–~~	
~~>HS-DSCH multi-code capability~~	~~M~~		~~ENUMERATED (5, 10, 15,…)~~		~~–~~	
~~>Min Inter-TTI Interval~~	~~M~~		~~INTEGER (1..3,…)~~		~~–~~	
>HS-DSCH Physical Layer Category	M		9.2.1.y		–	
>MAC-hs reordering buffer size	M		INTEGER (1..300,…)	The total buffer size defined in UE capability minus the RLC AM buffer	–	
~~**HARQ Information**~~		~~*1..<maxnoofHARQprocesses>*~~			~~–~~	
~~>Process memory size~~	~~M~~		~~INTEGER (1..172800, …)~~	~~Number of soft channel bits per process.~~	~~–~~	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CQI Feedback Cycle k	M		9.2.2.24a		–	
CQI Repetition Factor	C-CQICyclek		9.2.2.24c		–	
ACK-NACK Repetition Factor	M		9.2.2.a		–	
CQI Power Offset	M		9.2.2.24b		–	
ACK Power Offset	M		9.2.2.b		–	
NACK Power Offset	M		9.2.2.26a		–	
HS-SCCH Power Offset	O		9.2.2.19d		–	

Condition	Explanation
CQICyclek	The IE shall be present if the *CQI Feedback Cycle k* IE is set to a value greater than 0.

Range bound	Explanation
MaxnoofMACdFlows	Maximum number of MAC-d flows.
MaxnoofPrioQueues	Maximum number of Priority Queues.
MaxnoofMACdPDUindexes	Maximum number of MAC-d PDU Size Indexes (SIDs).
~~*MaxnoofHARQprocesses*~~	~~Maximum number of HARQ processes.~~

9.2.2.19b HS-DSCH FDD Information Response

The *HS-DSCH FDD Information Response* IE provides information for HS-DSCH MAC-d flows that have been established or modified.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
HS-DSCH MAC-d Flow Specific Information Response		*1..<maxnoofMACdFlows>*			–	
>HS-DSCH MAC-d Flow ID	M		9.2.1.30O		–	
>Binding ID	O		9.2.1.3		–	
>Transport Layer Address	O		9.2.1.62		–	
>HS-DSCH Initial Capacity Allocation	O		9.2.1.30Na		–	
HS-SCCH Specific Information Response		*1..<maxnoofHSSCCHcodes>*			–	
>Code Number	M		INTEGER(0..127)		–	
Measurement Power Offset	O		9.2.2.24d		–	
CHOICE *HARQ Memory Partitioning*	M				–	
>Implicit					–	
>>Number of Processes	M		INTEGER (1..8,...)		–	
>Explicit					–	
>>HARQ Memory Partitioning Infomation		*1..<maxnoofHARQprocesses>*			–	
>>>Process Memory Size	M		9.2.1.x	See [16]	–	

Range bound	Explanation
maxnoofMACdFlows	Maximum number of MAC-d flows.
maxnoofHSSCCHcodes	Maximum number of HS-SCCH codes.
maxnoofHARQprocesses	Maximum number of HARQ processes.

<Not affected part is omitted>

9.2.3.3aa HS-DSCH TDD Information

The *HS-DSCH TDD Information* IE provides information for HS-DSCH to be established.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
HS-DSCH MAC-d Flow Specific Information		*1..<maxnoofMACdFlows>*			–	
>HS-DSCH MAC-d Flow ID	M		9.2.1.30O		–	
>Allocation/Retention Priority	M		9.2.1.1A		–	
>Traffic Class	M		9.2.1.58A		–	
>Binding ID	O		9.2.1.3	Shall be ignored if bearer establishment with ALCAP.	–	
>Transport Layer Address	O		9.2.1.62	Shall be ignored if bearer establishment with ALCAP.	–	
>Priority Queue Information		*1..<maxnoofPrioQueues>*			-	
>>Priority Queue ID	M		9.2.1.45A		-	
>>Scheduling Priority Indicator	M		9.2.1.51A			
>>T1	M		9.2.1.54A			
>>MAC-hs Window Size	M		9.2.1.34C		–	
>>MAC-hs Guaranteed Bit Rate	O		9.2.1.34Aa			
>>MAC-d PDU Size Index		*1..<maxnoofMACdPDUindexes>*				
>>>SID	M		9.2.1.52D		-	
>>>MAC-d PDU Size	M		9.2.1.34A		-	
UE Capabilities information		*1*			-	
~~>HS-DSCH TrCH Bits per HS-DSCH TTI~~	~~M~~		~~ENUMERATED (7040, 10228, 14080,…)~~		~~-~~	
~~>HS-DSCH multi-code capability~~	~~M~~		~~ENUMERATED (8, 12, 16,…)~~		~~-~~	
>HS-DSCH Physical Layer Category	M		9.2.1.y		–	
>MAC-hs reordering buffer size	M		INTEGER (1..300,…)	The total buffer size defined in UE capability minus the RLC AM buffer		
~~**HARQ Information**~~		~~*1..<maxnoofHARQprocesses>*~~			~~–~~	
~~>Process memory size~~	~~M~~		~~INTEGER (1..168960, …)~~	~~Number of soft channel bits per process.~~	~~-~~	

Range bound	Explanation
maxnoofMACdFlows	Maximum number of MAC-d flows.
maxnoofPrioQueues	Maximum number of Priority Queues.
maxnoofMACdPDUindexes	Maximum number of MAC-d PDU Size Indexes (SIDs).
~~*maxnoofHARQprocesses*~~	~~Maximum number of HARQ processes.~~

9.2.3.3ab HS-DSCH TDD Information Response

The *HS-DSCH TDD Information Response* IE provides information for HS-DSCH that have been established or modified.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
HS-DSCH MAC-d Flow Specific Information Response		*1..<maxnoofMACdFlows>*			–	
>HS-DSCH MAC-d Flow ID	M		9.2.1.30O		–	
>Binding ID	O		9.2.1.3		–	
>Transport Layer Address	O		9.2.1.62		–	
>HS-DSCH Initial Capacity Allocation	O		9.2.1.30Na		–	
HS-SCCH Specific Information Response		*0..<maxnoofHSSCCHcodes>*		Mandatory for 3.84 Mcps TDD, not applicable to 1.28 Mcps TDD	–	
>Time Slot	M		9.2.3.23			
>Midamble Shift And Burst Type	M		9.2.3.7			
>TDD Channelisation Code	M		9.2.3.19			
>HS-SICH Information		*1*				
>>HS SICH ID	M		9.2.3.3ad			
>>Time Slot	M		9.2.3.23			
>>Midamble Shift And Burst Type	M		9.2.3.7			
>>TDD Channelisation Code	M		9.2.3.19			
HS-SCCH Specific Information Response LCR		*0..<maxnoofHSSCCHcodes>*		Mandatory for 1.28 Mcps TDD, not applicable to 3.84 Mcps TDD	–	
>Time Slot LCR	M		9.2.3.24a			
>Midamble shift LCR	M		9.2.3.7A			
>First TDD Channelisation Code LCR	M		TDD Channelisation Code LCR 9.2.3.19a			
>Second TDD Channelisation Code LCR	M		TDD Channelisation Code LCR 9.2.3.19a			
>HS-SICH Information LCR		*1*				
>>HS SICH ID	M		9.2.3.3ad			
>>Time Slot LCR	M		9.2.3.24a			
>>Midamble shift LCR	M		9.2.3.7A			
>>TDD Channelisation Code LCR	M		9.2.3.19a			
HS-PDSCH Timeslot Specific Information Response		*0..<maxnoofDLts>*		Mandatory for 3.84Mcps TDD. Not Applicable to 1.28Mcps TDD.	–	
>Time Slot	M		9.2.3.23		–	
>Midamble Shift And Burst Type	M		9.2.3.7		–	
HS-PDSCH Timeslot Specific Information Response LCR		*0..<maxnoofDLtsLCR>*		Mandatory for 1.28Mcps TDD. Not Applicable to	–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
				3.84Mcps TDD.		
>Time Slot LCR	M		9.2.3.24a		–	
>Midamble Shift LCR	M		9.2.3.7A		–	
CHOICE *HARQ Memory Partitioning*	M				–	
>Implicit					–	
>>Number of Processes	M		INTEGER (1..8)		–	
>Explicit					–	
>>HARQ Memory Partitioning Infomation		*1..<maxnoofHARQprocesses>*			–	
>>>Process Memory Size	M		9.2.1.x	See [16]	–	

Range bound	Explanation
maxnoofMACdFlows	Maximum number of MAC-d flows.
maxnoofHSSCCHcodes	Maximum number of HS-SCCH codes.
MaxnoofDLts	Maximum number of downlink time slots per Radio Link for 3.84Mcps TDD.
maxnoofDLtsLCR	Maximum number of Downlink time slots per Radio Link for 1.28Mcps TDD.
maxnoofHARQprocesses	Maximum number of HARQ processes.

