TSG RAN Meeting #21 **RP-030449**
Frankfurt, Germany, 16 - 19 September 2003

Title **CRs (Rel-5 only) to TS 25.423, TS 25.433 and TS 25.331 (RAN2) on HS-DSCH Priority Queue to Modify**
Source **TSG RAN WG3**
Agenda Item **7.4.6**

RAN3 Tdoc	Spec	curr. Vers.	new Vers.	REL	CR	Rev	Cat	Title	Work item
R3-031214	25.423	5.6.0	5.7.0	REL-5	847	2	F	HS-DSCH Priority Queue to Modify	HSDPA-IubIur
R3-031215	25.433	5.5.0	5.6.0	REL-5	874	2	F	HS-DSCH Priority Queue to Modify	HSDPA-IubIur
R2-031933	25.331	5.5.0	5.6.0	REL-5	2028	-	F	Reconfiguration of MAC-d flow	HSDPA-L23

Note: Two RAN3 CRs are linked with a RAN2 CR.

3GPP TSG-RAN2 Meeting #37
Budapest, Hungary, 25th - 29th August 2003

Tdoc ⌘R2-031933

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2028** ⌘ **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 [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Reconfiguration of MAC-d flow
Source:	⌘	RAN WG2
Work item code:	⌘	HSDPA-L23.
Date:	⌘	July 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:	⌘	It is currently not possible via the *Added or reconfigured MAC-d flow* IE to remove an existing MAC-hs queue from a MAC-d flow. It is currently unclear whether the UE shall remove all MAC-hs queues mapped onto a MAC-d flow, if this MAC-d flow is indicated to be released in the *Deleted DL TrCH information* IE.
Summary of change:	⌘	This CR includes the following changes: *Added or reconfigured MAC-d flow* IE Possibility to remove a MAC-hs queue from a MAC-d flow is introduced. Clarification is also added that only MAC-hs queues to be either reconfigured, added or deleted need to be included in the *Added or reconfigured MAC-d flow* IE. *Deleted DL TrCH information* IE Upon MAC-d flow deletion, it is clarified that all MAC-hs queues mapped onto this flow shall be removed. Impact assessment towards the previous version of the specification (same release): This CR has isolated impact on the previous version of the specification (same release). The impact can be considered isolated because the change only affects HSDPA. This CR has an impact under functional point of view.
Consequences if	⌘	If the CR is not approved, it will not be possible to remove an existing MAC-hs

not approved:	queue from a MAC-d flow. Furthermore, the UE behaviour when the *Deleted DL TrCH information* IE is received will remain ambiguous.

Clauses affected:	⌘	8.6.5.5a, 8.6.5.8, 10.3.5.1a, 11.1			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	25.423CR847 and 25.433CR874.
		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.

8.6.5.5a Added or reconfigured MAC-d flow

If the IE "Added or reconfigured MAC-d flow" is included, the UE shall:

1> if a MAC-hs queue (identified by the IE "MAC-hs queue Id") is included in both the IE "MAC-hs queue to add or reconfigure list" and the IE "MAC-hs queue to delete list":

2> set the variable INVALID_CONFIGURATION to TRUE.

1> for each MAC-hs queue included in the IE "MAC-hs queue to add or reconfigure":

2~~1~~> set the release timer for each of the MAC-hs queues in the MAC-hs entity to the value in the corresponding IE "T1";

2~~1~~> set the MAC-hs receiver window size for each of the MAC-hs queues in the MAC-hs entity to the value in the corresponding IE "MAC-hs window size";

2~~1~~> apply the indicated mapping between MAC-d flows and MAC-hs queues; and

2~~1~~> configure MAC-hs with the mapping between MAC-d PDU sizes index and allowed MAC-d PDU sizes as indicated, potentially replacing already existing MAC-d PDU sizes.

1> for each MAC-hs queue included in the IE "MAC-hs queue to delete":

2> delete any information about the MAC-hs queue identified by the IE "MAC-hs queue Id".

8.6.5.8 Deleted DL TrCH information

If the IE "Deleted DL TrCH information" is included the UE shall:

~~1> delete any information about the transport channel identified by the IE "DL TrCH identity" or IE "MAC-d Flow Identity" as applicable.~~

1> if a Downlink transport channel is requested to be deleted:

2> delete any information about the transport channel identified by the IE "DL TrCH identity".

1> if a DL MAC-d flow is requested to be deleted:

2> delete any information about the DL HS-DSCH MAC-d flow identified by the IE "MAC-d Flow Identity", i.e. delete any information about MAC-hs queue(s) mapped onto this MAC-d flow.

10.3.5.1a Added or reconfigured MAC-d flow

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
MAC-hs queue to add or reconfigure list	OP	<1 to maxQueue ID>			REL-5
>MAC-hs queue Id	MP		Integer(1..8)		REL-5
>MAC-d Flow Identity	MP		MAC-d Flow Identity 10.3.5.7c		REL-5
>T1	MP		Integer(10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 200, 300, 400)	Timer (in milliseconds) when PDUs are released to the upper layers even though there are outstanding PDUs with lower TSN values.	REL-5
>MAC-hs window size	MP		Integer(4, 6, 8, 12, 16, 24, 32)		REL-5
>MAC-d PDU size Info	OP	<1 to max MACdPDU sizes>		Mapping of the different MAC-d PDU sizes configured for the HS-DSCH to the MAC-d PDU size index in the MAC-hs header.	REL-5
>>MAC-d PDU size	MP		Integer (1..5000)		REL-5
>>MAC-d PDU size index	MP		Integer(0..7)		REL-5
MAC-hs queue to delete list	OP	<1 to maxQueue ID>			REL-5
>MAC-hs queue Id	MP		Integer(0..7)		REL-5

```
AddOrReconfMAC-dFlow    ::=         SEQUENCE {
    mac-hs-AddReconfQueue-List                  MAC-hs-AddReconfQueue-List  OPTIONAL,
    mac-hs-DelQueue-List                        MAC-hs-DelQueue-List    OPTIONAL
}


MAC-hs-AddReconfQueue-List ::=              SEQUENCE (SIZE(1..maxQueueIDs)) OF
                                        MAC-hs-AddReconfQueue

MAC-hs-AddReconfQueue   ::=                 SEQUENCE {
    mac-hsQueueId                       INTEGER(1..8),
    mac-dFlowId                         MAC-d-FlowIdentity,
    reorderingReleaseTimer              T1-ReleaseTimer,
    mac-hsWindowSize                    MAC-hs-WindowSize,
    mac-d-PDU-SizeInfo-List             MAC-d-PDU-SizeInfo-List
}

MAC-hs-DelQueue-List ::=                SEQUENCE (SIZE(1..maxQueueIDs)) OF
                                        MAC-hs-DelQueue

MAC-hs-DelQueue ::=                 SEQUENCE {
    mac-hsQueueId                       INTEGER(0..7)
}
```

