

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

RP-030275

Title: CR (Rel-5) to TS 25.221

Source: TSG-RAN WG1

Agenda item: 7.1.5

1. TS 25.221 (RP-030275)

RP Tdoc #	WG Toc#	Spec	CR	Rev	Subject	Phase	Cat	Curren	New V	Workitem	Remarks
RP-030275	R1-030582	25.221	114	1	Corrections to field coding of TPC for support of HS-SICH (3.84Mcps TDD)	Rel-5	F	5.4.0	5.5.0	HSDPA-Phys	

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

Tdoc #R1-030582

CR-Form-v7
CHANGE REQUEST
TS 25.221 CR 114 # 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 Radio Access Network Core Network

Title:	# Corrections to field coding of TPC for support of HS-SICH (3.84Mcps TDD)																
Source:	# TSG RAN WG1																
Work item code:	# HSDPA-Phys Date: # 19/05/2003																
Category:	# F Release: # Rel-5 Use <u>one</u> of the following categories: Use <u>one</u> of the following releases: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">F (correction)</td> <td style="width: 50%;">2 (GSM Phase 2)</td> </tr> <tr> <td>A (corresponds to a correction in an earlier release)</td> <td>R96 (Release 1996)</td> </tr> <tr> <td>B (addition of feature),</td> <td>R97 (Release 1997)</td> </tr> <tr> <td>C (functional modification of feature)</td> <td>R98 (Release 1998)</td> </tr> <tr> <td>D (editorial modification)</td> <td>R99 (Release 1999)</td> </tr> <tr> <td></td> <td>Rel-4 (Release 4)</td> </tr> <tr> <td></td> <td>Rel-5 (Release 5)</td> </tr> <tr> <td></td> <td>Rel-6 (Release 6)</td> </tr> </table> Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	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)		Rel-4 (Release 4)		Rel-5 (Release 5)		Rel-6 (Release 6)
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	Rel-4 (Release 4)																
	Rel-5 (Release 5)																
	Rel-6 (Release 6)																

Reason for change:	# The TPC field designed for R99 does not provide sufficient reliability at the C/I operating point for HS-SICH.
Summary of change:	# A new UL burst format (#90) is added extending the TPC field to 8 bits. This burst format is used exclusively for HS-SICH.
Consequences if not approved:	# Power control for HS-SCCH will not operate correctly as the reliability of TPC will be too low. Unnecessary performance degradation for HS-SICH will exist due to TPC limitation.

Clauses affected:	# 5.2.2.5, 5.2.2.6.2, 5.3.11.4										
Other specs affected:	<table style="border: none;"> <tr> <td style="border: 1px solid black; padding: 2px;">Y</td> <td style="border: 1px solid black; padding: 2px;">N</td> <td rowspan="3" style="padding-left: 10px;">Other core specifications</td> <td rowspan="3" style="padding-left: 20px;">#</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;">X</td> <td style="border: 1px solid black; padding: 2px;"></td> <td>Test specifications</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;">X</td> <td style="border: 1px solid black; padding: 2px;"></td> <td>O&M Specifications</td> </tr> </table>	Y	N	Other core specifications	#	X		Test specifications	X		O&M Specifications
Y	N	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.

5.2.2.5 Transmission of TPC

All burst types 1, 2 and 3 for dedicated channels provide the possibility for transmission of TPC in uplink.

The transmission of TPC is done in the data parts of the traffic burst. Independent of the SF that is applied to the data symbols in the burst, the data in the TPC field are always spread with SF=16 using the channelisation code in the branch with the highest code numbering of the allowed OVSF sub tree, as depicted in [8]. Hence the midamble structure and length is not changed. The TPC information is to be transmitted directly after the midamble. Figure 11 shows the position of the TPC in a traffic burst.

For every user the TPC information shall be transmitted at least once per transmitted frame. If a TFCI is applied for a CCTrCH, TPC shall be transmitted with the same channelisation codes and in the same timeslots as the TFCI. If no TFCI is applied for a CCTrCH, TPC shall be transmitted using the physical channel corresponding to physical channel sequence number $p=1$. Physical channel sequence numbering is determined by the rate matching function and is described in [7].

