TSG-RAN Meeting #6
Nice, France, 13 – 15 December 1999

TSGRP#6(99)696

Title: **Agreed CRs of category "C" (Modification) and "F" (Correction) to TS 25.223**

Source: **TSG-RAN WG1**

Agenda item: **5.1.3**

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc
25.223	001	01	R99	Primary and Secondary CCPCH in TDD	F	3.0.0	3.1.0	R1-99i85
25.223	004	-	R99	Code allocation for Case 3	C	3.0.0	3.1.0	R1-99j34

NOTE: The source of this document is TSG-RAN WG1. The source shown on each CR cover sheet is the originating organisation.

3GPP TSG RAN WG1 (Radio) Meeting #9
Dresden, Germany. 30 NOV 1999 - 3 DEC 1999

***Document* R1-99j34**
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25.223	CR	004	Current Version:	V3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: WG1 #9 *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: Texas Instruments **Date:** 24 Nov 1999

Subject: Code allocation for Case 3

Work item: TS25.223

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature	X		Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Currently there is no way for the UE to differentiate between Case 2 and Case 3. By making Case 2 a subset of Case 3 this ambiguity is resolved.

Clauses affected: 7.2.3

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

7.2.3 Code allocation for Case 3:

In addition to the information on code group three bits from SCH transport channel are transmitted to the UE with these codes.

Table 6: Code Allocation for Case 3

Code Group	Code Set	Frame 1						Frame 2						Associated t_{offset}	Addl bits from SCH transport channel
		Slot k			Slot k+8			Slot k			Slot k+8				
0	1	C_0	C_1	C_2	C_0	C_1	$-C_2$	$-C_0$	$-C_1$	C_2	$-C_0$	$-C_1$	$-C_2$	t_0	000
0	1	C_0	$-C_1$	C_2	C_0	$-C_1$	$-C_2$	$-C_0$	C_1	C_2	$-C_0$	C_1	$-C_2$		001
0	1	jC_0	jC_1	C_2	jC_0	jC_1	$-C_2$	$-jC_0$	$-jC_1$	C_2	$-jC_0$	$-jC_1$	$-C_2$		010
0	1	jC_0	$-jC_1$	C_2	jC_0	$-jC_1$	$-C_2$	$-jC_0$	jC_1	C_2	$-jC_0$	jC_1	$-C_2$		011