3GPP TSG-RAN3 Meeting #37
Budapest, Hungary, 25th - 29th August 2003

Tdoc ⌘R3-031214

CR-Form-v7

CHANGE REQUEST

⌘ **25.423** **CR** **847** ⌘ **rev** **2** ⌘ Current version: **5.6.0** ⌘

*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:	⌘	HS-DSCH Priority Queue to Modify
Source:	⌘	RAN3
Work item code:	⌘	HSDPA-IuBIur
Date:	⌘	28/08/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
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R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	It is currently not possible to delete an existing priority queue from a HS-DSCH MAC-d flow.
Summary of change:	⌘	Revision 2: *HS-DSCH MAC-d Flow ID* IE has been changed to *Associated HS-DSCH MAC-d Flow* IE. ASN.1 has been updated accordingly. -------- Revision 1: The CHOICE has been extended to include Add/Modify/Delete of a priority queue in *HS-DSCH Information To Modify* IE. *HS-DSCH MAC-d Flow ID* IE has been added to *Priority Queue Information* IE and the *Priority Queue Information* IE has been moved upp one level within *HS-DSCH Information To Modify* IE, *HS-DSCH FDD Information* IE and *HS-DSCH TDD Information* IE. ASN.1 has been updated accordingly. -------- A CHOICE has been added to Priority Queue Information in the *HS-DSCH Information To Modify* IE, which makes it possible to indicate priority queues for deletion. Corresponding changes have been done to the ASN.1 code. Impact assessment towards the previous version of the specification (same release): This CR has isolated impact on the previous version of the specification (same release). The impact can be considered isolated because the change only affects HSDPA. This CR has an impact under functional point of view.
Consequences if	⌘	If the CR is not approved, the procedure for HS-DSCH modification is incomplete.

not approved:	

Clauses affected:	⌘	9.2.1.30Q, 9.2.2.19a, 9.2.3.3aa, 9.3.4			
		Y	**N**		
Other specs	⌘	**X**		Other core specifications	⌘ CR874 rev2 on TS25.433 v5.5.0 Tdoc R2-031933 on TS25.331 v5.5.0
affected:			**X**	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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9.2.1.30Q HS-DSCH Information To Modify

The *HS-DSCH Information To Modify* IE provides information for HS-DSCH to be modified.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
HS-DSCH MAC-d Flow Specific Information		*0..<maxnoofMACdFlows>*			–	
>HS-DSCH MAC-d Flow ID	M		9.2.1.30O		–	
>Allocation/Retention Priority	O		9.2.1.1		–	
>Transport Bearer Request Indicator	M		9.2.1.61		–	
>Traffic Class	O		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		*0..<maxnoofPrioQueues>*			–	
>CHOICE *Priority Queue*					–	
>>*Add Priority Queue*					–	
>>>Priority Queue ID	M		9.2.1.45A		–	
>>>Associated HS-DSCH MAC-d Flow	M		HS-DSCH MAC-d Flow ID 9.2.1.30O		–	
>>>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		–	
>>*Modify Priority Queue*					–	
>>>Priority Queue ID	M		9.2.1.45A		–	
>>>Associated HS-DSCH MAC-d Flow	O		HS-DSCH MAC-d Flow ID 9.2.1.30O		–	
>>>Scheduling Priority Indicator	O		9.2.1.51A		–	
>>>T1	O		9.2.1.54A		–	
>>>MAC-hs Window Size	O		9.2.1.34C		–	
>>>MAC-hs Guaranteed Bit Rate	O		9.2.1.34Aa		–	
>>>MAC-d PDU Size Index		*0..<maxnoofMACdPDUindexes>*			–	
>>>>SID	M		9.2.1.52D		–	
>>>>MAC-d PDU Size	O		9.2.1.34A		–	
>>*Delete Priority Queue*					–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
>>>Priority Queue ID	M		9.2.1.45A		–	
CQI Feedback Cycle k	O		9.2.2.24a	For FDD only	–	
CQI Repetition Factor	O		9.2.2.24c	For FDD only	–	
ACK-NACK Repetition Factor	O		9.2.2.a	For FDD only	–	
CQI Power Offset	O		9.2.2.24b	For FDD only	–	
ACK Power Offset	O		9.2.2.b	For FDD only	–	
NACK Power Offset	O		9.2.2.26a	For FDD only	–	
HS-SCCH Power Offset	O		9.2.2.19d	For FDD only	–	
HS-SCCH Code Change Grant	O		9.2.1.30S		–	
TDD ACK NACK Power Offset	O		9.2.3.7I	For TDD only	–	

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).

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		9.2.1.1		–	
>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		–	
>Associated HS-DSCH MAC-d Flow	M		HS-DSCH MAC-d Flow ID 9.2.1.30O		–	
>>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 Physical Layer Category	M		9.2.1.30Oa		–	
>MAC-hs reordering buffer size	M		INTEGER (1..300,…)	The total buffer size defined in UE capability minus the RLC AM buffer	–	
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).

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		9.2.1.1		–	
>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		-	
>Associated HS-DSCH MAC-d Flow	M		HS-DSCH MAC-d Flow ID 9.2.1.30O		–	
>>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 Physical Layer Category	M		9.2.1.30Oa		–	
>MAC-hs reordering buffer size	M		INTEGER (1..300,…)	The total buffer size defined in UE capability minus the RLC AM buffer		
TDD ACK NACK Power Offset	M		9.2.3.7I		–	

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).

9.3.4 Information Element Definitions

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

/* partly omitted */

-- H

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-ExtIE
} }         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,
    priorityQueue-Info                      PriorityQueue-InfoList,
    uE-Capabilities-Info                    UE-Capabilities-Info,
    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,
    priorityQueue-Info-to-Modify                    PriorityQueue-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
    hSSCCH-CodeChangeGrant                          HSSCCH-Code-Change-Grant        OPTIONAL,
    tDDAckNackPowerOffset                           TDD-AckNack-Power-Offset        OPTIONAL,   -- For TDD
only
    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,
    priorityQueue-Info                      PriorityQueue-InfoList,
    uE-Capabilities-Info                    UE-Capabilities-Info,
    tDD-AckNack-Power-Offset                TDD-AckNack-Power-Offset,
    iE-Extensions                           ProtocolExtensionContainer { { HSDSCH-TDD-Information-ExtIEs } }
        OPTIONAL,
    ...
}

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

/* partly omitted */

-- M

MaxNrOfUL-DPCHs             ::= INTEGER (1..6)

MAC-c-sh-SDU-Length         ::= INTEGER (1..5000)
```

```
MAC-c-sh-SDU-LengthList ::= SEQUENCE(SIZE(1..maxNrOfMACcshSDU-Length)) OF MAC-c-sh-SDU-Length

MACdPDU-Size ::= INTEGER (1..5000,...)

MACdPDU-Size-IndexList ::= SEQUENCE (SIZE (1..maxNrOfPDUIndexes)) OF MACdPDU-Size-IndexItem

MACdPDU-Size-IndexItem ::= SEQUENCE {
    sID                                 SID,
    mACdPDU-Size                        MACdPDU-Size,
    iE-Extensions                       ProtocolExtensionContainer { { MACdPDU-Size-IndexItem-ExtIEs } }
    OPTIONAL,
    ...
}

MACdPDU-Size-IndexItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

MACdPDU-Size-IndexList-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfPDUIndexes)) OF MACdPDU-Size-IndexItem-to-
Modify

MACdPDU-Size-IndexItem-to-Modify ::= SEQUENCE {
    sID                                 SID,
    mACdPDU-Size                        MACdPDU-Size                            OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { MACdPDU-Size-IndexItem-to-Modify-ExtIE
} }         OPTIONAL,
    ...
}

MACdPDU-Size-IndexItem-to-Modify-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

MAChsGuaranteedBitRate ::= INTEGER (0..16777215,...)