<Not affected part is omitted>

9.3.4 Information Element Definitions

```
-- **************************************************************
--
-- Information Element Definitions
--
-- **************************************************************

RNSAP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) rnsap (1) version1 (1) rnsap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN
```

<Not affected part is omitted>

```
-- H
HARQ-FDD-InfoList ::= SEQUENCE (SIZE (1..maxNrOfHARQProc)) OF HARQ-FDD-InfoItem

HARQ-FDD-InfoItem ::= SEQUENCE {
    process-Memory-Size                 INTEGER (1..172800,...),
    iE-Extensions                       ProtocolExtensionContainer { { HARQ-FDD-InfoItem-ExtIEs } }         OPTIONAL,
    ...
}

HARQ-FDD-InfoItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HARQ-TDD-InfoList ::= SEQUENCE (SIZE (1..maxNrOfHARQProc)) OF HARQ-TDD-InfoItem

HARQ-TDD-InfoItem ::= SEQUENCE {
    process-Memory-Size                 INTEGER (1..168960,...),
    iE-Extensions                       ProtocolExtensionContainer { { HARQ-TDD-InfoItem-ExtIEs } }         OPTIONAL,
    ...
}

HARQ-TDD-InfoItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HARQ-MemoryPartitioning ::= CHOICE {
    implicit        HARQ-MemoryPartitioning-Implicit,
    explicit        HARQ-MemoryPartitioning-Explicit,
    ...
    }

HARQ-MemoryPartitioning-Implicit    ::= SEQUENCE {
    number-of-Processes         INTEGER (1..8,...)
```

```
    iE-Extensions               ProtocolExtensionContainer { { HARQ-MemoryPartitioning-Implicit-ExtIEs } }       OPTIONAL,
    ...
}

HARQ-MemoryPartitioning-Implicit-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HARQ-MemoryPartitioning-Explicit    ::= SEQUENCE {
    hARQ-MemoryPartitioningList         HARQ-MemoryPartitioningList,
    iE-Extensions                       ProtocolExtensionContainer { { HARQ-MemoryPartitioning-Explicit-ExtIEs } }       OPTIONAL,
    ...
}

HARQ-MemoryPartitioning-Explicit-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HARQ-MemoryPartitioningList ::= SEQUENCE (SIZE (1..maxNrOfHARQProc)) OF HARQ-MemoryPartitioningItem

HARQ-MemoryPartitioningItem ::= SEQUENCE {
    process-Memory-Size                 ENUMERATED {
                                        hms800, hms1600, hms2400, hms3200, hms4000,
                                        hms4800, hms5600, hms6400, hms7200, hms8000,
                                        hms8800, hms9600, hms10400, hms11200, hms12000,
                                        hms12800, hms13600, hms14400, hms15200, hms16000,
                                        hms17600, hms19200, hms20800, hms22400, hms24000,
                                        hms25600, hms27200, hms28800, hms30400, hms32000,
                                        hms36000, hms40000, hms44000, hms48000, hms52000,
                                        hms56000, hms60000, hms64000, hms68000, hms72000,
                                        hms76000, hms80000, hms88000, hms96000, hms104000,
                                        hms112000, hms120000, hms128000, hms136000, hms144000,
                                        hms152000, hms160000, hms176000, hms192000, hms208000,
                                        hms224000, hms240000, hms256000, hms272000, hms288000,
                                        hms304000,...},
    iE-Extensions                       ProtocolExtensionContainer { { HARQ-MemoryPartitioningItem-ExtIEs } }       OPTIONAL,
    ...
}

HARQ-MemoryPartitioningItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HCS-Prio    ::= INTEGER (0..7)
-- 0 = lowest priority, ...7 = highest priority

HSDSCH-FDD-Information ::= SEQUENCE {
    hSDSCH-MACdFlow-Specific-Info           HSDSCH-MACdFlow-Specific-InfoList,
    uE-Capabilities-InfoFDD                 UE-Capabilities-InfoFDD,
    hARQ-FDD-Info                           HARQ-FDD-InfoList,
    cqiFeedback-CycleK                      CQI-Feedback-Cycle,
    cqiRepetitionFactor                     CQI-RepetitionFactor            OPTIONAL,
    -- This IE shall be present if the CQI Feedback Cycle k is greater than 0
```

```
    cqiPowerOffset                          CQI-Power-Offset,
    ackNackRepetitionFactor                 AckNack-RepetitionFactor,
    ackPowerOffset                          Ack-Power-Offset,
    nackPowerOffset                         Nack-Power-Offset,
    hsscch-PowerOffset                      HSSCCH-PowerOffset              OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { HSDSCH-FDD-Information-ExtIEs } }       OPTIONAL,
    ...
}

HSDSCH-FDD-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-FDD-Information-Response ::= SEQUENCE {
    hSDSCH-MACdFlow-Specific-InfoList-Response      HSDSCH-MACdFlow-Specific-InfoList-Response,
    hSSCCH-Specific-InfoList-Response               HSSCCH-FDD-Specific-InfoList-Response,
    measurement-Power-Offset                        Measurement-Power-Offset        OPTIONAL,
    hARQ-MemoryPartitioning                         HARQ-MemoryPartitioning,
    iE-Extensions                                   ProtocolExtensionContainer { { HSDSCH-FDD-Information-Response-ExtIEs } }        OPTIONAL,
    ...
}

HSDSCH-FDD-Information-Response-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-Information-to-Modify ::= SEQUENCE {
    hSDSCH-MACdFlow-Specific-InfoList-to-Modify     HSDSCH-MACdFlow-Specific-InfoList-to-Modify           OPTIONAL,
    cqiFeedback-CycleK                              CQI-Feedback-Cycle              OPTIONAL,   -- For FDD only
    cqiRepetitionFactor                             CQI-RepetitionFactor            OPTIONAL,   -- For FDD only
    ackNackRepetitionFactor                         AckNack-RepetitionFactor        OPTIONAL,   -- For FDD only
    cqiPowerOffset                                  CQI-Power-Offset                OPTIONAL,   -- For FDD only
    ackPowerOffset                                  Ack-Power-Offset                OPTIONAL,   -- For FDD only
    nackPowerOffset                                 Nack-Power-Offset               OPTIONAL,   -- For FDD only
    hsscch-PowerOffset                              HSSCCH-PowerOffset              OPTIONAL,   -- Only for FDD
    iE-Extensions                                   ProtocolExtensionContainer { { HSDSCH-Information-to-Modify-ExtIEs } }        OPTIONAL,
    ...
}

HSDSCH-Information-to-Modify-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-MACdFlow-ID ::= INTEGER (0..maxNrOfMACdFlows-1)

HSDSCH-MACdFlow-Specific-InfoList ::= SEQUENCE (SIZE (1..maxNrOfMACdFlows)) OF HSDSCH-MACdFlow-Specific-InfoItem

HSDSCH-MACdFlow-Specific-InfoItem ::= SEQUENCE {
    hSDSCH-MACdFlow-ID                  HSDSCH-MACdFlow-ID,
    allocationRetentionPriority         AllocationRetentionPriority,
    trafficClass                        TrafficClass,
    bindingID                           BindingID                               OPTIONAL,
    transportLayerAddress               TransportLayerAddress                   OPTIONAL,
```

```
    priorityQueue-Info                  PriorityQueue-InfoList,
    iE-Extensions                       ProtocolExtensionContainer { { HSDSCH-MACdFlow-Specific-InfoItem-ExtIEs } }      OPTIONAL,
    ...
}

HSDSCH-MACdFlow-Specific-InfoItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-MACdFlow-Specific-InfoList-Response ::= SEQUENCE (SIZE (1..maxNrOfMACdFlows)) OF HSDSCH-MACdFlow-Specific-InfoItem-Response

HSDSCH-MACdFlow-Specific-InfoItem-Response ::= SEQUENCE {
    hSDSCH-MACdFlow-ID                  HSDSCH-MACdFlow-ID,
    bindingID                           BindingID                           OPTIONAL,
    transportLayerAddress               TransportLayerAddress               OPTIONAL,
    hSDSCH-Initial-Capacity-Allocation  HSDSCH-Initial-Capacity-Allocation  OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { HSDSCH-MACdFlow-Specific-InfoItem-Response-ExtIEs } }      OPTIONAL,
    ...
}

HSDSCH-MACdFlow-Specific-InfoItem-Response-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-MACdFlow-Specific-InfoList-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfMACdFlows)) OF HSDSCH-MACdFlow-Specific-InfoItem-to-Modify

HSDSCH-MACdFlow-Specific-InfoItem-to-Modify ::= SEQUENCE {
    hSDSCH-MACdFlow-ID                  HSDSCH-MACdFlow-ID,
    allocationRetentionPriority         AllocationRetentionPriority             OPTIONAL,
    transportBearerRequestIndicator     TransportBearerRequestIndicator,
    trafficClass                        TrafficClass                            OPTIONAL,
    bindingID                           BindingID                               OPTIONAL,
    transportLayerAddress               TransportLayerAddress                   OPTIONAL,
