TSG RAN Meeting #24 **RP-040231**
Seoul, Korea, 2 - 4 June 2004

Title **Independent Release 6 CR to TS 25.211**
Source **TSG RAN WG1**
Agenda Item **8.10**

WG1 Tdoc	Spec	CR	Rev	Phase	Cat	Version-Current	Subject	Workitem	Remarks
R1-040423	25.211	189	1	Rel-6	B	6.0.0	Re-Introduction of S-CPICH in combination with Closed Loop TxDiversity	TEI-6	
R1-040428	25.211	190	-	Rel-6	F	6.0.0	Clarification of NTFCI field of DL-DPCCH power preamble for CPCH	TEI-6	

3GPP TSG RAN WG1 Meeting #37
Montreal, Canada, 10-14 May, 2004

Tdoc ⌘R1-040423

CR-Form-v7

CHANGE REQUEST

⌘ **25.211** **CR** **189** ⌘ **rev** **1** ⌘ Current version: **6.0.0** ⌘

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

Title:	⌘	Re-Introduction of S-CPICH in combination with Closed Loop TxDiversity
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI6
Date:	⌘	23/04/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
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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:	⌘	The current specification does not allow Closed Loop TxDiversity in combination with using the S-CPICH as phase reference for DPCH and associated shared channels. This combination is seen benefitial to increase the cell capacity.
Summary of change:	⌘	The restriction that the P-CPICH shall always be a phase reference for DPCH and associated shared channels with Closed Loop TxDiversity is removed. Instead the S-CPICH may be used as phase reference.
Consequences if not approved:	⌘	Possible capacity increase due to the combination of Closed Loop TxDiversity with S-CPICH is lost.

Clauses affected:	⌘	5.3.3.1.1

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

Other comments:	⌘	Corresponding background Tdoc (R1-030025) and first version of the CR (R1-030043 REL-6 cat.B CR176 to 25.211 v5.3.0) were already discussed at RAN1 #30 (San Diego) in January 2003. The CR was revised in R1-030234 and R1-030320 at RAN1 #31 (Tokyo, Feb. 2003) to take comments into account and a final version (R1-030423) was already provided at RAN1 #32 (Paris) in May 2003. However, as there were no REL-6 specifications available so far the CR was put on hold and it was resubmitted in R1-040179 (CR189) at RAN1 #36 based on the new REL-6 specification. At RAN1 #36, the CR R1-040179 was agreed. But at RAN #23 (Phoenix, March 2004), the CR was not approved in RP-040087 as the 'removal of S-CPICH as phase reference for open loop diversity

	was questioned' and it was 'decided that the CR should be reviewed again by WG1 to check side impacts'. After RAN #23, the issue was discussed on the RAN1 reflector with the conclusion to not remove the corresponding sentence but just clarify it for closed loop TX diversity.

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.
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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.

5.3.3 Common downlink physical channels

5.3.3.1 Common Pilot Channel (CPICH)

The CPICH is a fixed rate (30 kbps, SF=256) downlink physical channel that carries a pre-defined bit sequence. Figure 13 shows the frame structure of the CPICH.

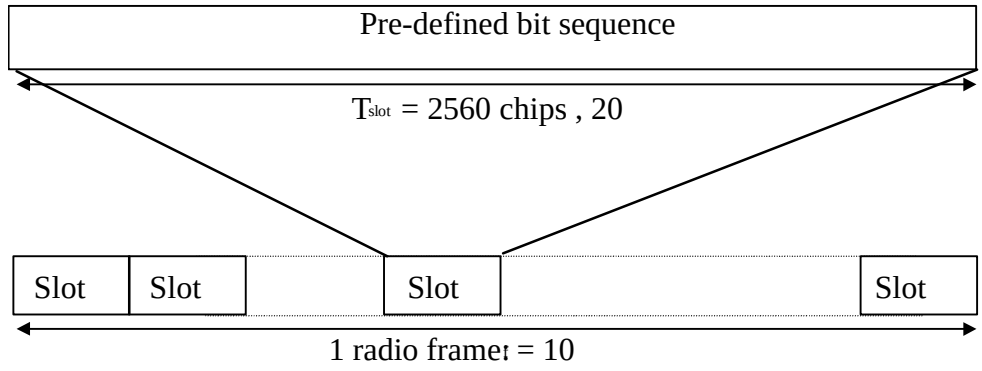

Figure 13: Frame structure for Common Pilot Channel

In case transmit diversity (open or closed loop) is used on any downlink channel in the cell, the CPICH shall be transmitted from both antennas using the same channelization and scrambling code. In this case, the pre-defined bit sequence of the CPICH is different for Antenna 1 and Antenna 2, see figure 14. In case of no transmit diversity, the bit sequence of Antenna 1 in figure 14 is used.