MAC-hsWindowSize        ::= ENUMERATED {v4, v6, v8, v12, v16, v24, v32,...}

MaximumAllowedULTxPower     ::= INTEGER (-50..33)

MaxNrDLPhysicalchannels     ::= INTEGER (1..224)
-- 1.28Mcps TDD 97 – 224 are unused

MaxNrDLPhysicalchannelsTS   ::= INTEGER (1..16)

MaxNrTimeslots              ::= INTEGER (1..14)
-- 1.28Mcps values 7-14 are unused

MaxNrULPhysicalchannels     ::= INTEGER (1..2)

MaxTFCIvalue                ::= INTEGER (1..1023)

MeasurementFilterCoefficient ::=  ENUMERATED{k0, k1, k2, k3, k4, k5, k6, k7, k8, k9, k11, k13, k15, k17,
k19,...}
-- Measurement Filter Coefficient to be used for measurement

MeasurementID               ::= INTEGER (0..1048575)

Measurement-Power-Offset ::= INTEGER(-12 .. 26)
-- Actual value = IE value * 0.5

MinimumSpreadingFactor      ::= INTEGER (1..16)

Multi-code-info             ::= INTEGER (1..16)

MultipleURAsIndicator ::= ENUMERATED {
    multiple-URAs-exist,
    single-URA-exists
}

MaxAdjustmentStep           ::= INTEGER(1..10)
-- Unit Slot

MeasurementChangeTime       ::= INTEGER (1..6000,...)
-- The MeasurementChangeTime  gives the MeasurementChangeTime
-- in number of 10 ms periods.
-- E.g. Value 6000 means 60000ms(1min)
-- Unit is ms, Step is 10 ms
```

```
Measurement-Feedback-Offset ::= INTEGER (0..79,...)

MeasurementHysteresisTime       ::= INTEGER (1..6000,...)
-- The MeasurementHysteresisTime  gives the
-- MeasurementHysteresisTime in number of 10 ms periods.
-- E.g. Value 6000 means 60000ms(1min)
-- Unit is ms, Step is 10ms

MeasurementIncreaseDecreaseThreshold        ::= CHOICE {
    sir                             SIR-Value-IncrDecrThres,
    sir-error                       SIR-Error-Value-IncrDecrThres,
    transmitted-code-power          Transmitted-Code-Power-Value-IncrDecrThres,
    rscp                            RSCP-Value-IncrDecrThres,
    round-trip-time                 Round-Trip-Time-IncrDecrThres,
    ...,
    extension-MeasurementIncreaseDecreaseThreshold      Extension-MeasurementIncreaseDecreaseThreshold
}

Extension-MeasurementIncreaseDecreaseThreshold  ::= ProtocolIE-Single-Container {{ Extension-
MeasurementIncreaseDecreaseThresholdIE }}

Extension-MeasurementIncreaseDecreaseThresholdIE RNSAP-PROTOCOL-IES ::= {
    { ID id-Load-Value-IncrDecrThres    CRITICALITY reject  TYPE Load-Value-IncrDecrThres   PRESENCE mandatory
}|
    { ID id-Transmitted-Carrier-Power-Value-IncrDecrThres   CRITICALITY reject  TYPE Transmitted-Carrier-
Power-Value-IncrDecrThres       PRESENCE mandatory }|
    { ID id-Received-Total-Wideband-Power-Value-IncrDecrThres   CRITICALITY reject  TYPE Received-Total-
Wideband-Power-Value-IncrDecrThres      PRESENCE mandatory }|
    { ID id-UL-Timeslot-ISCP-Value-IncrDecrThres    CRITICALITY reject  TYPE UL-Timeslot-ISCP-Value-
IncrDecrThres   PRESENCE mandatory }|
    { ID id-RT-Load-Value-IncrDecrThres CRITICALITY reject  TYPE RT-Load-Value-IncrDecrThres    PRESENCE
mandatory }|
    { ID id-NRT-Load-Information-Value-IncrDecrThres    CRITICALITY reject  TYPE NRT-Load-Information-Value-
IncrDecrThres   PRESENCE mandatory }
}

MeasurementThreshold            ::= CHOICE {
    sir                             SIR-Value,
    sir-error                       SIR-Error-Value,
    transmitted-code-power          Transmitted-Code-Power-Value,
    rscp                            RSCP-Value,
    rx-timing-deviation             Rx-Timing-Deviation-Value,
    round-trip-time                 Round-Trip-Time-Value,
    ...,
    extension-MeasurementThreshold  Extension-MeasurementThreshold
}

Extension-MeasurementThreshold  ::= ProtocolIE-Single-Container {{ Extension-MeasurementThresholdIE }}

Extension-MeasurementThresholdIE RNSAP-PROTOCOL-IES ::= {
    { ID id-TUTRANGPSMeasurementThresholdInformation    CRITICALITY reject  TYPE
TUTRANGPSMeasurementThresholdInformation        PRESENCE mandatory }|
    { ID id-SFNSFNMeasurementThresholdInformation       CRITICALITY reject  TYPE
SFNSFNMeasurementThresholdInformation           PRESENCE mandatory }|
    { ID id-Load-Value                                  CRITICALITY reject  TYPE Load-Value
                    PRESENCE mandatory }|
    { ID id-Transmitted-Carrier-Power-Value             CRITICALITY reject  TYPE Transmitted-Carrier-Power-
Value                   PRESENCE mandatory }|
    { ID id-Received-Total-Wideband-Power-Value         CRITICALITY reject  TYPE Received-Total-Wideband-
Power-Value         PRESENCE mandatory }|
    { ID id-UL-Timeslot-ISCP-Value                      CRITICALITY reject  TYPE UL-Timeslot-ISCP-Value
                    PRESENCE mandatory }|
    { ID id-RT-Load-Value                               CRITICALITY reject  TYPE RT-Load-Value
                    PRESENCE mandatory }|
    { ID id-NRT-Load-Information-Value                  CRITICALITY reject  TYPE NRT-Load-Information-Value
                    PRESENCE mandatory }|
    { ID id-Rx-Timing-Deviation-Value-LCR               CRITICALITY reject  TYPE Rx-Timing-Deviation-Value-LCR
                    PRESENCE mandatory}|
    { ID id-HS-SICH-Reception-Quality-Measurement-Value CRITICALITY reject  TYPE HS-SICH-Reception-Quality-
Measurement-Value   PRESENCE mandatory}
}

MidambleConfigurationBurstType1And3 ::=     ENUMERATED {v4, v8, v16}

MidambleConfigurationBurstType2 ::=     ENUMERATED {v3, v6}

MidambleConfigurationLCR ::=    ENUMERATED {v2, v4, v6, v8, v10, v12, v14, v16, ...}
```

```
MidambleShiftAndBurstType ::=       CHOICE {
    type1                               SEQUENCE {
        midambleConfigurationBurstType1And3     MidambleConfigurationBurstType1And3,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            commonMidamble                      NULL,
            ueSpecificMidamble                  MidambleShiftLong,
            ...
        },
        ...
    },
    type2                               SEQUENCE {
        midambleConfigurationBurstType2     MidambleConfigurationBurstType2,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            commonMidamble                      NULL,
            ueSpecificMidamble                  MidambleShiftShort,
            ...
        },
        ...
    },
    type3                               SEQUENCE {
        midambleConfigurationBurstType1And3 MidambleConfigurationBurstType1And3,
        midambleAllocationMode          CHOICE {
            defaultMidamble                     NULL,
            ueSpecificMidamble                  MidambleShiftLong,
            ...
        },
        ...
    },
    ...
}