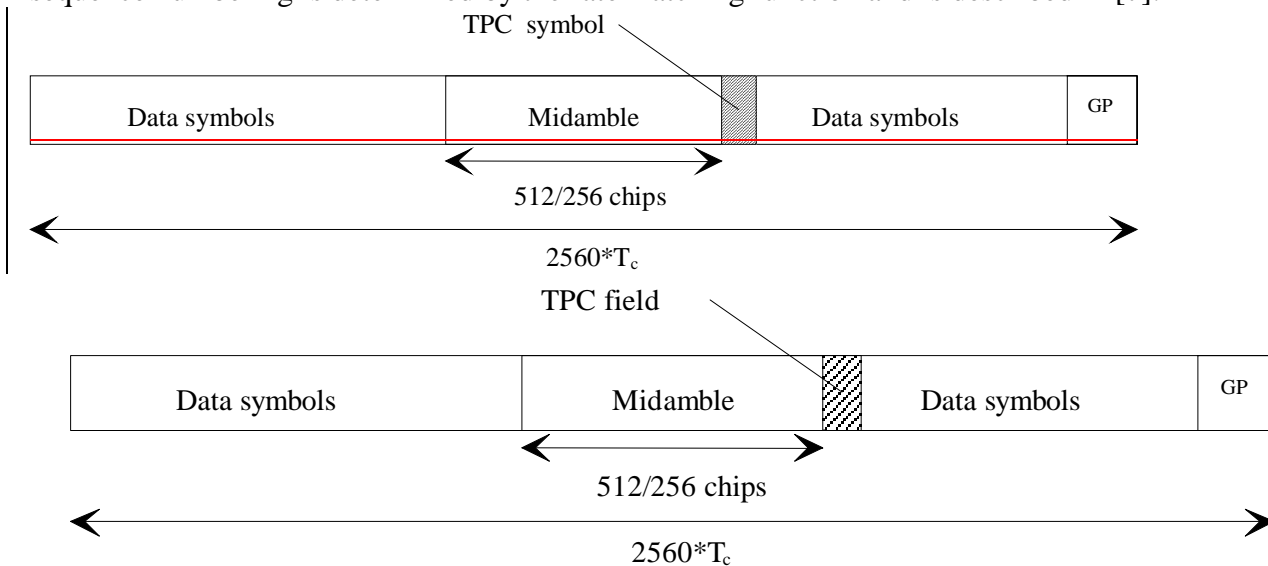


Figure 11: Position of TPC information in the traffic burst

The length of the TPC ~~command~~ field is N_{TPC} ~~bits~~ ~~one symbol~~. The TPC field is formed via repetition encoding a single bit b_{TPC} , N_{TPC} times.

The relationship between ~~the TPC symbol~~ b_{TPC} and the TPC command is shown in table 4a.

Table 4a: TPC bit pattern

TPC Bits b_{TPC}	TPC command	Meaning
00	'Down'	Decrease Tx Power
11	'Up'	Increase Tx Power

5.2.2.6.2 Uplink timeslot formats

The uplink timeslot format depends on the spreading factor, midamble length, guard period length and on the number of the TFCI code word bits. Due to TPC, different amount of bits are mapped to the two data fields. The timeslot formats are depicted in the table 5b. Note that slot format #90 shall only be used for HS_SICH.

