3GPP TSG RAN Meeting #20 **RP-030272**
Hameenlinna, FINLAND, 3 - 6 June 2003

Title: **CRs (Rel-5) to TS 25.212**

Source: **TSG-RAN WG1**

Agenda item: **7.1.5**

1. ***TS 25.212*** **(RP-030272)**

RP Tdoc #	WG Toc#	Spec	CR	Rev	Subject	Phase	Cat	Curre	New	Workitem	Remarks
RP-030272	R1-030579	25.212	172	1	Clarification of TPC and Pilot transmission with STTD in compressed mode	Rel-5	F	5.4.0	5.5.0	TEI-5	
RP-030272	R1-030624	25.212	173	2	Correction on the flexible TFCI coding in the DSCH hard split mode for Rel5	Rel-5	F	5.4.0	5.5.0	RInImp-DSCHhsp	

3GPP TSG RAN WG1 Meeting #32
EuroDisney, France, 19-23 May 2003

R1-030579

CR-Form-v7

CHANGE REQUEST

⌘ **25.212** **CR** **172** ⌘ **rev** **1** ⌘ 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:	⌘	Clarification of TPC and Pilot transmission with STTD in compressed mode
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI-5
Date:	⌘	2003-04-29
Category:	⌘	**F**
Release:	⌘	Rel-5

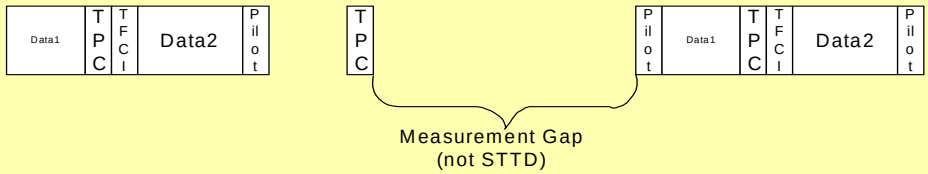
Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

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)*

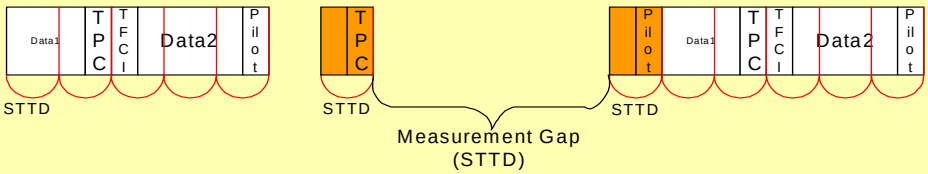
Reason for change: ⌘ The current specification leaves it undefined how to treat the one TPC command transmitted at the beginning of the transmission gap (if downlink Frame structure type B is used) and the pilot symbols (in case the pilot field is 2 bits long) at the end of the transmission gap, if STTD is used.

Summary of change: ⌘ It is clarified that the TPC command and the pilot field shall be STTD encoded in the transmission gap. If the pilot field is 2 bits long, the STTD encoding shall be done together with two DTX bits instead of two last Data2 bits (following the procedure described in 25.211, 5.3.2.1). In the same way, the TPC bits shall be STTD encoded with two DTX bits instead of the two last bits in the Data 1 field.

Transmitted bits without STTD



Transmitted bits with STTD



Consequences if not approved: ⌘ It is unclear whether and how the TPC and Pilot bits are transmitted at the beginning and the end of the transmission gap, if STTD is used on the radio link.

Clauses affected:	⌘	4.4.2			
Other specs affected:	⌘	**Y**	**N**		
			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.