MidambleShiftLong ::=               INTEGER (0..15)

MidambleShiftShort ::=              INTEGER (0..5)

MidambleShiftLCR ::= SEQUENCE {
    midambleAllocationMode      MidambleAllocationMode,
    midambleShift               MidambleShiftLong       OPTIONAL,
        -- The IE shall be present if the Midamble Allocation Mode IE is set to "UE specific midamble".
    midambleConfigurationLCR    MidambleConfigurationLCR,
    iE-Extensions               ProtocolExtensionContainer { {MidambleShiftLCR-ExtIEs} }        OPTIONAL,
    ...
    }

MidambleAllocationMode ::= ENUMERATED {
    defaultMidamble,
    commonMidamble,
    uESpecificMidamble,
    ...
    }

MidambleShiftLCR-ExtIEs  RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

MinUL-ChannelisationCodeLength      ::= ENUMERATED {
    v4,
    v8,
    v16,
    v32,
    v64,
    v128,
    v256
}

ModifyPriorityQueue ::= CHOICE {
    addPriorityQueue            PriorityQueue-InfoItem-to-Add,
    modifyPriorityQueue         PriorityQueue-InfoItem-to-Modify,
    deletePriorityQueue         PriorityQueue-Id,
    ...
}

Modulation ::= ENUMERATED {
    qPSK,
    eightPSK,
    ...
```

```
}

MultiplexingPosition ::= ENUMERATED {
    fixed,
    flexible
}

MAChs-ResetIndicator ::= ENUMERATED{
    mAChs-NotReset
}

/* partly omitted */

-- P

PagingCause ::= ENUMERATED {
    terminating-conversational-call,
    terminating-streaming-call,
    terminating-interactive-call,
    terminating-background-call,
    terminating-low-priority-signalling,
    ...,
    terminating-high-priority-signalling,
    terminating–cause-unknown
}
-- See in [16]

PagingRecordType ::= ENUMERATED {
    imsi-gsm-map,
    tmsi-gsm-map,
    p-tmsi-gsm-map,
    imsi-ds-41,
    tmsi-ds-41,
    ...
}
-- See in [16]

PartialReportingIndicator ::= ENUMERATED {
    partial-reporting-allowed
}

PayloadCRC-PresenceIndicator ::= ENUMERATED {
    crc-included,
    crc-not-included
}

PCCPCH-Power ::= INTEGER (-150..400,...)
-- PCCPCH-power = power * 10
-- If power <= -15 PCCPCH shall be set to -150
-- If power >= 40 PCCPCH shall be set to 400
-- Unit dBm, Range -15dBm .. +40 dBm, Step 0.1dBm

PCH-InformationList ::= SEQUENCE (SIZE(0..1)) OF PCH-InformationItem

PCH-InformationItem ::= SEQUENCE {
    transportFormatSet              TransportFormatSet,
    iE-Extensions                   ProtocolExtensionContainer { { PCH-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

PCH-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PC-Preamble ::= INTEGER(0..7,...)

PDSCHCodeMapping ::= SEQUENCE {
    dL-ScramblingCode       DL-ScramblingCode,
    signallingMethod        PDSCHCodeMapping-SignallingMethod,
    iE-Extensions           ProtocolExtensionContainer { { PDSCHCodeMapping-ExtIEs} } OPTIONAL,
    ...
}

PDSCHCodeMapping-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCHCodeMapping-SignallingMethod ::= CHOICE {
```

```
    pDSCHCodeMapping-SignallingMethod-CodeRange     PDSCHCodeMapping-SignallingMethod-CodeRange,
    pDSCHCodeMapping-SignallingMethod-TFCIRange     PDSCHCodeMapping-SignallingMethod-TFCIRange,
    pDSCHCodeMapping-SignallingMethod-Explicit      PDSCHCodeMapping-SignallingMethod-Explicit,
    ...,
    pDSCHCodeMapping-SignallingMethod-Replace       PDSCHCodeMapping-SignallingMethod-Replace
 }

PDSCHCodeMapping-SignallingMethod-CodeRange ::= SEQUENCE (SIZE (1..maxNoCodeGroups)) OF
    SEQUENCE {
        spreadingFactor         SpreadingFactor,
        multi-code-info         Multi-code-info,
        start-CodeNumber        CodeNumber,
        stop-CodeNumber         CodeNumber,
        iE-Extensions           ProtocolExtensionContainer { { PDSCHCodeMapping-SignallingMethod-CodeRange-
ExtIEs} } OPTIONAL,
        ...
    }

PDSCHCodeMapping-SignallingMethod-CodeRange-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCHCodeMapping-SignallingMethod-TFCIRange ::= SEQUENCE (SIZE (1..maxNoTFCIGroups)) OF
    SEQUENCE {
        maxTFCIvalue            MaxTFCIvalue,
        spreadingFactor         SpreadingFactor,
        multi-code-info         Multi-code-info,
        codeNumber              CodeNumber,
        iE-Extensions           ProtocolExtensionContainer { { PDSCHCodeMapping-SignallingMethod-TFCIRange-
ExtIEs} } OPTIONAL,
        ...
    }

PDSCHCodeMapping-SignallingMethod-TFCIRange-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCHCodeMapping-SignallingMethod-Explicit ::= SEQUENCE (SIZE (1..maxTFCI2Combs)) OF
    SEQUENCE {
        spreadingFactor         SpreadingFactor,
        multi-code-info         Multi-code-info,
        codeNumber              CodeNumber,
        iE-Extensions           ProtocolExtensionContainer { { PDSCHCodeMapping-SignallingMethod-Explicit-
ExtIEs} } OPTIONAL,
        ...
    }

PDSCHCodeMapping-SignallingMethod-Explicit-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCHCodeMapping-SignallingMethod-Replace ::= SEQUENCE (SIZE (1..maxTFCI2Combs)) OF
    SEQUENCE {
        tfci-Field2                 TFCS-MaxTFCI-field2-Value,
        spreadingFactor             SpreadingFactor,
        multi-CodeInfo              Multi-code-info,
        codeNumber                  CodeNumber,
        iE-Extensions               ProtocolExtensionContainer { { PDSCHCodeMapping-SignallingMethod-Replace-
ExtIEs} }       OPTIONAL,
    ...
}

PDSCHCodeMapping-SignallingMethod-Replace-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Periodic ::= SEQUENCE {
    reportPeriodicity       ReportPeriodicity,
    iE-Extensions           ProtocolExtensionContainer { {Periodic-ExtIEs} } OPTIONAL,
    ...
}

Periodic-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PeriodicInformation ::= SEQUENCE {
    informationReportPeriodicity        InformationReportPeriodicity,
```

```
    iE-Extensions                       ProtocolExtensionContainer { {PeriodicInformation-ExtIEs} } OPTIONAL,
    ...
}

PeriodicInformation-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Permanent-NAS-UE-Identity ::= CHOICE {
    imsi        IMSI,
    ...
}

PLMN-Identity ::= OCTET STRING (SIZE(3))

PowerAdjustmentType ::= ENUMERATED {
    none,
    common,
    individual
}

PowerOffset             ::= INTEGER (0..24)

PRC ::= INTEGER (-2047..2047)
--pseudo range correction; scaling factor 0.32 meters

PRCDeviation ::= ENUMERATED {
    prcd1,
    prcd2,
    prcd5,
    prcd10,
    ...
}

Pre-emptionCapability ::= ENUMERATED {
    shall-not-trigger-pre-emption,
    may-trigger-pre-emption
}

