TSG-RAN Meeting #20 ***RP-030302***
Hämeenlinna, Finland, 03-06 June 2003

Title: **CR (Rel-5) to TS 25.321**

Source: **TSG-RAN WG2**

Agenda item: **7.2.5**

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem
25.321	171	-	Rel-5	Text clean up of the description of the reordering entity	F	5.4.0	5.5.0	R2-031385	TEI5
25.321	172	-	Rel-5	MAC header for DTCH and DCCH mapped to HS-DSCH	F	5.4.0	5.5.0	R2-031387	HSDPA-L23
25.321	173	-	Rel-5	UE procedure for TB Size signaling	F	5.4.0	5.5.0	R2-031388	HSDPA-L23

3GPP TSG-RAN-WG2 Meeting #36 **R2-031385**
Paris, France, 19th – 23rd May 2003

CR-Form-v7

CHANGE REQUEST

⌘ **25.321** **CR** **171** ⌘ **rev** **-** ⌘ Current version: **5.4.0** ⌘

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

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

Title:	⌘	Text clean up of the description of the reordering entity
Source:	⌘	RAN WG2
Work item code:	⌘	TEI5
Date:	⌘	28/03/2003
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:	⌘	Text modifications introduced by CR 170 on RAN2#34 resulted in some erroneous left-overs due to the change of the variable name from Highest_Received_TSN to RcvWindow_UpperEdge.
Summary of change:	⌘	Highest_Received_TSN is replaced by RcvWindow_UpperEdge, where this replacement was forgotten in CR 170. The definition of the variable RcvWindow_UpperEdge is corrected semantically.
Consequences if not approved:	⌘	Incorrect specification

Clauses affected:	⌘	11.6.2.3.1

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
			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

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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.

11.6.2.3 Reordering entity

11.6.2.3.1 Definitions

In the functions described in this section the following definitions apply:

Parameters

- Transmitter window size (TRANSMIT_WINDOW_SIZE)
  TRANSMIT_WINDOW_SIZE is the size of the transmitter window according to the definition below. This is a parameter in the Node B and the value of the parameter is configured by higher layers.

- Receiver window size (RECEIVE_WINDOW_SIZE)
  RECEIVE_WINDOW_SIZE is the size of the receiver window according to the definition below. This is a parameter in the UE and the value of the parameter is configured by higher layers.

State variables

- Next_expected_TSN:
  The next_expected_TSN is the Transmission sequence number (TSN) following the TSN of the last in-sequence MAC-hs PDU received. It shall be updated upon the receipt of the MAC-hs PDU with TSN equal to Next_expected_TSN. The initial value of Next_expected_TSN =0.

- RcvWindow_UpperEdge~~RcvWindow_UpperEdge~~:
  The RcvWindow_UpperEdge represents the TSN, which is at the upper edge of the receiver window. After the first MAC-hs PDU has been received successfully, it also corresponds to ~~is~~ the MAC-hs PDU with the highest TSN of all received MAC-hs PDUs. The initial ~~Highest received TSN~~ RcvWindow_UpperEdge equals 63. ~~Highest received TSN~~ RcvWindow_UpperEdge is updated based on the reception of new payloads according to the procedure given below.

- T1_TSN:
  The TSN of the latest MAC-hs PDU that cannot be delivered to ~~highest layer~~ the disassembly function, when the timer T1 is started.

Timers

- Re-ordering release timer (T1):
  The Re-ordering release timer T1 controls the stall avoidance in the UE reordering buffer as described below. The value of T1 is configured by upper layers.

Other definitions

- Receiver window:
  The receiver window defines TSNs of those MAC-hs PDUs that can be received in the receiver without causing an advancement of the receiver window according to the procedure below. The size of the receiver window equals RECEIVE_WINDOW_SIZE and spans TSNs going from RcvWindow_UpperEdge – RECEIVE_WINDOW_SIZE + 1 to RcvWindow_UpperEdge included.

