TSG-RAN Meeting #22 **RP-030644**
Maui, USA, 09-12 December 2003

Title: **HARQ Memory Partioning, process identifiers and re-ordering: Rel-5 CRs on 25.331, 25.212, 25.423 and 25.433.**

Source: **TSG-RAN WG2**

Agenda item: **7.3.6**

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem	WG
25.212	185	25.212	Rel-5	HARQ process identifier mapping	F	5.6.0	5.7.0	R1-031344	HSDPA-Phys	RAN WG1
25.331	2141	-	Rel-5	Re-ordering Queue and HARQ Ids	F	5.6.0	5.7.0	R2-032626	HSDPA-L23	RAN WG2
25.423	879	1	Rel-5	Explicit HARQ Memory Partitioning Clarification	F	5.7.0	5.8.0	R3-031778	HSDPA-IubIur	RAN WG3
25.433	925	1	Rel-5	Explicit HARQ Memory Partitioning Clarification	F	5.6.0	5.7.0	R3-031777	HSDPA-IubIur	RAN WG3

3GPP TSG- RAN WG1 Meeting #35
Lisbon, Portugal, 17-21 November, 2003

Tdoc ⌘ R1-031344

CR-Form-v7

CHANGE REQUEST

⌘ **25.212** **CR** **185** ⌘ **rev** **-** ⌘ 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 [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	HARQ process identifier mapping
Source:	⌘	TSG RAN WG1
Work item code:	⌘	HSDPA-Phys
Date:	⌘	17/11/2003
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:	⌘	Common understanding seems to be that this 3bit HARQ process information in section 4.6 of TS 25.212 is unsigned binary presentation of the HARQ process identifier. However it is not clearly said so and the terminology 'HARQ process identifier' does not appear in TS 25.212.
Summary of change:	⌘	Add new section 4.6.2.5 to clarify HARQ process identifier mapping New section 4.6.2.6 to clarify transport block size index mapping is also added for completeness
Consequences if not approved:	⌘	Ambiguity in mapping of HARQ process identifier into HARQ process information remains. <Isolated Impact Analysis> There should be no impact if UE is implemented according to the clarification.

Clauses affected:	⌘				
Other specs affected:	⌘	Y	N	Other core specifications	⌘
				Test specifications	
				O&M Specifications	
Other comments:	⌘				

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

4.6.2 HS-SCCH information field mapping

4.6.2.1 Redundancy and constellation version coding

The redundancy version (RV) parameters *r*, *s* and constellation version parameter *b* are coded jointly to produce the value X_{rv}. X_{rv} is alternatively represented as the sequence $x_{rv,1}$, $x_{rv,2}$, $x_{rv,3}$ where $x_{rv,1}$ is the MSB. This is done according to the following tables according to the modulation mode used:

Table 12: RV coding for 16 QAM

X_{rv} (value)	s	r	b
0	1	0	0
1	0	0	0
2	1	1	1
3	0	1	1
4	1	0	1
5	1	0	2
6	1	0	3
7	1	1	0

Table 13: RV coding for QPSK

X_{rv} (value)	s	r
0	1	0
1	0	0
2	1	1
3	0	1
4	1	2
5	0	2
6	1	3
7	0	3

4.6.2.2 Modulation scheme mapping

The value of $x_{ms,1}$ is derived from the modulation and given by the following:

$$X_{ms,1} = \begin{cases} 0 & if \quad QPSK \\ 1 & if \quad 16QAM \end{cases}$$

4.6.2.3 Channelization code-set mapping

The channelization code-set bits $x_{ccs,1}$, $x_{ccs,2}$, …, $x_{ccs,7}$ are coded according to the following:

Given P (multi-)codes starting at code O calculate the information-field using the unsigned binary representation of integers calculated by the expressions,

for the first three bits (code group indicator):

$x_{ccs,1}$, $x_{ccs,2}$, $x_{ccs,3}$ = min(P-1,15-P)

for the last four bits (code offset indicator):

$x_{ccs,4}$, $x_{ccs,5}$, $x_{ccs,6}$, $x_{ccs,7}$ = |O-1-$\lfloor$P/8$\rfloor$ *15|

The definitions of P and O are given in [3].

4.6.2.4 UE identity mapping

The UE identity is the HS-DSCH Radio Network Identifier (H-RNTI) defined in [13]. This is mapped such that xue,1 corresponds to the MSB and xue,16 to the LSB, cf. [14].

4.6.2.5 HARQ process identifier mapping

Hybrid-ARQ process information (3 bits) $x_{hap,1}$, $x_{hap,2}$, $x_{hap,3}$ is unsigned binary representation of the HARQ process identifier where $x_{hap,1}$ is MSB.