Pre-emptionVulnerability ::= ENUMERATED {
    not-pre-emptable,
    pre-emptable
}

PredictedSFNSFNDeviationLimit ::= INTEGER (1..256)
-- Unit chip, Step 1/16 chip, Range 1/16..16 chip

PredictedTUTRANGPSDeviationLimit ::= INTEGER (1..256)
-- Unit chip, Step 1/16 chip, Range 1/16..16 chip

PrimaryCPICH-Power          ::= INTEGER (-100..500)
-- step 0.1 (Range –10.0..50.0) Unit is dBm

PrimaryCPICH-EcNo           ::= INTEGER (-30..30)

PrimaryCCPCH-RSCP           ::= INTEGER (0..91)
-- According to maping in [14]

PrimaryScramblingCode           ::= INTEGER (0..511)

PriorityLevel               ::= INTEGER (0..15)
-- 0 = spare, 1 = highest priority, ...14 = lowest priority and 15 = no priority

PriorityQueue-Id ::= INTEGER (0..maxNrOfPrioQueues-1)

PriorityQueue-InfoList ::= SEQUENCE (SIZE (1..maxNrOfPrioQueues)) OF PriorityQueue-InfoItem

PriorityQueue-InfoItem ::= SEQUENCE {
    priorityQueue-Id                    PriorityQueue-Id,
    associatedHSDSCH-MACdFlow           HSDSCH-MACdFlow-ID,
    schedulingPriorityIndicator         SchedulingPriorityIndicator,
    t1                                  T1,
    mAC-hsWindowSize                    MAC-hsWindowSize,
    mAChsGuaranteedBitRate              MAChsGuaranteedBitRate      OPTIONAL,
    mACdPDU-Size-Index                  MACdPDU-Size-IndexList,
    iE-Extensions                       ProtocolExtensionContainer { { PriorityQueue-InfoItem-ExtIEs } }
    OPTIONAL,
    ...
```

```
}

PriorityQueue-InfoItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PriorityQueue-InfoList-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfPrioQueues)) OF PriorityQueue-InfoItem-to-
ModifyModifyPriorityQueue

PriorityQueue-InfoItem-to-Add ::= SEQUENCE {
    priorityQueue-Id                    PriorityQueue-Id,
    associatedHSDSCH-MACdFlow           HSDSCH-MACdFlow-ID,
    schedulingPriorityIndicator         SchedulingPriorityIndicator,
    t1                                  T1,
    mAC-hsWindowSize                    MAC-hsWindowSize,
    mAChsGuaranteedBitRate              MAChsGuaranteedBitRate                  OPTIONAL,
    mACdPDU-Size-Index-to-Modify        MACdPDU-Size-IndexList-to-Modify,
    iE-Extensions                       ProtocolExtensionContainer { { PriorityQueue-InfoItem-to-Add-ExtIEs }
}           OPTIONAL,
    ...
}

PriorityQueue-InfoItem-to-Add-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PriorityQueue-InfoItem-to-Modify ::= SEQUENCE {
    priorityQueue-Id                    PriorityQueue-Id,
    associatedHSDSCH-MACdFlow           HSDSCH-MACdFlow-ID                      OPTIONAL,
    schedulingPriorityIndicator         SchedulingPriorityIndicator             OPTIONAL,
    t1                                  T1                                      OPTIONAL,
    mAC-hsWindowSize                    MAC-hsWindowSize                        OPTIONAL,
    mAChsGuaranteedBitRate              MAChsGuaranteedBitRate                  OPTIONAL,
    mACdPDU-Size-Index-to-Modify        MACdPDU-Size-IndexList-to-Modify                    OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { PriorityQueue-InfoItem-to-Modify-ExtIE
} }         OPTIONAL,
    ...
}

PriorityQueue-InfoItem-to-Modify-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

3GPP TSG-RAN3 Meeting #37
Budapest, Hungary, 25th - 29th August 2003

Tdoc ⌘R3-031215

CR-Form-v7

CHANGE REQUEST

⌘ **25.433** **CR** **874** ⌘ **rev** **2** ⌘ 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:	⌘	HS-DSCH Priority Queue to Modify
Source:	⌘	RAN3
Work item code:	⌘	HSDPA-IuBIur
Date:	⌘	28/08/2003
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:	⌘	It is currently not possible to delete an existing priority queue from a HS-DSCH MAC-d flow.
Summary of change:	⌘	Revision 2: *HS-DSCH MAC-d Flow ID* IE has been changed to *Associated HS-DSCH MAC-d Flow* IE. ASN.1 has been updated accordingly. -------- Revision 1: The CHOICE has been extended to include Add/Modify/Delete of a priority queue in *HS-DSCH Information To Modify* IE. *HS-DSCH MAC-d Flow ID* IE has been added to *Priority Queue Information* IE and the *Priority Queue Information* IE has been moved up one level within *HS-DSCH Information To Modify* IE, *HS-DSCH FDD Information* IE and *HS-DSCH TDD Information* IE. ASN.1 has been updated accordingly. -------- A CHOICE has been added to Priority Queue Information in the *HS-DSCH To Modify* IE, which makes it possible to indicate priority queues for deletion. Corresponding changes have been done to the ASN.1 code. Impact assessment towards the previous version of the specification (same release): This CR has isolated impact on the previous version of the specification (same release). The impact can be considered isolated because the change only affects HSDPA. This CR has an impact under functional point of view.
Consequences if	⌘	If the CR is not approved, the procedure for HS-DSCH modification is incomplete.

not approved:	

Clauses affected:	⌘	9.2.1.31H, 9.2.2.18D, 9.2.3.5F, 9.3.4				
		Y	**N**			
Other specs	⌘	**X**		Other core specifications	⌘	CR847 rev2 on TS25.423 v5.6.0 Tdoc R2-031933 on TS25.331 v5.5.0
affected:			**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.

9.2.1.31H HS-DSCH Information To Modify

The HS-DSCH Information To Modify provides information for HS-DSCH to be modified.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
HS-DSCH MAC-d Flow Specific Information		*0..<maxnoofMACdFlows>*			–	
>HS-DSCH MAC-d Flow ID	M		9.2.1.31I		–	
>Allocation/Retention Priority	O		9.2.1.1A		–	
>Transport Bearer Request Indicator	M		9.2.1.62A		–	
>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		*0..<maxnoofPrioQueues>*			–	
>CHOICE *Priority Queue*					–	
>>Add Priority Queue					–	
>>>Priority Queue ID	M		9.2.1.49C		–	
>>>Associated HS-DSCH MAC-d Flow	M		HS-DSCH MAC-d Flow ID 9.2.1.31I		–	
>>>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		–	
>>Modify Priority Queue					–	
>>>Priority Queue ID	M		9.2.1.49C		–	
>>>Associated HS-DSCH MAC-d Flow	O		HS-DSCH MAC-d Flow ID 9.2.1.31I		–	
>>>Scheduling Priority Indicator	O		9.2.1.53H		–	
>>>T1	O		9.2.1.56a		–	
>>>MAC-hs Window Size	O		9.2.1.38B		–	
>>>MAC-hs Guaranteed Bit Rate	O		9.2.1.38Aa		–	
>>>MAC-d PDU Size Index		*0..<maxnoofMACdPDUindexes>*			–	
>>>>SID	M		9.2.1.53I		–	
>>>>MAC-d PDU Size	O		9.2.1.38A		–	
>>Delete Priority Queue					–	
>>>Priority Queue ID	M		9.2.1.49C		–	
CQI Feedback Cycle k	O		9.2.2.21B	For FDD only	–	
CQI Repetition Factor	O		9.2.2.4Cb	For FDD only	–	
ACK-NACK Repetition Factor	O		9.2.2.a	For FDD only	–	
CQI Power Offset	O		9.2.2.4Ca	For FDD only	–	
ACK Power Offset	O		9.2.2.b	For FDD only	–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
NACK Power Offset	O		9.2.2.23a	For FDD only	–	
HS-SCCH Power Offset	O		9.2.2.18I	For FDD only	–	
Measurement Power Offset	O		9.2.2.21C	For FDD only	–	
HS-SCCH Code Change Grant	O		9.2.1.31L		–	
TDD ACK NACK Power Offset	O		9.2.3.18F	For TDD only	–	