    priorityQueue-Info-to-Modify        PriorityQueue-InfoList-to-Modify        OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { HSDSCH-MACdFlow-Specific-InfoItem-to-Modify-ExtIEs } }        OPTIONAL,
    ...
}

HSDSCH-MACdFlow-Specific-InfoItem-to-Modify-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-Initial-Capacity-Allocation::= SEQUENCE (SIZE (1..16)) OF HSDSCH-Initial-Capacity-AllocationItem

HSDSCH-Initial-Capacity-AllocationItem ::= SEQUENCE {
    schedulingPriorityIndicator     SchedulingPriorityIndicator,
    maximum-MACdPDU-Size            MACdPDU-Size,
    hSDSCH-InitialWindowSize        HSDSCH-InitialWindowSize,
    iE-Extensions                   ProtocolExtensionContainer { {HSDSCH-Initial-Capacity-AllocationItem-ExtIEs} } OPTIONAL,
    ...
}

HSDSCH-Initial-Capacity-AllocationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
```

```
    ...
}

HSDSCH-InitialWindowSize            ::= INTEGER (1..2047)
-- Number of MAC-d PDUs.
-- 2047 = Unlimited number of MAC-d PDUs

HSDSCH-RNTI ::= INTEGER (0..65535)

HSDSCH-TDD-Information ::= SEQUENCE {
    hSDSCH-MACdFlow-Specific-Info           HSDSCH-MACdFlow-Specific-InfoList,
    uE-Capabilities-InfoTDD                 UE-Capabilities-InfoTDD,
    hARQ-TDD-InfoList                       HARQ-TDD-InfoList,
    iE-Extensions                           ProtocolExtensionContainer { { HSDSCH-TDD-Information-ExtIEs } }       OPTIONAL,
    ...
}

HSDSCH-TDD-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-TDD-Information-Response ::= SEQUENCE {
    hSDSCH-MACdFlow-Specific-InfoList-Response      HSDSCH-MACdFlow-Specific-InfoList-Response,
    hSSCCH-TDD-Specific-InfoList-Response           HSSCCH-TDD-Specific-InfoList-Response           OPTIONAL,
-- Mandatory for 3.84Mcps TDD, Not Applicable to 1.28Mcps TDD
    hSSCCH-TDD-Specific-InfoList-Response-LCR       HSSCCH-TDD-Specific-InfoList-Response-LCR       OPTIONAL,
-- Mandatory for 1.28Mcps TDD, Not Applicable to 3.84Mcps TDD
    hSPDSCH-TDD-Specific-InfoList-Response          HSPDSCH-TDD-Specific-InfoList-Response          OPTIONAL,
    hSPDSCH-TDD-Specific-InfoList-Response-LCR      HSPDSCH-TDD-Specific-InfoList-Response-LCR      OPTIONAL,
    hARQ-MemoryPartitioning                         HARQ-MemoryPartitioning,
    iE-Extensions                                   ProtocolExtensionContainer { { HSDSCH-TDD-Information-Response-ExtIEs } }       OPTIONAL,
    ...
}

HSDSCH-TDD-Information-Response-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSPDSCH-TDD-Specific-InfoList-Response ::= SEQUENCE (SIZE (1..maxNrOfDLTs)) OF HSPDSCH-TDD-Specific-InfoItem-Response

HSPDSCH-TDD-Specific-InfoItem-Response ::= SEQUENCE {
    timeslot                                    TimeSlot,
    midambleShiftAndBurstType                   MidambleShiftAndBurstType,
    iE-Extensions                               ProtocolExtensionContainer { { HSPDSCH-TDD-Specific-InfoItem-Response-ExtIEs } }       OPTIONAL,
    ...
}

HSPDSCH-TDD-Specific-InfoItem-Response-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSPDSCH-TDD-Specific-InfoList-Response-LCR ::= SEQUENCE (SIZE (1.. maxNrOfDLTsLCR)) OF HSPDSCH-TDD-Specific-InfoItem-Response-LCR
```

```
HSPDSCH-TDD-Specific-InfoItem-Response-LCR ::= SEQUENCE {
    timeslotLCR                                 TimeSlotLCR,
    midambleShiftLCR                            MidambleShiftLCR,
    iE-Extensions                               ProtocolExtensionContainer { { HSPDSCH-TDD-Specific-InfoItem-Response-LCR-ExtIEs } }       OPTIONAL,
    ...
}

HSPDSCH-TDD-Specific-InfoItem-Response-LCR-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSSCCH-FDD-Specific-InfoList-Response ::= SEQUENCE (SIZE (1..maxNrOfHSSCCHCodes)) OF HSSCCH-FDD-Specific-InfoItem-Response

HSSCCH-FDD-Specific-InfoItem-Response ::= SEQUENCE {
    code-Number                                  INTEGER (0..127),
    iE-Extensions                                ProtocolExtensionContainer { { HSSCCH-FDD-Specific-InfoItem-Response-ExtIEs } }        OPTIONAL,
    ...
}

HSSCCH-FDD-Specific-InfoItem-Response-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSSCCH-PowerOffset ::= INTEGER (0..255)
-- PowerOffset = -32 + offset * 0.25
-- Unit dB, Range -32dB .. +31.75dB, Step +0.25dB

HSSCCH-TDD-Specific-InfoList-Response ::= SEQUENCE (SIZE (1..maxNrOfHSSCCHCodes)) OF HSSCCH-TDD-Specific-InfoItem-Response

HSSCCH-TDD-Specific-InfoItem-Response ::= SEQUENCE {
    timeslot                                     TimeSlot,
    midambleShiftAndBurstType                    MidambleShiftAndBurstType,
    tDD-ChannelisationCode                       TDD-ChannelisationCode,
    hSSICH-Info                                  HSSICH-Info,
    iE-Extensions                                ProtocolExtensionContainer { { HSSCCH-TDD-Specific-InfoItem-Response-ExtIEs } }        OPTIONAL,
    ...
}

HSSCCH-TDD-Specific-InfoItem-Response-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSSCCH-TDD-Specific-InfoList-Response-LCR ::= SEQUENCE (SIZE (1..maxNrOfHSSCCHCodes)) OF HSSCCH-TDD-Specific-InfoItem-Response-LCR

HSSCCH-TDD-Specific-InfoItem-Response-LCR ::= SEQUENCE {
    timeslotLCR                                  TimeSlotLCR,
    midambleShiftLCR                             MidambleShiftLCR,
    first-TDD-ChannelisationCodeLCR         TDD-ChannelisationCodeLCR,
    second-TDD-ChannelisationCodeLCR             TDD-ChannelisationCodeLCR,
    hSSICH-InfoLCR                               HSSICH-InfoLCR,
    iE-Extensions                                ProtocolExtensionContainer { { HSSCCH-TDD-Specific-InfoItem-Response-LCR-ExtIEs } }        OPTIONAL,
    ...
}
```

```
HSSCCH-TDD-Specific-InfoItem-Response-LCR-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSSICH-Info ::= SEQUENCE {
    hsSICH-ID                                   HS-SICH-ID,
    timeslot                                    TimeSlot,
    midambleShiftAndBurstType                   MidambleShiftAndBurstType,
    tDD-ChannelisationCode                      TDD-ChannelisationCode,
    iE-Extensions                               ProtocolExtensionContainer { { HSSICH-Info-ExtIEs } }       OPTIONAL,
    ...
}

HSSICH-Info-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSSICH-InfoLCR ::= SEQUENCE {
    hsSICH-ID                                   HS-SICH-ID,
    timeslotLCR                                 TimeSlotLCR,
    midambleShiftLCR                            MidambleShiftLCR,
    tDD-ChannelisationCodeLCR                   TDD-ChannelisationCodeLCR,
    iE-Extensions                               ProtocolExtensionContainer { { HSSICH-Info-LCR-ExtIEs } }      OPTIONAL,
    ...
}

HSSICH-Info-LCR-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HS-SICH-Reception-Quality-Value ::= SEQUENCE {
    failed-HS-SICH              HS-SICH-failed,
    missed-HS-SICH              HS-SICH-missed,
    total-HS-SICH               HS-SICH-total,
    iE-Extensions               ProtocolExtensionContainer { { HS-SICH-Reception-Quality-Value-ExtIEs} } OPTIONAL,
...
}

HS-SICH-Reception-Quality-Value-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HS-SICH-failed ::= INTEGER (0..20)

HS-SICH-missed ::= INTEGER (0..20)

HS-SICH-total ::= INTEGER (0..20)

HS-SICH-Reception-Quality-Measurement-Value ::= INTEGER (0..20)
-- According to mapping in [23]

HS-SICH-ID ::= INTEGER (0..31)
```

```
HSSCCH-CodeChangeIndicator  ::= ENUMERATED {
    hsSCCHCodeChangeNeeded
}

HSDSCH-FDD-Update-Information ::= SEQUENCE {
    hsSCCHCodeChangeIndicator                   HSSCCH-CodeChangeIndicator                  OPTIONAL,
    cqiFeedback-CycleK                          CQI-Feedback-Cycle                          OPTIONAL,
    cqiRepetitionFactor                         CQI-RepetitionFactor                        OPTIONAL,
    ackNackRepetitionFactor                     AckNack-RepetitionFactor                    OPTIONAL,
    cqiPowerOffset                              CQI-Power-Offset                            OPTIONAL,
    ackPowerOffset                              Ack-Power-Offset                            OPTIONAL,
    nackPowerOffset                             Nack-Power-Offset                           OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { HSDSCH-FDD-Update-Information-ExtIEs } }    OPTIONAL,
    ...
}

HSDSCH-FDD-Update-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-TDD-Update-Information ::= SEQUENCE {
    hsSCCHCodeChangeIndicator                   HSSCCH-CodeChangeIndicator                  OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { HSDSCH-TDD-Update-Information-ExtIEs } }    OPTIONAL,
    ...
}

HSDSCH-TDD-Update-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

<Not affected part is omitted>