4.6.2.6 Transport block size index mapping

Transport-block size information (6 bits) $x_{tbs,1}$, $x_{tbs,2}$, …, $x_{tbs,6}$ is unsigned binary representation of the Transport block size index where $x_{tbs,1}$ is MSB.

3GPP TSG-RAN2 Meeting #39
San Diego, USA, 17th November 2003

Tdoc ⌘R2-032626

CR-Form-v7

CHANGE REQUEST

⌘ **25.331** **CR** **2141** ⌘ **rev** **-** ⌘ 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 [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Re-ordering Queue and HARQ IDs
Source:	⌘	RAN WG2
Work item code:	⌘	HSDPA-L23
Date:	⌘	17/11/2003
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 not explicitly stated how to allocate HARQ process IDs based on the memory split information. It is not stated that the queue ID is unique across multiple MAC-d flows. This leads to confusion as to how to map traffic between queues and MAC-d flows. It is not stated that the sum of the soft-memory configuration should be limited to the value corresponding to the UE category. It is not stated how the soft memory would be allocated in case the implicit division yields a non-integer result.
Summary of change:	⌘	It is explained which HARQ process IDs to assign and how the process IDs are associated with a given memory size. We clarify in the Tabular (for lack of a better place) that the queue ID is unique across multiple MAC-d flows.
Consequences if not approved:	⌘	UE might consider that the UTRAN has allocated memory for different HARQ processes than what was intended. Developpers will remain unclear about how to map re-ordering queues to MAC-d flows.

Clauses affected:	⌘	8.6.5.6b, 10.3.5.1a
Other specs	⌘	Y [ ] N [ ] Other core specifications ⌘

affected:	Test specifications O&M Specifications	
Other comments: ⌘		

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

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

2> 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".

….

8.6.5.6b HARQ Info

If the IE "HARQ Info" is included, the UE shall:

1> configure the MAC-hs entity with the number of HARQ processes indicated in IE "Number of Processes";

1> assign to each of these HARQ processes IDs going from 0 to “Number of Processes” – 1;

1> if the IE "Memory Partitioning" is set to 'Implicit':

2> partition the soft memory buffer in the MAC-hs entity equally among the processes configured above. In the event that the division of the soft memory buffer results in a non-Integer value the partition memory size is rounded down to the nearerst Integer value.

1> if the IE "Memory Partitioning" is set to 'Explicit':

2> if the UE capability "Total number of soft channel bits in HS-DSCH", as specified in [35], is exceeded with this configuration:

3> set the variable INVALID_CONFIGURATION to TRUE.

2> else:

3~~2~~> partition the soft memory buffer in the MAC-hs entity according to the IE "Process memory size" assuming that the order in the list follows the order in the HARQ process IDs.

….

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(0..7)	The MAC-hs queue ID is unique across all MAC-d flows.	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)	The MAC-hs queue ID is unique across all MAC-d flows.	REL-5

….

10.3.5.7a HARQ Info

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Number of Processes	MP		Integer (1..8)		REL-5
CHOICE *Memory Partitioning*	MP				REL-5
>Implicit				UE shall apply memory partitioning of equal size across all HARQ processes	REL-5
>Explicit					REL-5
>>Memory size	MP	<1 to MaxHProcesses>			REL-5
>>>Process Memory size	MP		Integer(800 .. 16000 by step of 800, 17600 .. 32000 by step of 1600, 36000 .. 80000 by step of 4000, 88000 .. 160000 by step of 8000, 176000 .. 304000 by step of 16000)	Maximum n~~N~~umber of soft ~~channel~~ bits available in the virtual IR buffer [27]	REL-5

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San Diego, USA, November 17th-21st 2003

Tdoc ⌘R3-031778

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CHANGE REQUEST

⌘ **25.423** **CR** **879** ⌘ **rev** **1** ⌘ Current version: **5.7.0** ⌘

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

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

Title:	⌘	Explicit HARQ Memory Partitioning Clarification
Source:	⌘	RAN3
Work item code:	⌘	HSDPA-IuBIur
Date:	⌘	11/11/2003
Category:	⌘	**F**
Release:	⌘	REL-5

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R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change: ⌘ RANAP allows to explicitly configure the Process Memory size for every HARQ process. However it has been forgotten to provide the relation between HARQ Process identifier and Process Memory size. This leaves room for interpretation, which would in consequence lead to interoperability problems between UTRAN and UEs. For example a UE might assume HARQ first rate matching stage parameters N_{IR} different from the parameters actually used by UTRAN. In this case it can happen that a UE is not able to correctly decode transport blocks received on HS-DSCH.