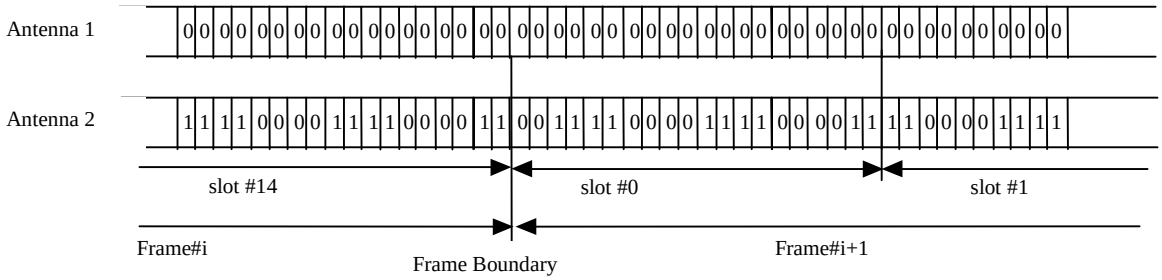

Figure 14: Modulation pattern for Common Pilot Channel

There are two types of Common pilot channels, the Primary and Secondary CPICH. They differ in their use and the limitations placed on their physical features.

5.3.3.1.1 Primary Common Pilot Channel (P-CPICH)

The Primary Common Pilot Channel (P-CPICH) has the following characteristics:

- The same channelization code is always used for the P-CPICH, see [4];
- The P-CPICH is scrambled by the primary scrambling code, see [4];
- There is one and only one P-CPICH per cell;
- The P-CPICH is broadcast over the entire cell.

The Primary CPICH is a phase reference for the following downlink channels: SCH, Primary CCPCH, AICH, PICH AP-AICH, CD/CA-ICH, CSICH, DL-DPCCH for CPCH and the S-CCPCH. By default, the Primary CPICH is also a phase reference for downlink DPCH and any associated PDSCH, HS-PDSCH and HS-SCCH. The UE is informed by higher layer signalling if the P-CPICH is not a phase reference for a downlink DPCH and any associated PDSCH, HS-PDSCH and HS-SCCH.

~~The Primary CPICH is always a phase reference for a downlink physical channel using closed loop TX diversity.~~

5.3.3.1.2 Secondary Common Pilot Channel (S-CPICH)

A Secondary Common Pilot Channel (S-CPICH) has the following characteristics:

- An arbitrary channelization code of SF=256 is used for the S-CPICH, see [4];
- A S-CPICH is scrambled by either the primary or a secondary scrambling code, see [4];
- There may be zero, one, or several S-CPICH per cell;
- A S-CPICH may be transmitted over the entire cell or only over a part of the cell;

A Secondary CPICH may be a phase reference for a downlink DPCH. If this is the case, the UE is informed about this by higher-layer signalling.

The Secondary CPICH can be a phase reference for a downlink physical channel using open loop or closed loop TX diversity, instead of the Primary CPICH being a phase reference.

Note that it is possible that neither the P-CPICH nor any S-CPICH is a phase reference for a downlink DPCH.

5.3.3.2 Downlink phase reference

Table 17 summarizes the possible phase references usable on different downlink physical channel types.

Table 17: Application of phase references on downlink physical channel types
"X" – can be applied, "–" – not applied

Physical channel type	Primary-CPICH	Secondary-CPICH	Dedicated pilot
P-CCPCH	X	–	–
SCH	X	–	–
S-CCPCH	X	–	–
DPCH	X	X	X
PICH	X	–	–
PDSCH*	X	X	X
HS-PDSCH*	X	X	X
HS-SCCH*	X	X	X
AICH	X	–	–
CSICH	X	–	–
DL-DPCCH for CPCH	X	–	–

Note *: The same phase reference as with the associated DPCH shall be used. The support for dedicated pilots as phase reference for HS-PDSCH and HS-SCCH is optional for the UE.

Furthermore, during a PDSCH frame, and within the slot prior to that PDSCH frame, the phase reference on the associated DPCH shall not change. During a DPCH frame overlapping with any part of an associated HS-DSCH or HS-SCCH subframe, the phase reference on this DPCH shall not change.