```
-- U

UARFCN                  ::= INTEGER (0..16383,...)
-- Corresponds to: 0.0Hz..3276.6Mhz. See 25.101, 25.105

UDRE ::= ENUMERATED {
    lessThan1,
    between1-and-4,
    between4-and-8,
    over8,
    ...
}
```

~~UE-Capabilities-InfoFDD ::= SEQUENCE {~~
~~   hSDSCH-TrCH-Bits-Per-HSDSCH-TTI   ENUMERATED {v7300, v14600, v20456, v28800,...},~~
~~   hSDSCH-Multi-Code-Capability   ENUMERATED {v5, v10, v15,...},~~
~~   min-Inter-TTI-Interval   INTEGER (1..3,...),~~
~~   mAChs-Reordering-Buffer-Size   INTEGER (1..300,...),~~
~~   iE-Extensions   ProtocolExtensionContainer { { UE-Capabilities-InfoFDD-ExtIEs } }   OPTIONAL,~~

~~   ...~~
~~}~~

~~UE-Capabilities-InfoFDD-ExtIEs-RNSAP-PROTOCOL-EXTENSION ::= {~~
~~   ...~~
~~}~~

~~UE-Capabilities-InfoTDD ::= SEQUENCE {~~
~~   hSDSCH-TrCH-Bits-Per-HSDSCH-TTI   ENUMERATED {v7040, v10228, v14080,...},~~
~~   hSDSCH-Multi-Code-Capability   ENUMERATED {v8, v12, v16,...},~~
~~   mAChs-Reordering-Buffer-Size   INTEGER (1..300,...),~~
~~   iE-Extensions   ProtocolExtensionContainer { { UE-Capabilities-InfoTDD-ExtIEs } }   OPTIONAL,~~
~~   ...~~
~~}~~

~~UE-Capabilities-InfoTDD-ExtIEs-RNSAP-PROTOCOL-EXTENSION ::= {~~
~~   ...~~
~~}~~
UE-Capabilities-Info ::= SEQUENCE {
    hSDSCH-Physical-Layer-Category   INTEGER (1..64,...),
    mAChs-Reordering-Buffer-Size   INTEGER (1..300,...),
    iE-Extensions   ProtocolExtensionContainer { { UE-Capabilities-Info-ExtIEs } }   OPTIONAL,
    ...
}

UE-Capabilities-Info-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

3GPP TSG-RAN3 Meeting #36
Paris, France, 19th – 23rd May, 2003

Tdoc ⌘R3-030733

CR-Form-v7

CHANGE REQUEST

25.433 **CR** **854** ⌘ **rev** **-** ⌘ Current version: **5.4.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Correction to HARQ Memory Partitioning
Source:	⌘	RAN WG3
Work item code:	⌘	HSDPA-IuBIur
Date:	⌘	19/05/2003
Category:	⌘	**F**
Release:	⌘	REL-5

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

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

Reason for change: ⌘ The current assumption in NBAP is that the *HARQ Memory Partitioning* IE is provided by the RNC within the RL Setup/Rcfg procedure. Given that the HARQ entities are within the NodeB, the NodeB is in a much better position than the RNC to decide on how many HARQ processes it will use for a particular UE and how should the overall soft memory be partitioned across individual HARQ processes.

It is further proposed to align NBAP to RRC in that the RNC should signal the *HS-DSCH Physical Layer Capability*, instead of signalling all the *UE Capabilities* separately.

In addition, it is proposed to introduce "implict" HARQ Memory Partitioning in order to align NBAP to RRC.

Summary of change: ⌘

1. New reference to 25.306 is added.

2. The following HS-DSCH Physical Layer Capabilities:
   - *Max TrCH Bits Per HS-DSCH TTI*
   - *HS-DSCH Multi-Code Capability*, and
   - *Min Inter-TTI Arrival,*

   are replaced by:
   - *HS-DSCH Physical Layer Category*.

3. *HARQ Memory Partitioning* IE is moved from *HS-DSCH Information* IE to *HS-DSCH Information Response* IE, for both FDD and TDD and "implict" HARQ Memory Partitioning was introduced.

4. ASN.1 changes:

		• *HARQ-FDD-InfoItem* and *HARQ-TDD-InfoItem* replaced by *HARQ-InfoItem* • *UE-Capabilities-InfoFDD* and *UE-Capabilities-InfoTDD* replaced by *UE-Capabilities-Info* Impact assessment towards the previous version of the specification (same release): This CR has an isolated impact towards the previous version of the specification (same release). This CR has an impact under functional point of view. The impacted functionality is HSDPA.
Consequences if not approved:	⌘	A major error will remain in the spec yielding inefficient use of HSDPA resources in the NodeB.

Clauses affected:	⌘	2; 9.2.1.x (new); 9.2.1.y (new); 9.2.2.18D; 9.2.2.18E; 9.2.3.5F ; 9.2.3.5G; 9.3.4				
		Y	**N**			
Other specs Affected:	⌘	**X**		Other core specifications	⌘	CR835 on TS25.423v5.5.0
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

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

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

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TS 25.401: "UTRAN Overall Description".

[2] 3GPP TS 25.426: "UTRAN Iur and Iub Interface Data Transport & Transport Signalling for DCH Data Streams".

[3] CCITT Recommendation X.731 (01/92): "Information Technology – Open Systems Interconnection – Systems Management: State Management function".

[4] 3GPP TS 25.215: "Physical layer – Measurements (FDD)".

[5] 3GPP TS 25.225: "Physical layer – Measurements (TDD)".

[6] 3GPP TS 25.430: "UTRAN Iub General Aspect and Principle".

[7] 3GPP TS 25.211: "Physical channels and mapping of transport channels onto physical channels (FDD)".

[8] 3GPP TS 25.212: "Multiplexing and channel coding (FDD)".

[9] 3GPP TS 25.213: "Spreading and modulation (FDD)".

[10] 3GPP TS 25.214: "Physical layer procedures (FDD)".

[11] ITU-T Recommendation X.691, (12/97) "Information technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER)".

[12] ITU-T Recommendation X.680, (12/97) "Information Technology - Abstract Syntax Notation One (ASN.1):Specification of basic notation".

[13] ITU-T Recommendation X.681, (12/97) "Information Technology - Abstract Syntax Notation One (ASN.1): Information object specification".

[14] 3GPP TS 25.104: "UTRA (BS) FDD; Radio Transmission and Reception".

[15] 3GPP TS 25.105: "UTRA (BS) TDD; Radio Transmission and Reception".

[16] 3GPP TS 25.427: "UTRAN Iur/Iub Interface User Plane Protocol for DCH Data Stream".

[17] 3GPP TS 25.402: "Synchronisation in UTRAN Stage2".

[18] 3GPP TS 25.331: "RRC Protocol Specification".

[19] 3GPP TS25.221: "Physical channels and mapping of transport channels onto physical channels[TDD]".

[20] 3GPP TS 25.223: "Spreading and modulation (TDD)".

[21] 3GPP TS 25.224: "Physical Layer Procedures (TDD)".

[22] 3GPP TS 25.133: "Requirements for support of Radio Resource management (FDD)".

[23] 3GPP TS 25.123: "Requirements for support of Radio Resource management (TDD)".

[24] 3GPP TS 25.435: "UTRAN Iub Interface: User Plane Protocols for Common Transport Channel Data Streams".

[25] 3GPP TS 25.302: "Services Provided by the Physical Layer".

[26] 3GPP TR 25.921: "Guidelines and Principles for Protocol Description and Error Handling".

[27 ICD-GPS-200: "Navstar GPS Space Segment/Navigation User Interface".

[28] RTCM-SC104: "RTCM Recommended Standards for Differential GNSS Service (v.2.2)".

[29] IETF RFC 2460 "Internet Protocol, Version 6 (IPv6) Specification".

[30] IETF RFC 768 "User Datagram Protocol", (8/1980)

[31] 3GPP TS 25.434: "UTRAN Iub Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams ".

[32] 3GPP TS 25.321: "MAC protocol specification".

[33] 3GPP TS 25.306: "UE Radio Access capabilities".

<Not affected part is omitted>

9.2.1.x Process Memory Size

The *Process Memory Size* IE is the size of an HARQ process in the Node B expressed in bits.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Process Memory Size			ENUMERATED (800, 1600, 2400, 3200, 4000, 4800, 5600, 6400, 7200, 8000, 8800, 9600, 10400, 11200, 12000, 12800, 13600, 14400, 15200, 16000, 17600, 19200, 20800, 22400, 24000, 25600, 27200, 28800, 30400, 32000, 36000, 40000, 44000, 48000, 52000, 56000, 60000, 64000, 68000, 72000, 76000, 80000, 88000, 96000, 104000, 112000, 120000, 128000, 136000, 144000, 152000, 160000, 176000, 192000, 208000, 224000, 240000, 256000, 272000, 288000, 304000,...)	

9.2.1.y HS-DSCH Physical Layer Category

The *HS-DSCH Physical Layer Category* IE defines a set of UE radio access capabilities related to HSDPA, as defined in [33].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