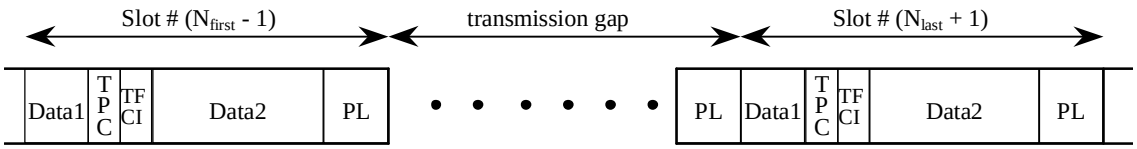
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.4.2 Frame structure types in the downlink

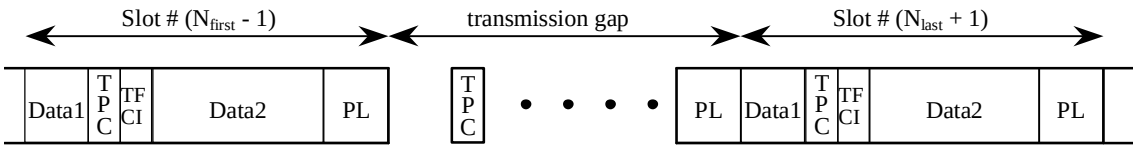
There are two different types of frame structures defined for downlink compressed frames. Type A maximises the transmission gap length and type B is optimised for power control. The frame structure type A or B is set by higher layers independent from the downlink slot format type A or B.

- With frame structure of type A, the pilot field of the last slot in the transmission gap is transmitted. Transmission is turned off during the rest of the transmission gap (figure 13(a)). In case the length of the pilot field is 2 bits and STTD is used on the radio link, the pilot bits in the last slot of the transmission gap shall be STTD encoded assuming DTX indicators as the two last bits in the Data2 field.

- With frame structure of type B, the TPC field of the first slot in the transmission gap and the pilot field of the last slot in the transmission gap is transmitted. Transmission is turned off during the rest of the transmission gap (figure 13(b)). In case the length of the pilot field is 2 bits and STTD is used on the radio link, the pilot bits in the last slot of the transmission gap shall be STTD encoded assuming DTX indicators as the two last bits of the Data2 field. Similarly, the TPC bits in the first slot of the transmission gap shall be STTD encoded assuming DTX indicators as the two last bits in the Data1 field.



(a) Frame structure type A



(b) Frame structure type B

Figure 13: Frame structure types in downlink compressed transmission

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Marne la Vallée, France, 19 – 23 May, 2003

CR-Form-v7

CHANGE REQUEST

⌘ **25.212** **CR** **173** ⌘ **rev** **2** ⌘ 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:	⌘	Correction on the flexible TFCI coding in the DSCH hard split mode for Rel5
Source:	⌘	TSG RAN WG1
Work item code:	⌘	RInImp-DSCHhsp
Date:	⌘	23/05/2003
Category:	⌘	**B**
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:	⌘	In section 4.3.4 equation representing the bit position of TFCI output code word indicates wrong position.
Summary of change:	⌘	The equation is changed to indicate the correct bit position.
Consequences if not approved:	⌘	TFCI code word is not transmitted correctly.

Clauses affected:	⌘	4.3.4

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

Other comments:	⌘	

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4.3.4 Operation of TFCI in Hard Split Mode

If one of the DCH is associated with a DSCH, the TFCI code word may be split in such a way that the code word relevant for TFCI activity indication is not transmitted from every cell. The use of such a functionality shall be indicated by higher layer signalling.

The TFCI is encoded by using punctured code of (32,10) sub-code of second order Reed-Muller code. The coding procedure is as shown in figure 10.