11.6 2 3.2 Reordering functionality

If no timer T1 is active:

- the timer T1 shall be started when a MAC-hs PDU with TSN=SN is correctly received but can not be delivered to the disassembly function.

- T1_TSN shall be set to SN.

If a timer T1 is already active:

- no additional timer shall be started, i.e. only one timer T1 may be active at a given time.

The timer T1 shall be stopped if:

- the MAC-hs PDU with TSN = T1_TSN can be delivered to the disassembly function before the timer expires.

When the timer T1expires:

- all correctly received MAC-hs PDUs up to and including T1_TSN-1 shall be delivered to the disassembly function and they shall be removed from the reordering buffer and be considered as having been received;

- all correctly received MAC-hs PDUs up to the next not received MAC-hs PDU shall be delivered to the disassembly function.

- next_expected_TSN shall be set to the TSN of the next not received MAC-hs PDU.

When the timer T1 is stopped or expires, and there still exist some received MAC-hs PDUs that can not be delivered to higher layer:

- timer T1 is started

- set T1_TSN to the highest TSN among those of the MAC-hs PDUs that can not be delivered.

Transmitter operation:

After the transmitter has transmitted a MAC-hs PDU with TSN=SN, any MAC-hs PDU with TSN ≤ SN – TRANSMIT_WINDOW_SIZE should not be retransmitted to avoid sequence number ambiguity in the receiver.

Receiver operation:

- MAC-hs PDUs that have been discarded by the timer based mechanism shall be considered as having been received in the following procedure.

When a MAC-hs PDU with TSN = SN is received:

- If SN is within the receiver window and this MAC-hs PDU has not previously been received:
  - the MAC-hs PDU is placed in the reordering buffer at the place indicated by the TSN.
- If SN is within the receiver window, and this MAC-hs PDU has been previously received:
  - the MAC-hs PDU shall be discarded.
- If SN is outside the receiver window:
  - the received MAC-hs PDU shall be placed above the highest received TSN in the reordering buffer, at the position indicated by SN;
  - RcvWindow_UpperEdge shall be set to SN thus advancing the receiver window;
  - any MAC-hs PDUs with TSN ≤ RcvWindow_UpperEdge – RECEIVE_WINDOW_SIZE, i.e. outside the receiver window after its position is updated, shall be removed from the reordering buffer and be delivered to the disassembly entity.
- All received MAC-hs PDUs with consecutive TSNs from next_expected_TSN up to the first not received MAC-hs PDU are delivered to the disassembly entity.
- next_expected_TSN shall be set to the TSN of this first not received MAC-hs PDU.

3GPP TSG-RAN WG2 Meeting #36 **R2-031387**
Paris, France, 19 – 23 May 2003

CR-Form-v7

CHANGE REQUEST

⌘ **25.321** **CR** **172** ⌘ **rev** **-** ⌘ Current version: **5.4.0** ⌘

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

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

Title:	⌘	MAC header for DTCH and DCCH mapped to HS-DSCH
Source:	⌘	RAN WG2
Work item code:	⌘	HSDPA-L23
Date:	⌘	12/05/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
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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:	⌘	In the event that DTCH or DCCH is mapped to the HS-DSCH, padding is included in the MAC-hs PDU. However padding is included only when the total size of the MAC-hs header and the MAC-hs payload is smaller than the transport block size. In Section 9.2.2.1, the last sentence fails to take the MAC-hs header into account when considering padding.
Summary of change:	⌘	Correction to last sentence in Section 9.2.2.1
Consequences if not approved:	⌘	Incorrect implementation of the padding in MAC-hs.