HS-DSCH Physical Layer Category			INTEGER (1..64,…)	

<Not affected part is omitted>

9.2.2.18D HS-DSCH FDD Information

The HS-DSCH Information provides information for HS-DSCH MAC-d flows to be established.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
HS-DSCH MAC-d Flow Specific Information		*1..<maxnoofMACdFlows>*			–	
>HS-DSCH MAC-d Flow ID	M		9.2.1.31I		–	
>Allocation/Retention Priority	M		9.2.1.1A		–	
>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	–	
>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	–	
>Priority Queue Information	M	*1..<maxnoofPrioQueues>*			–	
>>Priority Queue ID	M		9.2.1.49C		–	
>>Scheduling Priority Indicator	M		9.2.1.53H		–	
>>T1	M		9.2.1.56a		–	
>>MAC-hs Window Size	M		9.2.1.38B		–	
>>MAC-hs Guaranteed Bit Rate	O		9.2.1.38Aa		–	
>>MAC-d PDU Size Index		*1..<maxnoofMACdPDUindexes>*			–	
>>>SID	M		9.2.1.53I		–	
>>>MAC-d PDU Size	M		9.2.1.38A		–	
UE Capabilities Information		*1*			–	
~~>Max TrCH Bits Per HS-DSCH TTI~~	~~M~~		~~ENUMERATED (7300, 14600, 20456, 28800,...)~~		~~–~~	
~~>HS-DSCH Multi-Code Capability~~	~~M~~		~~ENUMERATED (5, 10, 15,...)~~		~~–~~	
~~>Min Inter-TTI Interval~~	~~M~~		~~INTEGER (1..3,...)~~		~~–~~	
>HS-DSCH Physical Layer Category	M		9.2.1.y		–	
>MAC-hs Reordering Buffer Size	M		INTEGER (1..300,...)	The total buffer size defined in UE capability minus the RLC AM buffer.	–	
~~**HARQ Memory Partitioning**~~		~~*1..<maxnoofHARQprocesses>*~~				
~~>Process Memory Size~~	~~M~~		~~INTEGER (1..172800,...)~~		~~–~~	
CQI Feedback Cycle k	M		9.2.2.21B		–	
CQI Repetition Factor	C-CQICyclek		9.2.2.4Cb		–	
ACK-NACK Repetition Factor	M		9.2.2.a		–	
CQI Power Offset	M		9.2.2.4Ca		–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
ACK Power Offset	M		9.2.2.b		–	
NACK Power Offset	M		9.2.2.23a		–	
HS-SCCH Power Offset	O		9.2.2.18I		–	
Measurement Power Offset	O		9.2.2.21C		–	

Condition	Explanation
CQICyclek	The IE shall be present if the *CQI Feedback Cycle k* IE is set to a value greater than 0.

Range Bound	Explanation
maxnoofMACdFlows	Maximum number of HS-DSCH MAC-d flows
maxnoofPrioQueues	Maximum number of Priority Queues
~~*maxnoofHARQprocesses*~~	~~Maximum number of HARQ processes for one UE~~
maxnoofMACdPDUindexes	Maximum number of different MAC-d PDU SIDs
~~*maxAllowedinterTTI*~~	~~Maximum Inter-TTI Interval that should be supported by any UE~~
~~*maxRecordBuffSize*~~	~~Maximum MAC-hs re-ordering buffer size~~
~~*maxProcessMemSize*~~	~~Maximum HARQ process memory size~~

9.2.2.18E HS-DSCH FDD Information Response

The HS-DSCH Information Response provides information for HS-DSCH that have been established or modified.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
HS-DSCH MAC-d Flow Specific Information Response		*1..<maxnoofMACdFlows>*			–	
>HS-DSCH MAC-d Flow ID	M		9.2.1.31I		–	
>Binding ID	O		9.2.1.4		–	
>Transport Layer Address	O		9.2.1.63		–	
>HS-DSCH Initial Capacity Allocation	O		9.2.1.31Ha		–	
HS-SCCH Code		*1..<maxnoofHSSCCHcodes>*			–	
>Code Number	M		INTEGER (0..127)		–	
CHOICE *HARQ Memory Partitioning*	M				–	
>Implicit					–	
>>Number of Processes	M		INTEGER (1..8,...)		–	
>Explicit					–	
>>HARQ Memory Partitioning Infomation		*1..<maxnoofHARQprocesses>*			–	
>>>Process Memory Size	M		9.2.1.x	See [18]	–	

Range Bound	Explanation
maxnoofMACdFlows	Maximum number of HS-DSCH MAC-d flows
~~*maxnoofPrioQueues*~~	~~Maximum number of Priority Queues~~
~~*maxnoofMACdPDUindexes*~~	~~Maximum number of MAC-d PDU Size Indexes~~
maxnoofHSSCCHcodes	Maximum number of HS-SCCH codes
~~*maxCodeNumComp*~~	~~Maximum number of codes at the defined spreading factor, within the complete code tree~~
MaxnoofHARQprocesses	Maximum number of HARQ processes for one UE

<Not affected part is omitted>

9.2.3.5F HS-DSCH TDD Information

The HS-DSCH TDD Information provides information for HS-DSCH MAC-d flows to be established.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
HS-DSCH MAC-d Flow Specific Information		*1..<maxnoofMACdFlows>*			–	
>HS-DSCH MAC-d Flow ID	M		9.2.1.31I		–	
>Allocation/Retention Priority	M		9.2.1.1A		–	
>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	–	
>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	–	
>Priority Queue Information	M	*1..<maxnoofPrioQueues>*			–	
>>Priority Queue ID	M		9.2.1.49C		–	
>>Scheduling Priority Indicator	M		9.2.1.53H		–	
>>T1	M		9.2.1.56a		–	
>>MAC-hs Window Size	M		9.2.1.38B		–	
>>MAC-hs Guaranteed Bit Rate	O		9.2.1.38Aa		–	
>>MAC-d PDU Size Index		*1..<maxnoofMACdPDUindexes>*			–	
>>>SID	M		9.2.1.53I		–	
>>>MAC-d PDU Size	M		9.2.1.38A		–	
UE Capabilities Information		*1*			–	-
~~>HS-DSCH TrCh Bits Per TTI~~	~~M~~		~~ENUMERATED (7040, 10228, 14080,...)~~		~~–~~	
~~>HS-DSCH Multi-Code Capability~~	~~M~~		~~ENUMERATED (8, 12, 16,...)~~		~~–~~	
>HS-DSCH Physical Layer Category	M		9.2.1.y		–	
>MAC-hs Reordering Buffer Size	M		INTEGER (1..300,...)	The total buffer size defined in UE capability minus the RLC AM buffer.	–	
~~**HARQ Memory Partitioning**~~		~~*1..<maxnoofHARQprocesses>*~~			~~–~~	
~~>Process Memory Size~~	~~M~~		~~INTEGER (1..168960,...)~~		~~–~~	

Range Bound	Explanation
maxnoofMACdFlows	Maximum number of HS-DSCH MAC-d flows
maxnoofPrioQueues	Maximum number of Priority Queues
~~*maxnoofHARQprocesses*~~	~~Maximum number of HARQ processes for one UE~~
maxnoofMACdPDUindexes	Maximum number of different MAC-d PDU SIDs
~~*maxNoOfHSDSCHTrChBitsPerTTI*~~	~~Maximum Number of HS-DSCH Transport Channel Bits per TTI~~

9.2.3.5G HS-DSCH TDD Information Response

The HS-DSCH TDD Information Response provides information for HS-DSCH MAC-d flows that have been established or modified.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
HS-DSCH MAC-d Flow Specific Information Response		*1..<maxnoofMACdFlows>*			–	
>HS-DSCH MAC-d Flow ID	M		9.2.1.31I		–	
>Binding ID	O		9.2.1.4		–	
>Transport Layer Address	O		9.2.1.63		–	
> HS-DSCH Initial Capacity Allocation	O		9.2.1.31Ha		–	
HS-SCCH Specific Information Response		*0..<maxNoOfHSSCCHcodes>*		Mandatory for 3.84 Mcps TDD, not applicable to 1.28 Mcps TDD	GLOBAL	reject
>Time Slot	M		9.2.3.23		–	
>Midamble Shift And Burst Type	M		9.2.3.7		–	
>TDD Channelisation Code	M		9.2.3.19		–	
>HS-SICH Information		*1*			–	
>>HS SICH ID	M		9.2.3.5Gb		–	
>>Time Slot	M		9.2.3.23		–	
>>Midamble Shift And Burst Type	M		9.2.3.7		–	
>>TDD Channelisation Code	M		9.2.3.19		–	
HS-SCCH Specific Information Response LCR		*0..<maxNoOfHSSCCHcodes>*		Mandatory for 1.28 Mcps TDD, not applicable to 3.84 Mcps TDD	GLOBAL	reject
>Time Slot LCR	M		9.2.3.24A		–	
>Midamble Shift LCR	M		9.2.3.7a		–	
>First TDD Channelisation Code LCR	M		TDD Channelisation Code LCR 9.2.3.19a		–	
>Second TDD Channelisation Code LCR	M		TDD Channelisation Code LCR 9.2.3.19a		-	
>HS-SICH Information LCR		*1*			–	
>>HS SICH ID	M		9.2.3.5Gb			
>>Time Slot LCR	M		9.2.3.24A		–	
>>Midamble Shift LCR	M		9.2.3.7a		–	
>>TDD Channelisation Code LCR	M		9.2.3.19a		–	
CHOICE *HARQ Memory Partitioning*	M				–	
>Implicit					–	
>>Number of Processes	M		INTEGER (1..8,...)		–	
>Explicit					–	
>>HARQ Memory Partitioning Infomation		*1..<maxnoofHARQprocesses>*			–	
>>>Process Memory Size	M		9.2.1.x	See [18]	–	

Range Bound	Explanation
maxnoofMACdFlows	Maximum number of HS-DSCH MAC-d flows.
~~*maxnoofPrioQueues*~~	~~Maximum number of Priority Queues~~
~~*maxnoofMACdPDUindexes*~~	~~Maximum number of different MAC-d Size Indexes (SIDs)~~
maxnoofHSSCCHcodes	Maximum number of HS-SCCH codes
maxnoofHARQprocesses	Maximum number of HARQ processes for one UE

<Not affected part is omitted>

9.3.4 Information Elements Definitions