Summary of change: ⌘ Revision 1: Add missing reference to 'Multiplexing and channel coding (TDD)' in 3GPP TS 25.222. Mapping of higher layer HARQ Process Indentifiers 0, 1, 2 , ... to Layer HARQ Process Identifiers ($x_{hap,1}$, $x_{hap,2}$, $x_{hap,3}$) removed, since it will be provided in RAN1 specification. For the implicit HARQ memory partitioning it is clarified that the partitions relate to HARQ process IDs going from 0 to "Number of Processes" – 1.

Revision 0: The missing relation between Process Memory size and HARQ process identifier has been given. It has been clarified that the term Process Memory size is related to the term 'virtual IR buffer size' in 25.212.

Impact assessment towards the previous version of the specification (same release):

This CR has isolated impact towards the previous version of the specification (same release).

This CR has an impact under functional point of view.

		The impact can be considered isolated because it only affects the HARQ "Memory Partitioning" function.
Consequences if not approved:	⌘	Lack in specification combined with the potential interoperability problem would further exist.

Clauses affected:	⌘	2; 9.2.1.45B; 9.2.2.19b; 9.2.3.3ab			
		Y	**N**		
Other specs	⌘	**X**		Other core specifications	⌘ 25.212 v5.6.0 CR185, 25.331 v5.6.0 CR2141, 25.433 v5.6.0 CR925r1
affected:			**X**	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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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".

[xx] 3GPP TS 25.222: "Multiplexing and Channel Coding (TDD)".

/* Text ommited */

9.2.1.45B Process Memory Size

The *Process Memory Size* IE is the size of an HARQ process in the DRNS expressed in bits. It provides the maximum number of soft bits in the virtual IR buffer [9] or [xx].

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,…)	

/* Text ommited */

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,...)	For HARQ process IDs going from 0 to "Number of Processes" – 1 the Total number of soft channel bits [42] is partitioned equally between all HARQ processes according to the rules in [16].	–	
>*Explicit*					–	
>>HARQ Memory Partitioning Infomation		*1..<maxnoofHARQprocesses>*		The first instance of the parameter corresponds to HARQ process with identifier 0, the second instance to HARQ process with identifier 1, and so on.	–	
>>>Process Memory Size	M		9.2.1.45B	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.

/* Text ommited */

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		9.2.1.56			
>Midamble Shift And Burst Type	M		9.2.3.4			
>TDD Channelisation Code	M		9.2.3.8			
>HS-SICH Information		*1*				
>>HS SICH ID	M		9.2.3.3ad			
>>Time Slot	M		9.2.1.56			
>>Midamble Shift And Burst Type	M		9.2.3.4			
>>TDD Channelisation Code	M		9.2.3.8			
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		9.2.3.12a			
>Midamble shift LCR	M		9.2.3.4C			
>First TDD Channelisation Code	M		TDD Channelisation Code 9.2.3.8			
>Second TDD Channelisation Code	M		TDD Channelisation Code 9.2.3.8			
>HS-SICH Information LCR		*1*				
>>HS SICH ID	M		9.2.3.3ad			
>>Time Slot LCR	M		9.2.3.12a			
>>Midamble shift LCR	M		9.2.3.4C			
>>TDD Channelisation Code	M		9.2.3.8			
HS-PDSCH Timeslot Specific Information Response		*0..<maxnoofDLts>*		Mandatory for 3.84Mcps TDD. Not Applicable to 1.28Mcps TDD.	–	
>Time Slot	M		9.2.1.56		–	
>Midamble Shift And Burst Type	M		9.2.3.4		–	
HS-PDSCH Timeslot Specific Information Response LCR		*0..<maxnoofDLtsLCR>*		Mandatory for 1.28Mcps TDD. Not Applicable to 3.84Mcps TDD.	–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
>Time Slot LCR	M		9.2.3.12a		–	
>Midamble Shift LCR	M		9.2.3.4C		–	
CHOICE *HARQ Memory Partitioning*	M				–	
>Implicit					–	
>>Number of Processes	M		INTEGER (1..8)	For HARQ process IDs going from 0 to "Number of Processes" – 1 the Total number of soft channel bits [42] is partitioned equally between all HARQ processes according to the rules in [16].	–	
>Explicit					–	
>>HARQ Memory Partitioning Infomation		*1..<maxnoofHARQprocesses>*		The first instance of the parameter corresponds to HARQ process with identifier 0, the second instance to HARQ process with identifier 1, and so on.	–	
>>>Process Memory Size	M		9.2.1.45B	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.

