TSG-RAN Meeting #23
Phoenix, Arizona, USA, 10 - 13 March 2004

RP-040123

Title: Clarification on reconfiguration of HSDPA Revision 11
Source: Panasonic, Philips, Nokia

Agenda item: 7.2.5

1. Independent Release 5 CRs to **TS 25.212** and the shadow CRs to Release 6 (**RP-040123**)

RP tdoc#	WG tdoc#	Spec	CR	R	Subject	Ph	C	Curr	New	WI	Remarks
RP-040123		25.214	331	11	Clarification on the reconfiguration of HSDPA	Rel-5	F	5.7.0	5.8.0	HSDPA-Phys	
RP-040123		25.214	342	3	Clarification on the reconfiguration of HSDPA	Rel-6	A	6.0.0	6.1.0	HSDPA-Phys	

1. Introduction

RAN1 has been discussed clarification on reconfiguration of HSDPA since Paris Disneyland meeting [1]-[13].
In RAN1#36, following approach was agreed.
- The CR is written as UE "should" use DTX, but "may" also transmit ACK/NACK/CQI.
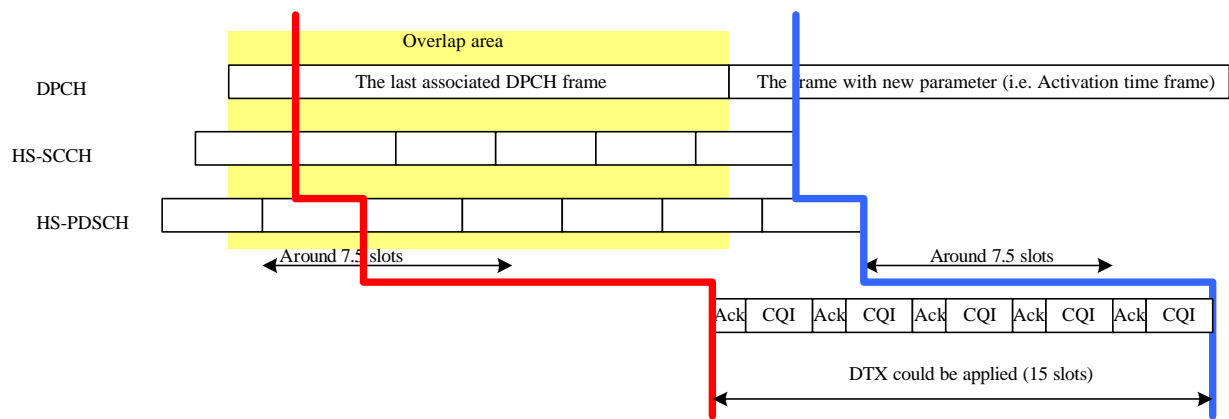- Try to agree wording of the text over the reflector until RAN#23, check with RAN2 offline until RAN. Revised CR to be provided to RAN#23 either by RAN1 or as company input.
This document is update based on online and offline discussion after RAN1#36.

2. Timing diagram for possible DTX period of HS-DPCCH

In following, timing diagram of how long DTX could be applied is shown. Red bold color line is the beginnig of the start of possible DTX period of HS-DPCCH. Blue bold color line is the beginning of the start of new parameter is applied according to TS25.331 specification section 8.6.3.1.

Overlap area

DPCH | The last associated DPCH frame | The frame with new parameter (i.e. Activation time frame)

HS-SCCH

HS-PDSCH

Around 7.5 slots

Around 7.5 slots

| Ack | CQI | Ack | CQI | Ack | CQI | Ack | CQI | Ack | CQI |

DTX could be applied (15 slots)

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3. Reference

[1]   R1-030536   Reconfiguration of HSDPA, Panasonic

[2]   R1-030755   CR25.214-331(Rel-5): Clarification on reconfiguration of HSDPA, Panasonic

[3]   R1-030868   CR25.214-331r1(Rel-5): Clarification on reconfiguration of HSDPA, Panasonic

[4]   R1-030919   CR25.214-331r2(Rel-5): Clarification on reconfiguration of HSDPA, Panasonic

[5]   R1-030935   CR25.214-331r3(Rel-5): Clarification on reconfiguration of HSDPA, Panasonic

[6]   R1-031068   CR25214CR331r4: "Clarification on the reconfiguration of HSDPA", Panasonic

[7]   R1-031225   CR25214CR331r5: "Clarification on the reconfiguration of HSDPA", Panasonic

[8]   R1-031401   CR25214CR331r6: "Clarification on the reconfiguration of HSDPA", Panasonic

[9]   RP-030699   CR25214CR331r6: "Clarification on the reconfiguration of HSDPA", Panasonic