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		*1..<maxnoofPrioQueues>*			–	
>>Priority Queue ID	M		9.2.1.49C		–	
>Associated HS-DSCH MAC-d Flow	M		HS-DSCH MAC-d Flow ID 9.2.1.31I		–	
>>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 Physical Layer Category	M		9.2.1.31Ia		–	
>MAC-hs Reordering Buffer Size	M		INTEGER (1..300,...)	The total buffer size defined in UE capability minus the RLC AM buffer.	–	
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		–	
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
maxnoofMACdPDUindexes	Maximum number of different MAC-d PDU SIDs

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		–	
>Associated HS-DSCH MAC-d Flow	M		HS-DSCH MAC-d Flow ID 9.2.1.31I		–	
>>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 Physical Layer Category	M		9.2.1.31Ia		–	
>MAC-hs Reordering Buffer Size	M		INTEGER (1..300,...)	The total buffer size defined in UE capability minus the RLC AM buffer.	–	
TDD ACK NACK Power Offset	M		9.2.3.18F		–	

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 PDU SIDs

9.3.4 Information Elements Definitions

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

/* partly omitted */

-- ==========================================
--  H
-- ==========================================


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-ExtIE
} }         OPTIONAL,
    ...
}

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

HARQ-MemoryPartitioningList ::= SEQUENCE (SIZE (1..maxNrOfHARQProcesses)) 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 ::= {
    ...
}

HS-DSCHProvidedBitRate ::= SEQUENCE (SIZE (1..16)) OF HS-DSCHProvidedBitRate-Item

HS-DSCHProvidedBitRate-Item ::= SEQUENCE {
    schedulingPriorityIndicator         SchedulingPriorityIndicator,
    hS-DSCHProvidedBitRateValue         HS-DSCHProvidedBitRateValue,
    iE-Extensions                       ProtocolExtensionContainer { { HS-DSCHProvidedBitRate-Item-ExtIEs} }
    ...
}
```

```
HS-DSCHProvidedBitRate-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HS-DSCHProvidedBitRateValue ::= INTEGER(0..16777215,...)
-- Unit bit/s, Range 0..2^24-1, Step 1 bit


HS-DSCHRequiredPower ::= SEQUENCE (SIZE (1..16)) OF HS-DSCHRequiredPower-Item

HS-DSCHRequiredPower-Item ::= SEQUENCE {
    schedulingPriorityIndicator             SchedulingPriorityIndicator,
    hS-DSCHRequiredPowerValue               HS-DSCHRequiredPowerValue,
    hS-DSCHRequiredPowerPerUEInformation    HS-DSCHRequiredPowerPerUEInformation,
    iE-Extensions                           ProtocolExtensionContainer { { HS-DSCHRequiredPower-Item-ExtIEs}
    ...
}

HS-DSCHRequiredPower-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HS-DSCHRequiredPowerValue ::= INTEGER(0..1000)
-- Unit %, Range 0 ..1000, Step 0.1%

HS-DSCHRequiredPowerPerUEInformation ::= SEQUENCE (SIZE (1.. maxNrOfContextsOnUeList)) OF HS-
DSCHRequiredPowerPerUEInformation-Item


HS-DSCHRequiredPowerPerUEInformation-Item ::= SEQUENCE {
    cRNC-CommunicationContextID             CRNC-CommunicationContextID,
    hS-DSCHRequiredPowerPerUEWeight         HS-DSCHRequiredPowerPerUEWeight     OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { HS-
DSCHRequiredPowerPerUEInformation-Item-ExtIEs} }        OPTIONAL,
    ...
}

HS-DSCHRequiredPowerPerUEInformation-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HS-DSCHRequiredPowerPerUEWeight ::= INTEGER(0..100)
-- Unit %, Range 0 ..100, Step 1%


HSDSCH-FDD-Information ::= SEQUENCE {
    hsDSCH-MACdFlow-Specific-Info       HSDSCH-MACdFlow-Specific-InfoList,
    priorityQueueInfo                   PriorityQueue-InfoList,
    ueCapability-Info                   UE-Capability-Information,
    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} }
    ...
}

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

HSDSCH-TDD-Information ::= SEQUENCE {
    hsDSCH-MACdFlow-Specific-Info       HSDSCH-MACdFlow-Specific-InfoList,
    priorityQueueInfo                   PriorityQueue-InfoList,
    ueCapability-Info                   UE-Capability-Information,
    tDD-AckNack-Power-Offset            TDD-AckNack-Power-Offset,
    iE-Extensions                       ProtocolExtensionContainer { { HSDSCH-TDD-Information-ExtIEs} }
    ...
}

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
    priorityQueueInfotoModify                       PriorityQueue-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
    hSSCCHCodeChangeGrant                           HSSCCH-Code-Change-Grant        OPTIONAL,
    tDDAckNackPowerOffset                           TDD-AckNack-Power-Offset        OPTIONAL,   -- For TDD
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 ::= {
    ...
}

/* partly omitted */

-- ========================================
--  M
-- ========================================

MACdPDU-Size ::= INTEGER (1..5000,...)

MACdPDU-Size-Indexlist ::= SEQUENCE (SIZE (1..maxNrOfMACdPDUIndexes)) OF MACdPDU-Size-IndexItem

MACdPDU-Size-IndexItem ::= SEQUENCE {
    sID                                 INTEGER (0..7),
    macdPDU-Size                        MACdPDU-Size,
    iE-Extensions                       ProtocolExtensionContainer { { MACdPDU-Size-IndexItem-ExtIEs} }
    ...
}

MACdPDU-Size-IndexItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

MACdPDU-Size-Indexlist-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfMACdPDUIndexes)) OF MACdPDU-Size-IndexItem-to-
Modify

MACdPDU-Size-IndexItem-to-Modify ::= SEQUENCE {
    sID                                 INTEGER (0..7),
    macdPDU-Size                        MACdPDU-Size
    iE-Extensions                       ProtocolExtensionContainer { { MACdPDU-Size-IndexItem-to-Modify-
ExtIEs} }       OPTIONAL,
    ...
}

MACdPDU-Size-IndexItem-to-Modify-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

MAChsGuaranteedBitRate ::= INTEGER (0..16777215,...)

