TSG-RAN Meeting #22   **RP-030649**
Maui, Hawaii, USA, 9 - 12 December 2003

Title: **Supplement Independent Release 5 CRs to TS 25.214**

Source: **TSG-RAN WG1**

Agenda item: **7.2.5**

TS 25.214   **(RP-030649)**

RP tdoc#	WG tdoc#	Spec	CR	R	Subject	Ph	Cat	Current	New	WI	Remarks
RP-030649	R1-031113	25.214	335	1	Clarification of HS-SCCH reception	Rel-5	F	5.6.0	5.7.0	HSDPA-Phys	
RP-030649	R1-031352	25.214	336	1	Clarification of CQI definition	Rel-5	F	5.6.0	5.7.0	HSDPA-Phys	
RP-030649	R1-031343	25.214	337	1	Clarification of the HS-SCCH detection	Rel-5	F	5.6.0	5.7.0	HSDPA-Phys	

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CHANGE REQUEST

| ⌘ | **25.214** CR **335** | ⌘ **rev** | **1** | ⌘ | Current version: | **5.6.0** | ⌘ |

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

Title: ⌘	Clarification of HS-SCCH reception	
Source: ⌘	TSG RAN WG1	
Work item code: ⌘	HSDPA-Phys	***Date:*** ⌘ 09/10/2003
Category: ⌘	F	***Release:*** ⌘ Rel-5

Use <u>one</u> of the following categories:	Use <u>one</u> of the following releases:
F *(correction)*	2 *(GSM Phase 2)*
A *(corresponds to a correction in an earlier release)*	R96 *(Release 1996)*
B *(addition of feature),*	R97 *(Release 1997)*
C *(functional modification of feature)*	R98 *(Release 1998)*
D *(editorial modification)*	R99 *(Release 1999)*
Detailed explanations of the above categories can	Rel-4 *(Release 4)*
be found in 3GPP TR 21.900.	Rel-5 *(Release 5)*
	Rel-6 *(Release 6)*

Reason for change: ⌘	The physical layer error handling for the UE procedure for receiving HS-DSCH was clarified in the last RAN WG 1 meeting. The reason was an LS from RAN 2 (R1-030336) "LS on delivery of wrong data to upper layers for HSDPA" and the correction was the inclusion of the following consistency checks:

• UE checks if the channelization code set information is in line with its capability
• UE checks if the HARQ process information is in line with the current configuration

However the procedure for receiving HS-DSCH also comprises the consecutive scheduling rule saying "if the UE did detect 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". The behavior of the UE related to the consecutive scheduling rule in case of a consistency check error needs to be clarified. |
| ***Summary of change:*** ⌘ | The UE behavior related to the consecutive scheduling rule in case of a consistency check error is clarified. Furthermore the physical layer error handling is completed by considering also the modulation scheme. |
| ***Consequences if not approved:*** ⌘ | If the UE behavior related to the consecutive scheduling rule is not corrected, this would lead to an increased missed detection rate for UEs exploiting the consecutive scheduling rule. Additional the specification would remain imperfect in case a consistency check fails.

Isolated Impact Analysis:

The modification only applies to the reception of HS-SCCH. There is no impact to Release 99 and Release 4. If the UE is implemented according to this CR, the |

		HS-SCCH missed detection rate and the probability of delivering wrong data to upper layers can be reduced.

Clauses affected:	⌘	6A.1.1

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

Other comments:	⌘	

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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.

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 ~~check~~ 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 this condition is not fulfilled, the UE shall discard the information received on this HS-SCCH. The UE also shall check if 'Hybrid-ARQ process information' is included in the set configured by upper layers. If this condition is not fulfilled, the UE shall discard the information received on this HS-SCCH.~~

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 signaled 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.

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 subframe.

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CHANGE REQUEST

⌘	**25.214** CR **336**	⌘**rev** **1** ⌘	Current version:	**5.6.0**	⌘

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

Title: ⌘	Clarification of CQI definition

Source: ⌘	TSG RAN WG1

Work item code: ⌘	HSDPA-Phys	**Date:** ⌘	30/09/2003

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: ⌘	The current CQI definition does not refer to the possibility that HS-PDSCH/HS-SCCH and Common Pilot Channel use to derive the reference power would be under different scrambling codes. Some of these configurations are seen useful from a deployment point-of-view in particular in the early days of HSDPA however estimation of the difference in interference level on the different scrambling code would have a significant impact on the UE complexity. It was therefore agreed to simplify the CQI definition in order to allow the use of scenarios with mixed scrambling codes without delaying the availability of Ues.
Summary of change: ⌘	In case HSDPA channels are mapped onto a different scrambling code than the on which the Common Pilot Channel used to estimate the reference power for the CQI report is mapped, the UE shall assume that HS-PDSCH channels are mapped onto the same scrambling code as the one onto which the Common Pilot Channel used to estimate the reference power is mapped i.e. S-CPICH if higher layer signalling have informed the UE that for the radio link from the serving HS-DSCH cell it may use a S-CPICH as a phase reference and the P-CPICH is not a valid phase reference, P-CPICH otherwise
Consequences if not approved: ⌘	Ambiguous CQI definition for CQI configuration where HS-PDSCH channels are under a different scrambling code as the one used to scramble the Common Pilot Channel which is used to derive the reference power. This would lead to a practical impossibility to use such mixed scrambling code configurations. *Isolated Impact Analysis:* The modification only applies to the CQI definition. There is no impact to Release 99 and Release 4.