0	1	jC_0	jC_2	C_1	jC_0	jC_2	$-C_1$	$-jC_0$	$-jC_2$	C_1	$-jC_0$	$-jC_2$	$-C_1$		100
0	1	jC_0	$-jC_2$	C_1	jC_0	$-jC_2$	$-C_1$	$-jC_0$	jC_2	C_1	$-jC_0$	jC_2	$-C_1$		101
0	1	jC_1	jC_2	C_0	jC_1	jC_2	$-C_0$	$-jC_1$	$-jC_2$	C_0	$-jC_1$	$-jC_2$	$-C_0$		110
0	1	jC_1	$-jC_2$	C_0	jC_1	$-jC_2$	$-C_0$	$-jC_1$	jC_2	C_0	$-jC_1$	jC_2	$-C_0$		111
1	2	C_3	C_4	C_5	C_3	C_4	$-C_5$	$-C_3$	$-C_4$	C_5	$-C_3$	$-C_4$	$-C_5$	t_2	000
1	2	C_3	$-C_4$	C_5	C_3	$-C_4$	$-C_5$	$-C_3$	C_4	C_5	$-C_3$	C_4	$-C_5$		001
1	2	jC_3	jC_4	C_5	jC_3	jC_4	$-C_5$	$-jC_3$	$-jC_4$	C_5	$-jC_3$	$-jC_4$	$-C_5$		010
1	2	jC_3	$-jC_4$	C_5	jC_3	$-jC_4$	$-C_5$	$-jC_3$	jC_4	C_5	$-jC_3$	jC_4	$-C_5$		011
1	2	jC_3	jC_5	C_4	jC_3	jC_5	$-C_4$	$-jC_3$	$-jC_5$	C_4	$-jC_3$	$-jC_5$	$-C_4$		100
1	2	jC_3	$-jC_5$	C_4	jC_3	$-jC_5$	$-C_4$	$-jC_3$	jC_5	C_4	$-jC_3$	jC_5	$-C_4$		101
1	2	jC_4	jC_5	C_3	jC_4	jC_5	$-C_3$	$-jC_4$	$-jC_5$	C_3	$-jC_4$	$-jC_5$	$-C_3$		110
1	2	jC_4	$-jC_5$	C_3	jC_4	$-jC_5$	$-C_3$	$-jC_4$	jC_5	C_3	$-jC_4$	jC_5	$-C_3$		111
2	3	C_6	C_7	C_8	C_6	C_7	$-C_8$	$-C_6$	$-C_7$	C_8	$-C_6$	$-C_7$	$-C_8$	t_3	000
…	…	…	…	…	…	…	…	…	…	…	…	…	…		…
2	3	jC_7	$-jC_8$	C_6	jC_7	$-jC_8$	$-C_6$	$-jC_7$	jC_8	C_6	$-jC_7$	jC_8	$-C_6$		111
…	…	…	…	…	…	…	…	…	…	…	…	…	…		…
31	32	C_7	C_9	C_{15}	C_7	C_9	$-C_{15}$	$-C_7$	$-C_9$	C_{15}	$-C_7$	$-C_9$	$-C_{15}$	t_{31}	000
31	32	C_7	$-C_9$	C_{15}	C_7	$-C_9$	$-C_{15}$	$-C_7$	C_9	C_{15}	$-C_7$	C_9	$-C_{15}$		001
31	32	jC_7	jC_9	C_{15}	jC_7	jC_9	$-C_{15}$	$-jC_7$	$-jC_9$	C_{15}	$-jC_7$	$-jC_9$	$-C_{15}$		010
31	32	jC_7	$-jC_9$	C_{15}	jC_7	$-jC_9$	$-C_{15}$	$-jC_7$	jC_9	C_{15}	$-jC_7$	jC_9	$-C_{15}$		011
31	32	jC_7	jC_{15}	C_9	jC_7	jC_6	$-C_9$	$-jC_7$	$-jC_{15}$	C_9	$-jC_7$	$-jC_{15}$	$-C_9$		100
31	32	jC_7	$-jC_{15}$	C_9	jC_7	$-jC_6$	$-C_9$	$-jC_7$	jC_{15}	C_9	$-jC_7$	jC_{15}	$-C_9$		101
31	32	jC_9	jC_{15}	C_7	jC_9	jC_{15}	$-C_7$	$-jC_9$	$-jC_{15}$	C_7	$-jC_9$	$-jC_{15}$	$-C_7$		110
31	32	jC_9	$-jC_{15}$	C_7	jC_9	$-jC_{15}$	$-C_7$	$-jC_9$	jC_{15}	C_7	$-jC_9$	jC_{15}	$-C_7$		111