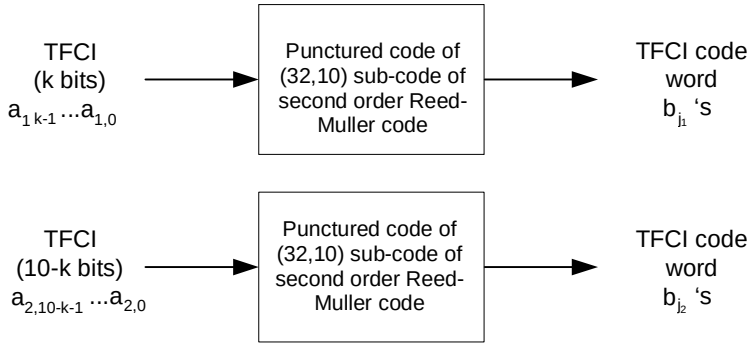

Figure 10: Channel coding of flexible hard split mode TFCI information bits

The code words of the punctured code of (32,10) sub-code of second order Reed-Muller code are linear combinations of basis sequences generated by puncturing 10 basis sequences defined in table 8 in section 4.3.3.

The first set of TFCI information bits ($a_{1,0}$, $a_{1,1}$, $a_{1,2}$, $a_{1,3}$, …, $a_{1,k-1}$ where $a_{1,0}$ is LSB and $a_{1,k-1}$ is MSB) shall correspond to the TFC index (expressed in unsigned binary form) defined by the RRC layer to reference the TFC of the DCH CCTrCH in the associated DPCH radio frame.

The second set of TFCI information bits ($a_{2,0}$, $a_{2,1}$, $a_{2,2}$, $a_{2,3}$, .., $a_{2,10-k-1}$ where $a_{2,0}$ is LSB and $a_{2,10-k-1}$ is MSB) shall correspond to the TFC index (expressed in unsigned binary form) defined by the RRC layer to reference the TFC of the associated DSCH CCTrCH in the corresponding PDSCH radio frame.

The output code word bits are given by :

$$b_{j_1} = \sum_{n=0}^{k-1} (a_{1,n} \times M_{\pi_1(k,i_1),\pi_2(k,n)}) \bmod 2 ; \qquad b_{j_2} = \sum_{n=0}^{10-k-1} (a_{2,n} \times M_{\pi_1(10-k,i_2),\pi_2(10-k,n)}) \bmod 2$$

where $i_1 = 0, \ldots, 3\times k$ and $i_2 = 0, \ldots, 30-3\times k$.

Then, the relation between j_1 (or j_2) and i_1 (or i_2) is as follows:

~~If k ≠ 5,~~

~~$j_1 = \left\lfloor \frac{32}{3\times \min(k,10-k)+1} \times (i_1+1) + \frac{1}{2} \right\rfloor - 1$;~~ ~~$j_2 = i_2 + \left\lfloor \frac{3\times \min(k,10-k)+1}{32-(3\times \min(k,10-k)+1)} \times (i_2 + \frac{1}{2}) \right\rfloor$.~~

$j_1 = \left\lfloor \frac{32}{3\times k+1} \times (i_1 + 1 - \frac{1}{2}\left\lfloor \frac{k}{5} \right\rfloor) + \frac{1}{2} \right\rfloor - 1$; $j_2 = \left\lfloor \frac{32}{32-(3\times k+1)} \times (i_2 + \frac{1}{2}\left(1 + \left\lfloor \frac{k}{5} \right\rfloor\right)) + \frac{1}{2} \right\rfloor - 1$.

~~If k = 5,~~

~~$j_1 = 2\times i_1$;~~ ~~$j_2 = 2\times i_2 + 1$.~~

The functions π_1, π_2 are defined as shown in the following table 9.

Table 9. π_1, π_2 functions

M	$\pi_1(m,i)$ for I = 0, …, 3×m	$\pi_2(m,n)$ for n = 0,…, m-1
3	0, 1, 2, 3, 4, 5, 6, 8, 9, 11	0, 1, 2
4	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	0, 1, 2, 3
5	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 30	0, 1, 2, 3, 5
6	0, 1, 2, 3, 4, 5, 7, 8, 9, 12, 15, 18, 21, 23, 25, 27, 28, 29, 30	0, 1, 2, 3, 4, 5
7	0, 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 13, 14, 15, 17, 20, 21, 22, 24, 25, 28, 29	0, 1, 2, 3, 4, 6, 7