Clauses affected: ⌘	6A.2

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

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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 $k' < N\_cqi\_transmit$.

4) The UE shall not transmit the CQI in other subframes than those described in 2) and 3).

6A .2   Channel quality indicator (CQI) definition

Based on an unrestricted observation interval, the UE shall report the highest tabulated CQI value for which a single HS-DSCH sub-frame formatted with the transport block size, number of HS-PDSCH codes and modulation corresponding to the reported or lower CQI value could be received in a 3-slot reference period ending 1 slot before the start of the first slot in which the reported CQI value is transmitted and for which the transport block error probability would not exceed 0.1. Depending on the UE category as defined in [10], either Table 7A, 7B, 7C, 7D, or 7E should be used.

For the purpose of CQI reporting, the UE shall assume a total received HS-PDSCH power of
$P_{HSPDSCH} = P_{CPICH} + \Gamma + \Delta$ in dB,

where the total received power is evenly distributed among the HS-PDSCH codes of the reported CQI value, the measurement power offset Γ is signaled by higher layers and the reference power adjustment Δ is given by Table 7A, 7B, 7C, 7D, or 7E depending on the UE category.

Further, UE shall assume the number of soft bits available in the virtual IR buffer (N_{IR}), and redundancy and constellation version parameter (X_{RV}) as given by Table 7A, 7B, 7C, 7D, or 7E depending on the UE category.

 If higher layer signaling informs the UE that for the radio link from the serving HS-DSCH cell it may use a S-CPICH as a phase reference and the P-CPICH is not a valid phase reference, P_{CPICH} is the received power of the S-CPICH used by the UE, otherwise P_{CPICH} is the received power of the P-CPICH. If closed loop transmit diversity is used for the radio link from the serving HS-DSCH cell, P_{CPICH} denotes the power of the combined received CPICH from both transmit antennas, determined as if error-free transmitter weights had been applied to the CPICH, where those weights are determined as described in sub-clause 7.2. If STTD is used, P_{CPICH} denotes the combined CPICH power received from each transmit antenna and if no transmit diversity is used P_{CPICH} denotes the power received from the non diversity antenna.

For the purpose of CQI reporting the UE shall assume that all HS-PDSCH channelisation codes it may receive are under the same scrambling code as the Common Pilot Channel used to determine P_{CPICH}.

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

Tdoc ⌘*R1-031343*

CR-Form-v7

CHANGE REQUEST

⌘	**25.214** CR **337**	⌘**rev** **1** ⌘	Current version:	**5.6.0** ⌘

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

Title: ⌘	Clarification of the HS-SCCH detection	
Source: ⌘	TSG RAN WG1	
Work item code: ⌘	HSDPA-Phys	***Date:*** ⌘ 10/11/2003
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)*
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R98   *(Release 1998)*
R99   *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change: ⌘	In the current specifications the requirement on the UE detection for the HS-SCCH channels is not completely clear. The understanding is that a UE is required to be able to decode up 4 HS-SCCH's simultaneously in one subframe. However this physical layer limitation is not yet captured explicitly in the RAN1 specifications.
Summary of change: ⌘	The requirement on the detection of the HS-SCCH channels is explicitly stated in the specification to remove any ambiguity.
Consequences if not approved: ⌘	The physical layer requirement on the detection of the HS-SCCH is ambiguous in the sense that it is relying on the maximum value defined in the RRC signaling. Isolated Impact Analysis: The physical layer limitation for the detection of the HS-SCCH was not captured explicitly in the physical layer specification. This CR does not have any impact to any UE implementation in line with the agreed assumption on the simultaneous reception of the HS-SCCH. This change does not have any impact on other specifications.

Clauses affected: ⌘	6.A.1.1

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

6A .1.1   UE procedure for receiving HS-DSCH

If the UE did not detect 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 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 check if decoded 'channelization-code-set information' is lower than or equal to 'maximum number of HS-DSCH codes received' in its UE capability. If this condition is not fulfilled, the UE shall discard the information received on this HS-SCCH. The UE also shall check if 'Hybrid-ARQ process information' is included in the set configured by upper layers. If this condition is not fulfilled, the UE shall discard the information received on this HS-SCCH.

If a UE detects that one of the monitored HS-SCCHs carries 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 signaled TFRI value as defined in [9].

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 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 subframe.