NOTE: The code construction for code groups 0 and 1 using the SCH codes from code sets 1 and 2 is shown. The construction for code groups 2 to 31 using the SCH codes from code sets 3 to 32 is done in the same way.

Code Group	Code Set	Frame 1						Frame 2						Associated t_{offset}	Addl bits from SCH transport channel
		Slot k			Slot k+8			Slot k			Slot k+8				
0	1	C_0	C_1	C_2	C_0	C_1	$-C_2$	$-C_0$	$-C_1$	C_2	$-C_0$	$-C_1$	$-C_2$	t_0	000
1	1	C_0	$-C_1$	C_2	C_0	$-C_1$	$-C_2$	$-C_0$	C_1	C_2	$-C_0$	C_1	$-C_2$	t_1	000
2	1	jC_0	jC_1	C_2	jC_0	jC_1	$-C_2$	$-jC_0$	$-jC_1$	C_2	$-jC_0$	$-jC_1$	$-C_2$	t_2	000
3	1	jC_0	$-jC_1$	C_2	jC_0	$-jC_1$	$-C_2$	$-jC_0$	jC_1	C_2	$-jC_0$	jC_1	$-C_2$	t_3	000
4	1	jC_0	jC_2	C_1	jC_0	jC_2	$-C_1$	$-jC_0$	$-jC_2$	C_1	$-jC_0$	$-jC_2$	$-C_1$	t_4	000
5	1	jC_0	$-jC_2$	C_1	jC_0	$-jC_2$	$-C_1$	$-jC_0$	jC_2	C_1	$-jC_0$	jC_2	$-C_1$	t_5	000
6	1	jC_1	jC_2	C_0	jC_1	jC_2	$-C_0$	$-jC_1$	$-jC_2$	C_0	$-jC_1$	$-jC_2$	$-C_0$	t_6	000
7	1	jC_1	$-jC_2$	C_0	jC_1	$-jC_2$	$-C_0$	$-jC_1$	jC_2	C_0	$-jC_1$	jC_2	$-C_0$	t_7	000
8	2	C_3	C_4	C_5	C_3	C_4	$-C_5$	$-C_3$	$-C_4$	C_5	$-C_3$	$-C_4$	$-C_5$	t_8	000
9	2	C_3	$-C_4$	C_5	C_3	$-C_4$	$-C_5$	$-C_3$	C_4	C_5	$-C_3$	C_4	$-C_5$	t_9	000
10	2	jC_3	jC_4	C_5	jC_3	jC_4	$-C_5$	$-jC_3$	$-jC_4$	C_5	$-jC_3$	$-jC_4$	$-C_5$	t_{10}	000
11	2	jC_3	$-jC_4$	C_5	jC_3	$-jC_4$	$-C_5$	$-jC_3$	jC_4	C_5	$-jC_3$	jC_4	$-C_5$	t_{11}	000
12	2	jC_3	jC_5	C_4	jC_3	jC_5	$-C_4$	$-jC_3$	$-jC_5$	C_4	$-jC_3$	$-jC_5$	$-C_4$	t_{12}	000
13	2	jC_3	$-jC_5$	C_4	jC_3	$-jC_5$	$-C_4$	$-jC_3$	jC_5	C_4	$-jC_3$	jC_5	$-C_4$	t_{13}	000
14	2	jC_4	jC_5	C_3	jC_4	jC_5	$-C_3$	$-jC_4$	$-jC_5$	C_3	$-jC_4$	$-jC_5$	$-C_3$	t_{14}	000
15	2	jC_4	$-jC_5$	C_3	jC_4	$-jC_5$	$-C_3$	$-jC_4$	jC_5	C_3	$-jC_4$	jC_5	$-C_3$	t_{15}	000
16	3	C_6	C_7	C_8	C_6	C_7	$-C_8$	$-C_6$	$-C_7$	C_8	$-C_6$	$-C_7$	$-C_8$	t_{16}	000
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
31	4	jC_{10}	$-jC_{11}$	C_9	jC_{10}	$-jC_{11}$	$-C_9$	$-jC_{10}$	jC_{11}	C_9	$-jC_{10}$	jC_{11}	$-C_9$	t_{31}	000
0	5	C_{12}	C_{13}	C_{14}	C_{12}	C_{13}	$-C_{14}$	$-C_{12}$	$-C_{13}$	C_{14}	$-C_{12}$	$-C_{13}$	$-C_{14}$	t_0	001
1	5	C_{12}	$-C_{13}$	C_{14}	C_{12}	$-C_{13}$	$-C_{14}$	$-C_{12}$	C_{13}	C_{14}	$-C_{12}$	C_{13}	$-C_{14}$	t_1	001
2	5	jC_{12}	jC_{13}	C_{14}	jC_{12}	jC_{13}	$-C_{14}$	$-jC_{12}$	$-jC_{13}$	C_{14}	$-jC_{12}$	$-jC_{13}$	$-C_{14}$	t_2	001
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
31	8	jC_5	$-jC_8$	C_0	jC_5	$-jC_8$	$-C_0$	$-jC_5$	jC_8	C_0	$-jC_5$	jC_8	$-C_0$	t_{31}	001
0	9	C_0	C_9	C_{12}	C_0	C_9	$-C_{12}$	$-C_0$	$-C_9$	C_{12}	$-C_0$	$-C_9$	$-C_{12}$	t_0	010
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
30	32	jC_9	jC_{15}	C_7	jC_9	jC_{15}	$-C_7$	$-jC_9$	$-jC_{15}$	C_7	$-jC_9$	$-jC_{15}$	$-C_7$	t_{30}	111
31	32	jC_9	$-jC_{15}$	C_7	jC_9	$-jC_{15}$	$-C_7$	$-jC_9$	jC_{15}	C_7	$-jC_9$	jC_{15}	$-C_7$	t_{31}	111

NOTE: The code construction using code sets 1 to 4 is exactly the same as for Case 2, and the additional bits from the SCH transport channel are “000”. The code construction from code sets 5 to 32 is done in the same way with the additional bits for code sets 5 to 8 being “001”, code sets 9 to 12 being “010”, code sets 13 to 16 being “011”, code sets 17 to 20 being “100”, code sets 21 to 24 being “101”, code sets 25 to 28 being “110”, and code sets 29 to 32 being “111”.

3GPP TSG RAN WG1 Meeting #9
Dresden, Germany, 30 Nov – 3 Dec 1999

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25.223	CR	001r1	Current Version:	3.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN #6	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: Siemens AG **Date:** 1999-11-17

Subject: Primary and Secondary CCPCH in TDD

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Due to recent changes in WG2 (CR25.321-014 and CR25.301-018r1) the transport to physical channel mapping in TDD can be changed in order to facilitate the channel description and harmonize TDD and FDD mapping.