MAC-hsWindowSize        ::= ENUMERATED {v4, v6, v8, v12, v16, v24, v32,...}

MaximumDL-PowerCapability ::=  INTEGER(0..500)
-- Unit dBm, Range 0dBm .. 50dBm, Step +0.1dB

Maximum-PDSCH-Power ::= SEQUENCE {
    maximum-PDSCH-Power-SF4     DL-Power        OPTIONAL,
    maximum-PDSCH-Power-SF8     DL-Power        OPTIONAL,
    maximum-PDSCH-Power-SF16    DL-Power        OPTIONAL,
    maximum-PDSCH-Power-SF32    DL-Power        OPTIONAL,
    maximum-PDSCH-Power-SF64    DL-Power        OPTIONAL,
    maximum-PDSCH-Power-SF128   DL-Power        OPTIONAL,
    maximum-PDSCH-Power-SF256   DL-Power        OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { Maximum-PDSCH-Power-ExtIEs} }        OPTIONAL,
    ...
}

Maximum-PDSCH-Power-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

MaximumTransmissionPower ::=  INTEGER(0..500)
-- Unit dBm, Range 0dBm .. 50dBm, Step +0.1dB

MaxNrOfUL-DPDCHs ::= INTEGER (1..6)

Max-Number-of-PCPCHes ::= INTEGER (1..64,...)

MaxPRACH-MidambleShifts ::= ENUMERATED {
    shift4,
    shift8,
    ...
}

MeasurementFilterCoefficient ::= ENUMERATED {k0, k1, k2, k3, k4, k5, k6, k7, k8, k9, k11, k13, k15, k17,
k19,...}
```

```
-- Measurement Filter Coefficient to be used for measurement

MeasurementID ::= INTEGER (0..1048575)

Measurement-Power-Offset ::= INTEGER(-12 .. 26)
-- Actual value = IE value * 0.5

MessageStructure ::= SEQUENCE (SIZE (1..maxNrOfLevels)) OF
    SEQUENCE {
        iE-ID                   ProtocolIE-ID,
        repetitionNumber        RepetitionNumber1       OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {MessageStructure-ExtIEs} } OPTIONAL,
        ...
    }

MessageStructure-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

MidambleConfigurationLCR ::=    ENUMERATED {v2, v4, v6, v8, v10, v12, v14, v16, ...}

MidambleConfigurationBurstType1And3 ::=     ENUMERATED {v4, v8, v16}

MidambleConfigurationBurstType2 ::=     ENUMERATED {v3, v6}

MidambleShiftAndBurstType ::=       CHOICE {
    type1                               SEQUENCE {
        midambleConfigurationBurstType1And3 MidambleConfigurationBurstType1And3,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            commonMidamble                      NULL,
            ueSpecificMidamble                  MidambleShiftLong,
            ...
        },
    ...
    },
    type2                               SEQUENCE {
        midambleConfigurationBurstType2     MidambleConfigurationBurstType2,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            commonMidamble                      NULL,
            ueSpecificMidamble                  MidambleShiftShort,
            ...
        },
        ...
    },
    type3                               SEQUENCE {
        midambleConfigurationBurstType1And3 MidambleConfigurationBurstType1And3,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            ueSpecificMidamble                  MidambleShiftLong,
        ...
        },
        ...
    },
    ...
}

MidambleShiftLong ::=               INTEGER (0..15)

MidambleShiftShort ::=              INTEGER (0..5)

MidambleShiftLCR ::= SEQUENCE {
    midambleAllocationMode      MidambleAllocationMode,
    midambleShift               MidambleShiftLong       OPTIONAL,
    -- The IE shall be present if the Midamble Allocation Mode IE is set to "UE specific midamble".
    midambleConfigurationLCR        MidambleConfigurationLCR,
    iE-Extensions               ProtocolExtensionContainer { {MidambleShiftLCR-ExtIEs} }        OPTIONAL,
    ...
    }

MidambleAllocationMode ::= ENUMERATED {
    defaultMidamble,
    commonMidamble,
    uESpecificMidamble,
    ...
    }
```

```
MidambleShiftLCR-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

MinimumDL-PowerCapability ::=  INTEGER(0..800)
-- Unit dBm, Range -30dBm .. 50dBm, Step +0.1dB

MinSpreadingFactor ::= ENUMERATED {
        v4,
        v8,
        v16,
        v32,
        v64,
        v128,
        v256,
        v512
}
--  TDD Mapping scheme for the minimum spreading factor 1 and 2: "256" means 1, "512" means 2

ModifyPriorityQueue ::= CHOICE {
    addPriorityQueue            PriorityQueue-InfoItem-to-Add,
    modifyPriorityQueue         PriorityQueue-InfoItem-to-Modify,
    deletePriorityQueue         PriorityQueue-Id,
    ...
}

Modulation ::= ENUMERATED {
    qPSK,
    eightPSK,
    ...
}

MinUL-ChannelisationCodeLength ::= ENUMERATED {
    v4,
    v8,
    v16,
    v32,
    v64,
    v128,
    v256,
    ...
}

MultiplexingPosition ::= ENUMERATED {
    fixed,
    flexible
}

/* partly omitted */

-- ==========================================
--  P
-- ==========================================

PagingIndicatorLength ::= ENUMERATED {
    v2,
    v4,
    v8,
    ...
}

PayloadCRC-PresenceIndicator ::= ENUMERATED {
    cRC-Included,
    cRC-NotIncluded,
    ...
}

PCCPCH-Power ::= INTEGER (-150..400,...)
-- PCCPCH-power = power * 10
-- If power <= -15 PCCPCH shall be set to -150
-- If power >= 40 PCCPCH shall be set to 400
-- Unit dBm, Range -15dBm .. +40 dBm, Step +0.1dB

PCP-Length ::= ENUMERATED{
    v0,
    v8
}
```

```
PDSCH-CodeMapping ::= SEQUENCE {
    dl-ScramblingCode               DL-ScramblingCode,
    signallingMethod                    CHOICE {
        code-Range                      PDSCH-CodeMapping-PDSCH-CodeMappingInformationList,
        tFCI-Range                      PDSCH-CodeMapping-DSCH-MappingInformationList,
        explicit                            PDSCH-CodeMapping-PDSCH-CodeInformationList,
        ...,
        replace                         PDSCH-CodeMapping-ReplacedPDSCH-CodeInformationList
    },
    iE-Extensions                           ProtocolExtensionContainer  { { PDSCH-CodeMapping-ExtIEs} }
    ...
}

PDSCH-CodeMapping-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCH-CodeMapping-CodeNumberComp ::= INTEGER (0..maxCodeNrComp-1)

PDSCH-CodeMapping-SpreadingFactor ::= ENUMERATED {
    v4,
    v8,
    v16,
    v32,
    v64,
    v128,
    v256,
    ...
}

PDSCH-CodeMapping-PDSCH-CodeMappingInformationList ::= SEQUENCE (SIZE (1..maxNrOfCodeGroups)) OF
    SEQUENCE {
        spreadingFactor             PDSCH-CodeMapping-SpreadingFactor,
        multi-CodeInfo              PDSCH-Multi-CodeInfo,
        start-CodeNumber                PDSCH-CodeMapping-CodeNumberComp,
        stop-CodeNumber             PDSCH-CodeMapping-CodeNumberComp,
        iE-Extensions                   ProtocolExtensionContainer  { { PDSCH-CodeMapping-PDSCH-
CodeMappingInformationList-ExtIEs} }        OPTIONAL,
        ...
}