Table 5b: Timeslot formats for the Uplink

Slot Format #	Spreading Factor	Midamble length (chips)	Guard Period (chips)	N _{TFCI} code word (bits)	N _{TPC} (bits)	Bits/slot	N _{Data/Slot} (bits)	N _{data/data field(1)} (bits)	N _{data/data field(2)} (bits)
0	16	512	96	0	0	244	244	122	122
1	16	512	96	0	2	244	242	122	120
2	16	512	96	4	2	244	238	120	118
3	16	512	96	8	2	244	234	118	116
4	16	512	96	16	2	244	226	114	112
5	16	512	96	32	2	244	210	106	104
6	16	256	96	0	0	276	276	138	138
7	16	256	96	0	2	276	274	138	136
8	16	256	96	4	2	276	270	136	134
9	16	256	96	8	2	276	266	134	132
10	16	256	96	16	2	276	258	130	128
11	16	256	96	32	2	276	242	122	120
12	8	512	96	0	0	488	488	244	244
13	8	512	96	0	2	486	484	244	240
14	8	512	96	4	2	482	476	240	236
15	8	512	96	8	2	478	468	236	232
16	8	512	96	16	2	470	452	228	224
17	8	512	96	32	2	454	420	212	208
18	8	256	96	0	0	552	552	276	276
19	8	256	96	0	2	550	548	276	272
20	8	256	96	4	2	546	540	272	268
21	8	256	96	8	2	542	532	268	264
22	8	256	96	16	2	534	516	260	256
23	8	256	96	32	2	518	484	244	240
24	4	512	96	0	0	976	976	488	488
25	4	512	96	0	2	970	968	488	480
26	4	512	96	4	2	958	952	480	472
27	4	512	96	8	2	946	936	472	464
28	4	512	96	16	2	922	904	456	448
29	4	512	96	32	2	874	840	424	416
30	4	256	96	0	0	1104	1104	552	552
31	4	256	96	0	2	1098	1096	552	544
32	4	256	96	4	2	1086	1080	544	536
33	4	256	96	8	2	1074	1064	536	528
34	4	256	96	16	2	1050	1032	520	512
35	4	256	96	32	2	1002	968	488	480
36	2	512	96	0	0	1952	1952	976	976
37	2	512	96	0	2	1938	1936	976	960
38	2	512	96	4	2	1910	1904	960	944
39	2	512	96	8	2	1882	1872	944	928
40	2	512	96	16	2	1826	1808	912	896
41	2	512	96	32	2	1714	1680	848	832
42	2	256	96	0	0	2208	2208	1104	1104
43	2	256	96	0	2	2194	2192	1104	1088
44	2	256	96	4	2	2166	2160	1088	1072
45	2	256	96	8	2	2138	2128	1072	1056
46	2	256	96	16	2	2082	2064	1040	1024

Slot Format #	Spreading Factor	Midamble length (chips)	Guard Period (chips)	N _{TF} CI code word (bits)	N _{TPC} (bits)	Bits/slot	N _{Data/Slot} (bits)	N _{data/data field(1)} (bits)	N _{data/data field(2)} (bits)
47	2	256	96	32	2	1970	1936	976	960
48	1	512	96	0	0	3904	3904	1952	1952
49	1	512	96	0	2	3874	3872	1952	1920
50	1	512	96	4	2	3814	3808	1920	1888
51	1	512	96	8	2	3754	3744	1888	1856
52	1	512	96	16	2	3634	3616	1824	1792
53	1	512	96	32	2	3394	3360	1696	1664
54	1	256	96	0	0	4416	4416	2208	2208
55	1	256	96	0	2	4386	4384	2208	2176
56	1	256	96	4	2	4326	4320	2176	2144
57	1	256	96	8	2	4266	4256	2144	2112
58	1	256	96	16	2	4146	4128	2080	2048
59	1	256	96	32	2	3906	3872	1952	1920
60	16	512	192	0	0	232	232	122	110
61	16	512	192	0	2	232	230	122	108
62	16	512	192	4	2	232	226	120	106
63	16	512	192	8	2	232	222	118	104
64	16	512	192	16	2	232	214	114	100
65	16	512	192	32	2	232	198	106	92
66	8	512	192	0	0	464	464	244	220
67	8	512	192	0	2	462	460	244	216
68	8	512	192	4	2	458	452	240	212
69	8	512	192	8	2	454	444	236	208
70	8	512	192	16	2	446	428	228	200
71	8	512	192	32	2	430	396	212	184
72	4	512	192	0	0	928	928	488	440
73	4	512	192	0	2	922	920	488	432
74	4	512	192	4	2	910	904	480	424
75	4	512	192	8	2	898	888	472	416
76	4	512	192	16	2	874	856	456	400
77	4	512	192	32	2	826	792	424	368
78	2	512	192	0	0	1856	1856	976	880
79	2	512	192	0	2	1842	1840	976	864
80	2	512	192	4	2	1814	1808	960	848
81	2	512	192	8	2	1786	1776	944	832
82	2	512	192	16	2	1730	1712	912	800
83	2	512	192	32	2	1618	1584	848	736
84	1	512	192	0	0	3712	3712	1952	1760
85	1	512	192	0	2	3682	3680	1952	1728
86	1	512	192	4	2	3622	3616	1920	1696
87	1	512	192	8	2	3562	3552	1888	1664
88	1	512	192	16	2	3442	3424	1824	1600
89	1	512	192	32	2	3202	3168	1696	1472
<u>90</u>	<u>16</u>	<u>512</u>	<u>96</u>	<u>0</u>	<u>8</u>	<u>244</u>	<u>236</u>	<u>122</u>	<u>114</u>

5.3.11.4 HS-SICH timeslot formats

The HS-SICH shall use time slot format #90+ from table 5b, see section 5.2.2.6.2.