Clauses affected: 3, 7.2

Other specs affected:

Other 3G core specifications		→ List of CRs:	25.221-001r1, 25.224-001r1, 25.225-001r1
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

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3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

CDMA	Code Division Multiple Access
P-CCPCH	Primary Common Control Physical Channel
PN	Pseudo Noise
PSCH	Physical Synchronisation Channel
QPSK	Quadrature Phase Shift Keying
RACH	Random Access Channel
SCH	Synchronisation Channel

7.2 Code Allocation

Three SCH codes are QPSK modulated and transmitted in parallel with the primary synchronization code. The QPSK modulation carries the following information.

- The code group that the base station belongs to (5 bits; Cases 1,2,3)
- The position of the frame within an interleaving period of 20 msec (1 bit, Cases 1,2,3)
- The position of the slot within the frame (1 bit, Cases 2,3)
- SCH transport channel information, e.g. the location of the Primary CCPCH (3 bits, Case 3)

The modulated codes are also constructed such that their cyclic-shifts are unique, i.e. a non-zero cyclic shift less than 2 (Case 1) and 4 (Cases 2 and 3) of any of the sequences is not equivalent to some cyclic shift of any other of the sequences. Also, a non-zero cyclic shift less than 2 (Case 1) and 4 (Cases 2 and 3) of any of the sequences is not equivalent to itself with any other cyclic shift less than 8. The secondary synchronization codes are partitioned into two code sets for Case 1, four code sets for Case 2 and thirty two code sets (possibly overlapping) for Case 3. The set is used to provide the following information:

Case 1:

Table 2: Code Set Allocation for Case 1

Code Set	Code Group
1	0-15
2	16-31

The code group and frame position information is provided by modulating the secondary codes in the code set.

Case 2:

Table 3: Code Set Allocation for Case 2

Code Set	Code Group
1	0-7
2	8-15
3	16-23
4	24-31

The slot timing and frame position information is provided by the comma free property of the code word and the Code group is provided by modulating some of the secondary codes in the code set.

Case 3:

Code set k, k=1:32 is associated with Code group k-1. The slot information, the frame position information is provided by the comma free property of the code and the SCH transport channel information is provided by modulating some of the codes in the code set.

The following SCH codes are allocated for each code set:

Case 1

Code set 1: C_0, C_1, C_2.
Code set 2: C_3, C_4, C_5.

Case 2

Code set 1: C_0, C_1, C_2.
Code set 2: C_3, C_4, C_5.
Code set 3: C_6, C_7, C_8.

Code set 4: C_9, C_{10}, C_{11}.

Case 3

Code set 1: C_0, C_1, C_2.
Code set 2: C_3, C_4, C_5.
Code set 3: C_6, C_7, C_8.
Code set 4: C_9, C_{10}, C_{11}.
Code set 5: C_{12}, C_{13}, C_{14}.
Code set 6: C_0, C_3, C_6.
Code set 7: C_0, C_4, C_7
Code set 8: C_0, C_5, C_8.
Code set 9: C_0, C_9, C_{12}.
Code set 10: C_0, C_{10}, C_{13}.
Code set 11: C_0, C_{11}, C_{14}.
Code set 12: C_1, C_3, C_7.
Code set 13: C_1, C_4, C_6.
Code set 14: C_1, C_5, C_9.
Code set 15: C_1, C_8, C_{10}.
Code set 16: C_1, C_{11}, C_{12}.
Code set 17: C_1, C_{13}, C_{15}.
Code set 18: C_2, C_3, C_8.
Code set 19: C_2, C_4, C_9.
Code set 20: C_2, C_5, C_6.
Code set 21: C_2, C_7, C_{10}.
Code set 22: C_2, C_{11}, C_{13}.
Code set 23: C_2, C_{12}, C_{15}
Code set 24: C_3, C_9, C_{13}.
Code set 25: C_3, C_{10}, C_{12}.
Code set 26: C_3, C_{11}, C_{15}.
Code set 27: C_4, C_8, C_{11}.
Code set 28: C_4, C_{10}, C_{14}.
Code set 29: C_5, C_7, C_{11}.
Code set 30: C_5, C_{10}, C_{15}.
Code set 31: C_6, C_9, C_{14}.
Code set 32: C_7, C_9, C_{15}.

The following subsections 7.2.1 to 7.2.3 refer to the three cases of PSCH/P-CCPCH usage as described in [7].