[10]   R1-040197   CR25214CR331r7: "Clarification on the reconfiguration of HSDPA", Panasonic

[11]   R1-040320   DTX period for reconfigurations of HSDPA, Panasonic

[12]   R1-040344   CR25214CR331r8: "Clarification on the reconfiguration of HSDPA", Panasonic

[13]   R1-040378   CR25214CR331r9&r10: "Clarification on the reconfiguration of HSDPA revision 9 & 10", Panasonic

3GPP TSG RAN #23
Phoenix, Arizona, USA 10-12 March 2004

Tdoc RP-040123

CR-Form-v7

CHANGE REQUEST

⌘ **25.214** CR **331** ⌘ **rev 11** ⌘ Current version: **5.7.0** ⌘

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

Title: ⌘	Clarification on reconfiguration of HSDPA	
Source: ⌘	Panasonic, Philips, Nokia	
Work item code: ⌘	HSDPA-Phys	***Date:*** ⌘ March 5, 2003
Category: ⌘ **F**		***Release:*** ⌘ Rel-5

Use <u>one</u> 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 <u>one</u> 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: ⌘	- CQI and DPCCH relation is not clear. CQI is only transmitted when uplink DPCCH or uplink DPCCH power control preamble is transmitted. - Current reconfiguration procedure relating HSDPA is not clear.
Summary of change: ⌘	We propose to clarify following points: - UE only transmit CQI when uplink DPCCH or uplink DPCCH power control preamble is transmitted. - The UE should use DTX of HS-DPCCH in 5 subframe periods after the HS-DPCCH subframe boundary immediately before the HS-DPCCH subframe corresponding to the first HS-SCCH subframe which entirely falls within the last associated DPCH frame in which the pre-event parameters are applicable. If the UE does not use DTX in one or more of these fields of the HS-DPCCH, then in the fields in which DTX is not used the UE shall transmit ACK, NACK or CQI as described in sub-clauses 6A.1 and 6A.3. - It is clarified that this possible DTX is not occured in case of synchronisation procedure in relation to the HS-DSCH serving cell. - In the text that "UE does not support the case of k'<N_cqi_transmit", k'=0 is exception is clarified. - Spelling mistake is corrected.
Consequences if not approved: ⌘	- The scheduler in Node B cannot know which downlink subframe is effective and which uplink subframe is not effective around activation time of the physical channel reconfiguration. Therefore, the reconfiguration procedure takes longer time because the scheduler will attempt not to use unclear subframes. UE is

required to transmit multiple scrambling codes in reconfiguration phase in case of the reconfiguration of the scrambling code. UE and Node B complexity increases for the special case such as reconfiguration of parameters.

<Isolated Impact Analysis>
- This CR relates only HS-DPCCH functionality. No impact is seen to R99 and R4 in both network and UE. UE behaviour of the previous version is not clearly defined.

Clauses affected:	⌘	6A.1.1, 6A.1.2, 6A.4		

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

6A .1.1   UE procedure for receiving HS-DSCH

If the UE did not detect consistent control information intended for this UE on any of the HS-SCCHs in the HS-SCCH set in the immediately preceding subframe, the UE shall monitor all HS-SCCHs in the HS-SCCH set. The maximum size of the HS-SCCH set is 4.

If the UE did detect consistent control information intended for this UE in the immediately preceding subframe, it is sufficient to only monitor the same HS-SCCH used in the immediately preceding subframe.

When the UE monitors HS-SCCHs, the UE shall only consider the control information to be consistent

if decoded 'channelization-code-set information' is lower than or equal to 'maximum number of HS-DSCH codes received' in its UE capability and

if the decoded modulation scheme is valid in terms of its UE capability.

If a UE detects that one of the monitored HS-SCCHs carries consistent control information intended for this UE, the UE shall start receiving the HS-PDSCHs indicated by this control information.

The transport block size information shall be derived from the signalled TFRI value as defined in [9]. If the 'Hybrid-ARQ process information' is not included in the set configured by upper layers, the UE shall discard the information received on this HS-SCCH and on the HS-PDSCHs.

With the exception of the provisions of subclauses 6A.3 and 6A.4, the following shall then apply:

After decoding the HS-PDSCH data, the UE shall transmit an hybrid ARQ ACK or NACK as determined by the MAC-hs based on the CRC check. The UE shall repeat the transmission of the ACK/NACK information over $N\_acknack\_transmit$ consecutive HS-DPCCH sub-frames, in the slots allocated to the HARQ-ACK as defined in [1]. When $N\_acknack\_transmit$ is greater than one, the UE shall not attempt to receive nor decode transport blocks from the HS-PDSCH in HS-DSCH sub-frames $n + 1$ to $n + (N\_acknack\_transmit - 1)$ where n is the number of the last HS-DSCH sub-frame in which a transport block has been received.