```
--**************************************************************************
--
-- Information Element Definitions
--
--**************************************************************************

NBAP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) nbap (2) version1 (1) nbap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=
BEGIN
```

<Not affected part is omitted>

```
-- ========================================
--  H
-- ========================================

HARQMemoryPartitioningFDD ::= SEQUENCE (SIZE (1..maxNrOfHARQProcesses)) OF HARQMemoryPartitioning-ItemFDD

HARQMemoryPartitioning-ItemFDD ::= SEQUENCE {
    process-Memory-Size                 INTEGER (0..172800,...),
    iE-Extensions                       ProtocolExtensionContainer { { HARQMemoryPartitioning-ItemFDD-ExtIEs} }        OPTIONAL,
    ...
}

HARQMemoryPartitioning-ItemFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HARQMemoryPartitioningTDD ::= SEQUENCE (SIZE (1..maxNrOfHARQProcesses)) OF HARQMemoryPartitioning-ItemTDD

HARQMemoryPartitioning-ItemTDD ::= SEQUENCE {
    process-Memory-Size                 INTEGER (0..168960,...),
    iE-Extensions                       ProtocolExtensionContainer { { HARQMemoryPartitioning-ItemTDD-ExtIEs} }        OPTIONAL,
    ...
}

HARQMemoryPartitioning-ItemTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
HARQ-MemoryPartitioning ::= CHOICE {
    implicit        HARQ-MemoryPartitioning-Implicit,
    explicit        HARQ-MemoryPartitioning-Explicit,
    ...
    }

HARQ-MemoryPartitioning-Implicit    ::= SEQUENCE {
```

```
    number-of-Processes         INTEGER (1..8,...)
    iE-Extensions               ProtocolExtensionContainer { { HARQ-MemoryPartitioning-Implicit-ExtIEs } }      OPTIONAL,
    ...
}

HARQ-MemoryPartitioning-Implicit-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HARQ-MemoryPartitioning-Explicit    ::= SEQUENCE {
    hARQ-MemoryPartitioningList         HARQ-MemoryPartitioningList,
    iE-Extensions                       ProtocolExtensionContainer { { HARQ-MemoryPartitioning-Explicit-ExtIEs } }       OPTIONAL,
    ...
}

HARQ-MemoryPartitioning-Explicit-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HARQ-MemoryPartitioningList ::= SEQUENCE (SIZE (1..maxNrOfHARQProc)) OF HARQ-MemoryPartitioningItem

HARQ-MemoryPartitioningItem ::= SEQUENCE {
    process-Memory-Size                 ENUMERATED {
                                        hms800, hms1600, hms2400, hms3200, hms4000,
                                        hms4800, hms5600, hms6400, hms7200, hms8000,
                                        hms8800, hms9600, hms10400, hms11200, hms12000,
                                        hms12800, hms13600, hms14400, hms15200, hms16000,
                                        hms17600, hms19200, hms20800, hms22400, hms24000,
                                        hms25600, hms27200, hms28800, hms30400, hms32000,
                                        hms36000, hms40000, hms44000, hms48000, hms52000,
                                        hms56000, hms60000, hms64000, hms68000, hms72000,
                                        hms76000, hms80000, hms88000, hms96000, hms104000,
                                        hms112000, hms120000, hms128000, hms136000, hms144000,
                                        hms152000, hms160000, hms176000, hms192000, hms208000,
                                        hms224000, hms240000, hms256000, hms272000, hms288000,
                                        hms304000,...},
    iE-Extensions                       ProtocolExtensionContainer { { HARQ-MemoryPartitioningItem-ExtIEs } }       OPTIONAL,
    ...
}