3GPP TSG RAN WG1 Meeting #37
Montreal, Canada, 10-14 May, 2004

Tdoc R1-040428

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CHANGE REQUEST

⌘ **25.211** **CR** **190** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Title:	⌘	Clarification of N_{TFCI} field of DL-DPCCH power preamble for CPCH
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI 6
Date:	⌘	30/04/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	It is described that DL-DPCCH power control preamble for CPCH shall take the same slot format as DL-DPCCH for CPCH and the TFCI field is filled with “1” bits. However, the number of bits allocated for TFCI is set to zero, so that there is no field that should be filled with “1” bits. Therefore, The sentence, “The TFCI field is filled with “1” bits” is redundant.
Summary of change:	⌘	The sentence, “The TFCI field is filled with “1” bits” is removed.
Consequences if not approved:	⌘	The contradictory description in the specification may cause readers to confuse.

Clauses affected:	⌘	5.3.2.3

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

⌘

Other comments: ⌘

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5.3.2.3 DL-DPCCH for CPCH

The downlink DPCCH for CPCH is a special case of downlink dedicated physical channel of the slot format #0 in table 11. The spreading factor for the DL-DPCCH is 512. Figure 12 shows the frame structure of DL-DPCCH for CPCH.

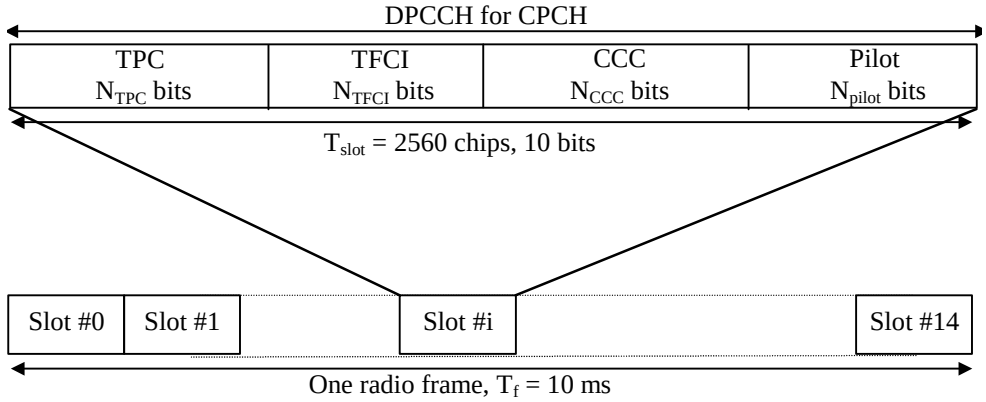

Figure 12: Frame structure for downlink DPCCH for CPCH

DL-DPCCH for CPCH consists of known pilot bits, TFCI, TPC commands and CPCH Control Commands (CCC). CPCH control commands are used to support CPCH signalling. There are two types of CPCH control commands: Layer 1 control command such as Start of Message Indicator, and higher layer control command such as Emergency Stop command. The exact number of bits of DL DPCCH fields (N_{pilot}, N_{TFCI}, N_{CCC} and N_{TPC}) is determined in Table 16. The pilot bit pattern for N_{pilot}=4 of table 12 is used for DPCCH for CPCH.

Table 16: DPCCH fields for CPCH message transmission

Slot Format #i	Channel Bit Rate (kbps)	Channel Symbol Rate (ksps)	SF	Bits/ Slot	DPCCH Bits/Slot				Transmitted slots per radio frame N_{Tr}
					N_{TPC}	N_{TFCI}	N_{CCC}	N_{Pilot}	
0	15	7.5	512	10	2	0	4	4	15

The DL DPCCH power control preamble for CPCH shall take the same slot format as afterwards, as given in Table 16. The length of the power control preamble is a higher-layer parameter, $L_{pc\text{-}preamble}$ (see [5], section 6.2), signalled by the network. When $L_{pc\text{-}preamble} > 0$, the pilot patterns from slot #(15 – N_{pcp}) to slot #14 of table 12 shall be used for the power control preamble pilot patterns. ~~The TFCI field is filled with "1" bits.~~

CCC field in figure 12 is used for the transmission of CPCH control command. On CPCH control command transmission request from higher layer, a certain pattern is mapped onto CCC field, otherwise nothing is transmitted in CCC field. There is one to one mapping between the CPCH control command and the pattern. In case of Emergency Stop of CPCH transmission, [1111] pattern is mapped onto CCC field. The Emergency Stop command shall not be transmitted during the first $N_{Start\_Message}$ frames of DL DPCCH after Power Control preamble.

Start of Message Indicator shall be transmitted during the first $N_{Start\_Message}$ frames of DL DPCCH after Power Control preamble. [1010] pattern is mapped onto CCC field for Start of Message Indicator. The value of $N_{Start\_Message}$ shall be provided by higher layers.