/* Text ommited */

3GPP TSG-RAN3 Meeting #39
San Diego, USA, November 17th-21st 2003

Tdoc ⌘R3-031777

CR-Form-v7

CHANGE REQUEST

⌘ **25.433** **CR** **925** ⌘ **rev** **1** ⌘ 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 [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Explicit HARQ Memory Partitioning Clarification
Source:	⌘	RAN3
Work item code:	⌘	HSDPA-IuBIur
Date:	⌘	11/11/2003
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: ⌘ NBAP allows to explicitly configure the Process Memory size for every HARQ process. However it has been forgotten to provide the relation between HARQ Process identifier and Process Memory size. This leaves room for interpretation, which would in consequence lead to interoperability problems between UTRAN and UEs. For example a UE might assume HARQ first rate matching stage parameters N_{IR} different from the parameters actually used by UTRAN. In this case it can happen that a UE is not able to correctly decode transport blocks received on HS-DSCH.

Summary of change: ⌘ Revision 1: Add missing reference to 'Multiplexing and channel coding (TDD)' in 3GPP TS 25.222. Mapping of higher layer HARQ Process Indentifiers 0, 1, 2 , ... to Layer HARQ Process Identifiers ($x_{hap,1}$, $x_{hap,2}$, $x_{hap,3}$) removed, since it will be provided in RAN1 specification. For the implicit HARQ memory partitioning it is clarified that the partitions relate to HARQ process IDs going from 0 to "Number of Processes" – 1.

Revision 0: The missing relation between Process Memory size and HARQ process identifier has been given. It has been clarified that the term Process Memory size is related to the term 'virtual IR buffer size' in 25.212.

Impact assessment towards the previous version of the specification (same release):

This CR has isolated impact towards the previous version of the specification (same release).

This CR has an impact under functional point of view.

The impact can be considered isolated because it only affects the HARQ

		"Memory Partitioning" function.
Consequences if not approved:	⌘	Lack in specification combined with the potential interoperability problem would further exist.

Clauses affected:	⌘	2; 9.2.1.49D; 9.2.2.18E ;9.2.3.5G				
		Y	**N**			
Other specs	⌘	**X**		Other core specifications	⌘	25.212 v5.6.0 CR185, 25.331 v5.6.0 CR2141, 25.423 v5.7.0 CR879r1
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.

/* Text ommited */

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".

[xx] 3GPP TS 25.222: "Multiplexing and Channel Coding (TDD)".

/* Text ommited */

9.2.1.49D Process Memory Size

The *Process Memory Size* IE is the size of an HARQ process in the Node B expressed in bits. It provides the maximum number of soft bits in the virtual IR buffer [8] or [xx].

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,…)	

/* Text ommited */

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 Specific Information Response		*1..<maxnoofHSSCCHcodes>*			–	
>Code Number	M		INTEGER (0..127)		–	
CHOICE *HARQ Memory Partitioning*	M				–	
>Implicit					–	
>>Number of Processes	M		INTEGER (1..8,...)	For HARQ process IDs going from 0 to "Number of Processes" – 1 the Total number of soft channel bits [33] is partitioned equally between all HARQ processes according to the rules in [18].	–	
>Explicit					–	
>>HARQ Memory Partitioning Infomation		*1..<maxnoofHARQprocesses>*		The first instance of the parameter corresponds to HARQ process with identifier 0, the second instance to HARQ process with identifier 1, and so on.	–	
>>>Process Memory Size	M		9.2.1.49D	See [18]	–	

Range Bound	Explanation
maxnoofMACdFlows	Maximum number of HS-DSCH MAC-d flows
maxnoofHSSCCHcodes	Maximum number of HS-SCCH codes
MaxnoofHARQprocesses	Maximum number of HARQ processes for one UE

/* Text ommited */

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	M		TDD Channelisation Code 9.2.3.19		–	
>Second TDD Channelisation Code	M		TDD Channelisation Code 9.2.3.19		-	
>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	M		9.2.3.19		–	
CHOICE *HARQ Memory Partitioning*	M				–	
>Implicit					–	
>>Number of Processes	M		INTEGER (1..8,...)	For HARQ process IDs going from 0 to "Number of Processes" – 1 the Total number of soft channel bits [33] is partitioned equally between all HARQ processes according to the rules in [18].	–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
>Explicit					–	
>>HARQ Memory Partitioning Infomation		*1..<maxnoofHARQprocesses>*		The first instance of the parameter corresponds to HARQ process with identifier 0, the second instance to HARQ process with identifier 1, and so on.	–	
>>>Process Memory Size	M		9.2.1.49D	See [18]	–	

Range Bound	Explanation
maxnoofMACdFlows	Maximum number of HS-DSCH MAC-d flows.
maxnoofHSSCCHcodes	Maximum number of HS-SCCH codes

/* Text ommited */