HARQ-MemoryPartitioningItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-FDD-Information ::= SEQUENCE {
    hsDSCH-MACdFlow-Specific-Info       HSDSCH-MACdFlow-Specific-InfoList,
    ueCapability-Info                   UE-Capability-InformationFDD,
    harqMemoryPartitioningFDD           HARQMemoryPartitioningFDD,
    cqiFeedback-CycleK                  CQI-Feedback-Cycle,
    cqiRepetitionFactor                 CQI-RepetitionFactor            OPTIONAL,
    -- This IE shall be present if the CQI Feedback Cycle k is greater than 0
    ackNackRepetitionFactor             AckNack-RepetitionFactor,
    cqiPowerOffset                      CQI-Power-Offset,
```

```
    ackPowerOffset                      Ack-Power-Offset,
    nackPowerOffset                     Nack-Power-Offset,
    hsscch-PowerOffset                  HSSCCH-PowerOffset              OPTIONAL,
    measurement-Power-Offset            Measurement-Power-Offset        OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { HSDSCH-FDD-Information-ExtIEs} }              OPTIONAL,
    ...
}

HSDSCH-FDD-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-TDD-Information ::= SEQUENCE {
    hsDSCH-MACdFlow-Specific-Info       HSDSCH-MACdFlow-Specific-InfoList,
    ueCapability-Info                   UE-Capability-InformationTDD,
    harqMemoryPartitioningTDD           HARQMemoryPartitioningTDD,
    iE-Extensions                       ProtocolExtensionContainer { { HSDSCH-TDD-Information-ExtIEs} }              OPTIONAL,
    ...
}

HSDSCH-TDD-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-MACdFlow-Specific-InfoList ::= SEQUENCE (SIZE (1..maxNrOfMACdFlows)) OF HSDSCH-MACdFlow-Specific-InfoItem

HSDSCH-MACdFlow-Specific-InfoItem ::= SEQUENCE {
    hsDSCH-MACdFlow-ID                  HSDSCH-MACdFlow-ID,
    allocationRetentionPriority         AllocationRetentionPriority,
    bindingID                           BindingID                   OPTIONAL,
    transportLayerAddress               TransportLayerAddress       OPTIONAL,
    priorityQueueInfo                   PriorityQueue-InfoList,
    iE-Extensions                       ProtocolExtensionContainer { { HSDSCH-MACdFlow-Specific-InfoItem-ExtIEs} }    OPTIONAL,
    ...
}

HSDSCH-MACdFlow-Specific-InfoItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-Information-to-Modify ::= SEQUENCE {
    hsDSCH-MACdFlow-Specific-Info-to-Modify         HSDSCH-MACdFlow-Specific-InfoList-to-Modify                     OPTIONAL,
    cqiFeedback-CycleK                              CQI-Feedback-Cycle              OPTIONAL,   -- For FDD only
    cqiRepetitionFactor                             CQI-RepetitionFactor            OPTIONAL,   -- For FDD only
    ackNackRepetitionFactor                         AckNack-RepetitionFactor        OPTIONAL,   -- For FDD only
    cqiPowerOffset                                  CQI-Power-Offset                OPTIONAL,   -- For FDD only
    ackPowerOffset                                  Ack-Power-Offset                OPTIONAL,   -- For FDD only
    nackPowerOffset                                 Nack-Power-Offset               OPTIONAL,   -- For FDD only
    hsscch-PowerOffset                              HSSCCH-PowerOffset              OPTIONAL, -- only for FDD
    measurement-Power-Offset                        Measurement-Power-Offset        OPTIONAL,   -- For FDD only
    iE-Extensions                                   ProtocolExtensionContainer { { HSDSCH-Information-to-Modify-ExtIEs} }   OPTIONAL,
    ...
}
```

```
HSDSCH-Information-to-Modify-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-MACdFlow-Specific-InfoList-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfMACdFlows)) OF HSDSCH-MACdFlow-Specific-InfoItem-to-Modify

HSDSCH-MACdFlow-Specific-InfoItem-to-Modify ::= SEQUENCE {
    hsDSCH-MACdFlow-ID                  HSDSCH-MACdFlow-ID,
    allocationRetentionPriority         AllocationRetentionPriority                OPTIONAL,
    transportBearerRequestIndicator     TransportBearerRequestIndicator,
    bindingID                           BindingID                                  OPTIONAL,
    transportLayerAddress               TransportLayerAddress                      OPTIONAL,
    priorityQueueInfotoModify           PriorityQueue-InfoList-to-Modify           OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { HSDSCH-MACdFlow-Specific-InfoItem-to-Modify-ExtIEs} }   OPTIONAL,
    ...
}

HSDSCH-MACdFlow-Specific-InfoItem-to-Modify-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-FDD-Information-Response ::= SEQUENCE {
    hsDSCH-MACdFlow-Specific-InformationResp        HSDSCH-MACdFlow-Specific-InformationResp,
    hsSCCH-Specific-Information-ResponseFDD         HSSCCH-Specific-InformationRespListFDD,
    hARQ-MemoryPartitioning                         HARQ-MemoryPartitioning,
    iE-Extensions                                   ProtocolExtensionContainer { { HSDSCH-FDD-Information-Response-ExtIEs } }     OPTIONAL,
    ...
}

HSDSCH-FDD-Information-Response-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-TDD-Information-Response ::= SEQUENCE {
    hsDSCH-MACdFlow-Specific-InformationResp        HSDSCH-MACdFlow-Specific-InformationResp,
    hsSCCH-Specific-Information-ResponseTDD         HSSCCH-Specific-InformationRespListTDD      OPTIONAL, -- Mandatory for 3.84Mcps TDD, Not
Applicable to 1.28Mcps TDD
    hsSCCH-Specific-Information-ResponseTDDLCR      HSSCCH-Specific-InformationRespListTDDLCR   OPTIONAL, -- Mandatory for 1.28Mcps TDD, Not
Applicable to 3.84Mcps TDD
    hARQ-MemoryPartitioning                         HARQ-MemoryPartitioning,
    iE-Extensions                                   ProtocolExtensionContainer { { HSDSCH-TDD-Information-Response-ExtIEs } }     OPTIONAL,
    ...
}

HSDSCH-TDD-Information-Response-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-MACdFlow-Specific-InformationResp ::= SEQUENCE (SIZE (1..maxNrOfMACdFlows)) OF HSDSCH-MACdFlow-Specific-InformationResp-Item

HSDSCH-MACdFlow-Specific-InformationResp-Item ::= SEQUENCE {
    hsDSCHMacdFlow-Id                           HSDSCH-MACdFlow-ID,
```

```
    bindingID                                       BindingID                   OPTIONAL,
    transportLayerAddress                           TransportLayerAddress       OPTIONAL,
    hSDSCH-Initial-Capacity-Allocation              HSDSCH-Initial-Capacity-Allocation OPTIONAL,
    iE-Extensions                                   ProtocolExtensionContainer { { HSDSCH-MACdFlow-Specific-InformationRespItem-ExtIEs } }
    OPTIONAL,
    ...
}

HSDSCH-MACdFlow-Specific-InformationRespItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSSCCH-PowerOffset ::= INTEGER (0..255)
-- PowerOffset = -32 + offset * 0.25
-- Unit dB, Range -32dB .. +31.75dB, Step +0.25dB

HSDSCH-Initial-Capacity-Allocation::= SEQUENCE (SIZE (1..16)) OF HSDSCH-Initial-Capacity-AllocationItem

HSDSCH-Initial-Capacity-AllocationItem ::= SEQUENCE {
    schedulingPriorityIndicator     SchedulingPriorityIndicator,
    maximum-MACdPDU-Size            MACdPDU-Size,
    hSDSCH-InitialWindowSize        HSDSCH-InitialWindowSize,
    iE-Extensions                   ProtocolExtensionContainer { { HSDSCH-Initial-Capacity-AllocationItem-ExtIEs } } OPTIONAL,
    ...
}

HSDSCH-Initial-Capacity-AllocationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-InitialWindowSize            ::= INTEGER (1..2047)
-- Number of MAC-d PDUs.
-- 2047 = Unlimited number of MAC-d PDUs

HSSCCH-Specific-InformationRespListFDD ::= SEQUENCE (SIZE (1..maxNrOfHSSCCHCodes)) OF HSSCCH-Codes

HSSCCH-Codes ::= SEQUENCE {
    codeNumber                                      INTEGER (1..127),
    iE-Extensions                                   ProtocolExtensionContainer { { HSSCCH-Specific-InformationRespItemFDD-ExtIEs } }    OPTIONAL,
    ...
}