Clauses affected:	⌘	9.2.2.1			
Other specs affected:	⌘	**Y**	**N**		⌘
			X	Other core specifications	
				Test specifications	
				O&M Specifications	
Other comments:	⌘				

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9.2.2.1 MAC header for DTCH and DCCH

a) DTCH or DCCH mapped to HS-DSCH:

- The Queue ID field and TSN field are always included in the MAC-hs header. One SID field, N field and F field is included for each MAC-d PDU size included in the MAC-hs PDU. Padding is not explicitly indicated but is included in the end of the MAC-hs PDU if the total size of the MAC-hs payload plus the MAC-hs header is smaller than the transport block set size.

3GPP TSG-RAN WG2 Meeting #36 ***R2-031388***
Paris, France, 19 – 23 May 2003

CR-Form-v7

CHANGE REQUEST

⌘ **25.321** **CR** **173** ⌘ **rev** **-** ⌘ Current version: **5.4.0** ⌘

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

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

Title:	⌘	UE procedure for TB Size signaling
Source:	⌘	RAN WG2
Work item code:	⌘	HSDPA-L23
Date:	⌘	22/05/2003
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:	⌘	In the event when UE receives all 1's TBS index and the NDI bit incremented, the transport block can still be successfully decoded at a subsequent retransmission. This could happen, for example, when the Node B selects channelization codes and modulation within the valid range for that transport block size at the time of subsequent retransmission. So, the UE behavior in the event of receiving all 1's TBS index and the NDI bit incremented should be to send a NACK rather than an ACK, as in current specification.
Summary of change:	⌘	(i) Correction to I range in Section 9.2.3.1. (ii) Correction to k_i range in Section 9.2.3.1. (iii) Correction of text describing UE behavior when TBS index is all 1's and the NDI bit has been incremented.
Consequences if not approved:	⌘	UE behaviour may lead to possible loss in system performance when UE receives all 1's TBS index and NDI bit incremented.

Clauses affected:	⌘	9.2.3.1and 11.6.2.2

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

Other comments:	⌘	

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9.2.3.1 Transport block size for FDD

For all transmissions of a transport block, the transport block size is derived from the TFRI value as specified below, except only in those cases of retransmissions where the Node-B selects a combination for which no mapping exists between the original transport block size and the selected combination of channelisation Code set and modulation type. In such cases, the transport block size index value signalled to the UE shall be set to 111111, i.e., k_i=63.

For each combination of channelization code set and modulation scheme i = 0..~~31~~29, a set of k_i = 0..62 transport block sizes $L(i, k_i)$ is given by:

If i = 0 and k_i < 39

$$L(i,k_i) = 137 + 12k_i$$
$$k_i = 0,...,38$$

else

$$L(i,k_i) = \lfloor L_{\min} p^{k_{0,i}+k_i} \rfloor$$
$$p = 2085/2048$$
~~$$L_{\min} = 296$$~~
$$k_{0,i} = \text{from Table 9.2.3.1}$$
$$k_i = 0,...,63$$

$$L(i,k_i) = \lfloor L_{\min} p^{k_{0,i}+k_i} \rfloor$$
$$p = 2085/2048$$
$$L_{\min} = 296$$
$$k_{0,i} = \text{from Table 9.2.3.1}$$
$$k_i = 0,...,62$$

end

11.6.2.2 HARQ process

A number of parallel HARQ processes are used in the UE to support the HARQ protocol. The number of HARQ processes is configured by upper layers.

The HARQ process processes the New Data Indicator indicated by lower layers for each received MAC-hs PDU.

The UE shall:

- if the New Data Indicator has been incremented compared to the value in the previous received transmission in this HARQ process or this is the first received transmission in the HARQ process:
  - ~~replace~~ discard the data currently in the soft buffer for this HARQ process. ~~with the received data~~.
  - if the Transport Block Size index value is equal to 111111 (FDD only):
    - the UE may store the received data;
    - generate a ~~positive~~ negative acknowledgement (NACK) of the data in this HARQ process;

- ~~discard the received data;~~
- ~~assume that the data has been successfully decoded.~~

- else:
  - store the received data in the soft buffer for this HARQ process.