PDSCH-CodeMapping-PDSCH-CodeMappingInformationList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCH-CodeMapping-DSCH-MappingInformationList ::= SEQUENCE (SIZE (1..maxNrOfTFCIGroups)) OF
    SEQUENCE {
        maxTFCI-field2-Value            PDSCH-CodeMapping-MaxTFCI-Field2-Value,
        spreadingFactor             PDSCH-CodeMapping-SpreadingFactor,
        multi-CodeInfo              PDSCH-Multi-CodeInfo,
        codeNumber                  PDSCH-CodeMapping-CodeNumberComp,
        iE-Extensions                   ProtocolExtensionContainer  { { PDSCH-CodeMapping-DSCH-
MappingInformationList-ExtIEs} }        OPTIONAL,
        ...
}

PDSCH-CodeMapping-DSCH-MappingInformationList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCH-CodeMapping-MaxTFCI-Field2-Value ::= INTEGER (1..1023)

PDSCH-CodeMapping-PDSCH-CodeInformationList ::= SEQUENCE (SIZE (1..maxNrOfTFCI2Combs)) OF
    SEQUENCE {
        spreadingFactor             PDSCH-CodeMapping-SpreadingFactor,
        multi-CodeInfo              PDSCH-Multi-CodeInfo,
        codeNumber                  PDSCH-CodeMapping-CodeNumberComp,
        iE-Extensions                   ProtocolExtensionContainer  { { PDSCH-CodeMapping-PDSCH-
CodeInformationList-ExtIEs} }       OPTIONAL,
        ...
}

PDSCH-CodeMapping-PDSCH-CodeInformationList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCH-CodeMapping-ReplacedPDSCH-CodeInformationList ::= SEQUENCE (SIZE (1..maxNrOfTFCI2Combs)) OF
    SEQUENCE {
```

```
        tfci-Field2                 TFCS-MaxTFCI-field2-Value,
        spreadingFactor             PDSCH-CodeMapping-SpreadingFactor,
        multi-CodeInfo              PDSCH-Multi-CodeInfo,
        codeNumber                  PDSCH-CodeMapping-CodeNumberComp,
        iE-Extensions               ProtocolExtensionContainer { { PDSCH-CodeMapping-ReplacedPDSCH-
CodeInformationList-ExtIEs} }       OPTIONAL,
    ...
}

PDSCH-CodeMapping-ReplacedPDSCH-CodeInformationList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCH-Multi-CodeInfo ::= INTEGER (1..16)

PDSCH-ID ::= INTEGER (0..255)

PDSCHSet-ID ::= INTEGER (0..255)

PICH-Mode ::= ENUMERATED {
    v18,
    v36,
    v72,
    v144,
    ...
}

PICH-Power ::= INTEGER (-10..5)
-- Unit dB, Range -10dB .. +5dB, Step +1dB

PowerAdjustmentType ::= ENUMERATED {
    none,
    common,
    individual
}

PowerOffset ::= INTEGER (0..24)
-- PowerOffset = offset * 0.25
-- Unit dB, Range 0dB .. +6dB, Step +0.25dB

PowerRaiseLimit ::= INTEGER (0..10)

PRACH-Midamble ::= ENUMERATED {
    inverted,
    direct,
    ...
}

PRC ::= INTEGER (-2047..2047)
--pseudo range correction; scaling factor 0.32 meters

PRCDeviation ::= ENUMERATED {
   one,
   two,
   five,
   ten,
   ...
}

PreambleSignatures ::= BIT STRING {
                                    signature15(0),
                                    signature14(1),
                                    signature13(2),
                                    signature12(3),
                                    signature11(4),
                                    signature10(5),
                                    signature9(6),
                                    signature8(7),
                                    signature7(8),
                                    signature6(9),
                                    signature5(10),
                                    signature4(11),
                                    signature3(12),
                                    signature2(13),
                                    signature1(14),
                                    signature0(15)
                                    } (SIZE (16))
```

```
PreambleThreshold ::= INTEGER (0..72)
-- 0= -36.0dB, 1= -35.5dB, ... , 72= 0.0dB

PredictedSFNSFNDeviationLimit ::=INTEGER (1..256)
-- Unit chip, Step 1/16 chip, Range 1/16..16 chip

PredictedTUTRANGPSDeviationLimit ::= INTEGER (1..256)
-- Unit chip, Step 1/16 chip, Range 1/16..16 chip

Pre-emptionCapability ::= ENUMERATED {
    shall-not-trigger-pre-emption,
    may-trigger-pre-emption
}

Pre-emptionVulnerability ::= ENUMERATED {
    not-pre-emptable,
    pre-emptable
}

PrimaryCPICH-Power ::= INTEGER(-100..500)
-- step 0.1 (Range –10.0..50.0) Unit is dBm

PrimaryScramblingCode ::= INTEGER (0..511)

PriorityLevel               ::= INTEGER (0..15)
-- 0 = spare, 1 = highest priority, ...14 = lowest priority and 15 = no priority

PriorityQueue-Id ::= INTEGER (0..maxNrOfPriorityQueues-1)

PriorityQueue-InfoList ::= SEQUENCE (SIZE (1..maxNrOfPriorityQueues)) OF PriorityQueue-InfoItem

PriorityQueue-InfoItem ::= SEQUENCE {
    priorityQueueId                 PriorityQueue-Id,
    associatedHSDSCH-MACdFlow       HSDSCH-MACdFlow-ID,
    schedulingPriorityIndicator     SchedulingPriorityIndicator,
    t1                              T1,
    mAC-hsWindowSize                MAC-hsWindowSize,
    mAChsGuaranteedBitRate          MAChsGuaranteedBitRate                                  OPTIONAL,
    macdPDU-Size-Index              MACdPDU-Size-Indexlist,
    iE-Extensions                   ProtocolExtensionContainer { { PriorityQueue-InfoItem-ExtIEs} }
    ...
}

PriorityQueue-InfoItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PriorityQueue-InfoList-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfPriorityQueues)) OF ~~PriorityQueue-InfoItem-to-Modify~~ModifyPriorityQueue

PriorityQueue-InfoItem-to-Add ::= SEQUENCE {
    priorityQueueId                 PriorityQueue-Id,
    associatedHSDSCH-MACdFlow       HSDSCH-MACdFlow-ID,
    schedulingPriorityIndicator     SchedulingPriorityIndicator,
    t1                              T1,
    mAC-hsWindowSize                MAC-hsWindowSize,
    mAChsGuaranteedBitRate          MAChsGuaranteedBitRate                                  OPTIONAL,
    macdPDU-Size-Index-to-Modify    MACdPDU-Size-Indexlist-to-Modify,
    iE-Extensions                   ProtocolExtensionContainer { { PriorityQueue-InfoItem-to-Add-ExtIEs}
        OPTIONAL,
    ...
}

PriorityQueue-InfoItem-to-Add-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}


PriorityQueue-InfoItem-to-Modify ::= SEQUENCE {
    priorityQueueId                 PriorityQueue-Id,
    associatedHSDSCH-MACdFlow       HSDSCH-MACdFlow-ID                                      OPTIONAL,
    schedulingPriorityIndicator     SchedulingPriorityIndicator                             OPTIONAL,
    t1                              T1                                                      OPTIONAL,
    mAC-hsWindowSize                MAC-hsWindowSize                                        OPTIONAL,
    mAChsGuaranteedBitRate          MAChsGuaranteedBitRate                                  OPTIONAL,
    macdPDU-Size-Index-to-Modify    MACdPDU-Size-Indexlist-to-Modify                        OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { PriorityQueue-InfoItem-to-Modify-
ExtIEs} }       OPTIONAL,
```

```
    ...
}

PriorityQueue-InfoItem-to-Modify-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```