HSSCCH-Specific-InformationRespItemFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSSCCH-Specific-InformationRespListTDD ::= SEQUENCE (SIZE (1..maxNrOfHSSCCHCodes)) OF HSSCCH-Specific-InformationRespItemTDD

HSSCCH-Specific-InformationRespItemTDD ::= SEQUENCE {
    timeslot                                        TimeSlot,
    midambleShiftAndBurstType                       MidambleShiftAndBurstType,
    tDD-ChannelisationCode                          TDD-ChannelisationCode,
    hSSICH-Info                                     HSSICH-Info,
```

```
    iE-Extensions                                   ProtocolExtensionContainer { { HSSCCH-Specific-InformationRespItemTDD-ExtIEs } }       OPTIONAL,
    ...
}

HSSCCH-Specific-InformationRespItemTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSSCCH-Specific-InformationRespListTDDLCR ::= SEQUENCE (SIZE (1..maxNrOfHSSCCHCodes)) OF HSSCCH-Specific-InformationRespItemTDDLCR

HSSCCH-Specific-InformationRespItemTDDLCR ::= SEQUENCE {
    timeslotLCR                                     TimeSlotLCR,
    midambleShiftLCR                                MidambleShiftLCR,
    first-TDD-ChannelisationCodeLCR                     TDD-ChannelisationCodeLCR,
    second-TDD-ChannelisationCodeLCR                TDD-ChannelisationCodeLCR,
    hSSICH-InfoLCR                                  HSSICH-InfoLCR,
    iE-Extensions                                   ProtocolExtensionContainer { { HSSCCH-Specific-InformationRespItemTDDLCR-ExtIEs } }       OPTIONAL,
    ...
}

HSSCCH-Specific-InformationRespItemTDDLCR-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSSICH-Info ::= SEQUENCE {
    hsSICH-ID                                       HS-SICH-ID,
    timeslot                                        TimeSlot,
    midambleShiftAndBurstType                       MidambleShiftAndBurstType,
    tDD-ChannelisationCode                          TDD-ChannelisationCode,
    iE-Extensions                                   ProtocolExtensionContainer { { HSSICH-Info-ExtIEs } }       OPTIONAL,
    ...
}

HSSICH-Info-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSSICH-InfoLCR ::= SEQUENCE {
    hsSICH-ID                                       HS-SICH-ID,
    timeslotLCR                                     TimeSlotLCR,
    midambleShiftLCR                                MidambleShiftLCR,
    tDD-ChannelisationCodeLCR                       TDD-ChannelisationCodeLCR,
    iE-Extensions                                   ProtocolExtensionContainer { { HSSICH-Info-LCR-ExtIEs } }      OPTIONAL,
    ...
}

HSSICH-Info-LCR-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HS-SICH-Reception-Quality-Value ::= SEQUENCE {
    failed-HS-SICH              HS-SICH-failed,
    missed-HS-SICH              HS-SICH-missed,
```

```
    total-HS-SICH               HS-SICH-total,
    iE-Extensions               ProtocolExtensionContainer { { HS-SICH-Reception-Quality-Value-ExtIEs} } OPTIONAL,
...
}

HS-SICH-Reception-Quality-Value-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HS-SICH-failed ::= INTEGER (0..20)

HS-SICH-missed ::= INTEGER (0..20)

HS-SICH-total ::= INTEGER (0..20)

HS-SICH-Reception-Quality-Measurement-Value ::= INTEGER (0..20)
-- According to mapping in [23]

HSDSCH-MACdFlow-ID ::= INTEGER (0..maxNrOfMACdFlows-1)

HSDSCH-RNTI ::= INTEGER (0..65535)

HS-PDSCH-FDD-Code-Information ::= SEQUENCE {
   number-of-HS-PDSCH-codes                    INTEGER (0..maxCodeNrComp-1),
   hS-PDSCH-Start-code-number                  HS-PDSCH-Start-code-number      OPTIONAL,
-- Only included when number of HS-DSCH codes > 0
   ...
}

HS-PDSCH-Start-code-number ::=  INTEGER (0..maxCodeNrComp-1)

HS-SCCH-ID ::= INTEGER (0..31)
HS-SICH-ID ::= INTEGER (0..31)

HS-SCCH-FDD-Code-Information::= CHOICE {
    replace                 HS-SCCH-FDD-Code-List,
    remove                  NULL,
    ...
}

HS-SCCH-FDD-Code-List ::= SEQUENCE (SIZE (1..maxNrOfHSSCCHs)) OF HS-SCCH-FDD-Code-Information-Item

HS-SCCH-FDD-Code-Information-Item ::= INTEGER (0..maxCodeNrComp-1)

HSSCCH-CodeChangeIndicator  ::= ENUMERATED {
    hsSCCHCodeChangeNeeded
}

HSDSCH-FDD-Update-Information ::= SEQUENCE {
    hsSCCHCodeChangeIndicator                   HSSCCH-CodeChangeIndicator              OPTIONAL,
    cqiFeedback-CycleK                          CQI-Feedback-Cycle                      OPTIONAL,
    cqiRepetitionFactor                         CQI-RepetitionFactor                    OPTIONAL,
    ackNackRepetitionFactor                     AckNack-RepetitionFactor                OPTIONAL,
```

```
    cqiPowerOffset                                  CQI-Power-Offset                            OPTIONAL,
    ackPowerOffset                                  Ack-Power-Offset                            OPTIONAL,
    nackPowerOffset                                 Nack-Power-Offset                           OPTIONAL,
    iE-Extensions                                   ProtocolExtensionContainer { { HSDSCH-FDD-Update-Information-ExtIEs } }    OPTIONAL,
    ...
}

HSDSCH-FDD-Update-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-TDD-Update-Information ::= SEQUENCE {
    hsSCCHCodeChangeIndicator                       HSSCCH-CodeChangeIndicator                  OPTIONAL,
    iE-Extensions                                   ProtocolExtensionContainer { { HSDSCH-TDD-Update-Information-ExtIEs } }    OPTIONAL,
    ...
}

HSDSCH-TDD-Update-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

<Not affected part is omitted>

```
-- ==========================================
--  U
-- ==========================================

UARFCN ::= INTEGER (0..16383, ...)
-- corresponds to 1885.2MHz .. 2024.8MHz

UC-Id ::= SEQUENCE {
    rNC-ID              RNC-ID,
    c-ID                C-ID,
    iE-Extensions           ProtocolExtensionContainer { {UC-Id-ExtIEs} } OPTIONAL,
    ...
}
UC-Id-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UDRE ::= ENUMERATED {
    udre-minusequal-one-m,
    udre-betweenoneandfour-m,
    udre-betweenfourandeight-m,
    udre-greaterequaleight-m
}
```

~~UE-Capability-InformationFDD ::= SEQUENCE {~~
~~   hSDSCH-TrCH-Bits-Per-HSDSCH-TTI   ENUMERATED {v7300, v14600, v20456, v28800,...},~~
~~   hSDSCH-Multi-Code-Capability   ENUMERATED {v5, v10, v15,...},~~
~~   min-Inter-TTI-Interval   INTEGER (1..3,...),~~
~~   mAChs-Reordering-Buffer-Size   INTEGER (1..300,...),~~

~~iE-Extensions ProtocolExtensionContainer { { UE-Capability-InformationFDD-ExtIEs } } OPTIONAL,~~
~~...~~
~~}~~

~~UE-Capability-InformationFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {~~
~~...~~
~~}~~

~~UE-Capability-InformationTDD ::= SEQUENCE {~~
~~hSDSCHTrCHBitsPerTTI ENUMERATED { v7040, v10228, v14080, ... },~~
~~hSDSCH-Multi-Code-Capability ENUMERATED {v8, v12, v16,...},~~
~~mAChs-Reordering-Buffer-Size INTEGER (1..300,...),~~
~~iE-Extensions ProtocolExtensionContainer { { UE-Capability-InformationTDD-ExtIEs } } OPTIONAL,~~
~~...~~
~~}~~

~~UE-Capability-InformationTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {~~
~~...~~
~~}~~

UE-Capability-Information ::= SEQUENCE {
hSDSCH-Physical-Layer-Category INTEGER (1..64,...),
mAChs-Reordering-Buffer-Size INTEGER (1..300,...),
iE-Extensions ProtocolExtensionContainer { { UE-Capability-Information-ExtIEs } } OPTIONAL,
...
}

UE-Capability-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
...
}