If consistent control information is not detected on any of the HS-SCCHs in the HS-SCCH set, neither ACK, nor NACK, shall be transmitted in the corresponding HS-DPCCH subframe.

6A .1.2   UE procedure for reporting channel quality indication (CQI)

With the exception of the provisions of subclauses 6A.3 and 6A.4, the following shall apply:

1) The UE derives the CQI value as defined in 6A .2.

2) For k = 0, the UE shall not transmit the CQI value.
   For k > 0, the UE shall transmit the CQI value in each subframe that starts $m{\times}256$ chips after the start of the associated uplink DPCCH frame with m fulfilling

$$\left(5 \times CFN + \lceil m \times 256chip/7680chip \rceil\right)\bmod k' = 0 \text{ with } k' = k/(2ms),$$

where CFN denotes the connection frame number for the associated DPCH and the set of five possible values of m is calculated as described in subclause 7.7 in [1].

3) The UE shall repeat the transmission of the CQI value derived in 1) over the next $(N\_cqi\_transmit – 1)$ consecutive HS-DPCCH sub frames in the slots respectively allocated to the CQI as defined in [1]. UE does not support the case of $k' < N\_cqi\_transmit$ except for the case of k=0.

4) The UE shall not transmit the CQI in other subframes than those described in 2) and 3). In addition, the UE shall not transmit CQI in any CQI field which wholly or partly overlaps a period when neither the uplink DPCCH nor uplink DPCCH power control preamble is transmitted.

6A .4   Operation during special events

When any of the events listed below occur without activation of a UE synchronisation procedure described in section 4.3.2 in relation to the HS-DSCH serving cell:

The UE should use DTX of HS-DPCCH in 5 subframe periods after the HS-DPCCH subframe boundary immediately before the HS-DPCCH subframe corresponding to the first HS-SCCH subframe which entirely falls within the last associated DPCH frame in which the pre-event parameters are applicable. If the UE does not use DTX in one or more of these fields of the HS-DPCCH, then in the fields in which DTX is not used the UE shall transmit ACK, NACK or CQI as described in sub-clauses 6A.1 and 6A.3.

The events to activate the above UE behaviour are:

- Reconfiguration of H-RNTI

- MAC-hs reset

- Reconfiguration of number of HARQ process

- Reconfiguration of HARQ memory partitioning

- Reconfiguration of DPCH timing offset $\tau_{DPCH,n}$ for HS-DSCH serving cell

- Reconfiguration of transmission gap pattern sequence

- Change of HS-DSCH serving cell

- Reconfiguration of scrambling code and channelisation code for HS-SCCH

- Reconfiguration of Ack-Nack repetition factor

- Reconfiguration of Scrambling code of uplink DPCH

- Reconfiguration of IQ mapping of HS-DPCCH

- Reconfiguration of Tx-diversity mode for HS-DSCH serving cell

- Reconfiguration of closed loop timing adjustment mode for HS-DSCH serving cell

- Reconfiguration of phase reference

- Reconfiguration of scrambling code or channelisation code of S-CPICH in case of S-CPICH may be used as a phase reference

- Reconfiguration of default Power offset between HS-PDSCH and P-CPICH/S-CPICH

- Reconfiguration of CQI Feedback cycle

- Reconfiguration of CQI repetition factor

CR-Form-v7

CHANGE REQUEST

⌘   **25.214** CR **342**   ⌘**rev** **3** ⌘   Current version: **6.0.0** ⌘

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

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Source: ⌘	Panasonic, Philips, Nokia	
Work item code: ⌘	HSDPA-Phys	***Date:*** ⌘ March 5, 2003

Category: ⌘ **A**

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			X	O&M Specifications	

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where CFN denotes the connection frame number for the associated DPCH and the set of five possible values of *m* is calculated as described in subclause 7.7 in [1].

3) The UE shall repeat the transmission of the CQI value derived in 1) over the next *(N_cqi_transmit – 1)* consecutive HS-DPCCH sub frames in the slots respectively allocated to the CQI as defined in [1]. UE does not support the case of $k' < N\_cqi\_transmit$ except for the case of k=0.

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The events to activate the above UE behaviour are:

- Reconfiguration of H-RNTI

- MAC-hs reset

- Reconfiguration of number of HARQ process

- Reconfiguration of HARQ memory partitioning

- Reconfiguration of DPCH timing offset $\tau_{DPCH,n}$ for HS-DSCH serving cell

- Reconfiguration of transmission gap pattern sequence

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- Reconfiguration of default Power offset between HS-PDSCH and P-CPICH/S-CPICH

- Reconfiguration of CQI Feedback cycle

- Reconfiguration of CQI repetition factor