CHANGE REQUEST

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25.224 CR	**xxx**	Current Version:	3.3.0

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

For submission to: **RAN#10**
list expected approval meeting # here
↑

for approval	**X**
for information	

Strategic	
non-strategic	

(for SMG use only)

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:	CWTS	**Date:**	

Subject:	CR for TS25.224 regarding 1.28 Mcps TDD

Work item:	Low Chip Rate TDD option, Physical Layer

Category:

(only one category shall be marked with an X)

F	Correction		
A	Corresponds to a correction in an earlier release		
B	Addition of feature	**X**	
C	Functional modification of feature		
D	Editorial modification		

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	
Release 00	**X**

Reason for change:	This CR collects the principally agreed wording of the changes necessary for introducing the feature 'Low Chip Rate TDD option' in the TS25.224. In its last revision it should be editorially changed to reflect the correct changes needed for the latest approved version of this specification.

Clauses affected:	

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:	In this first version, a proposed structure has been included in this CR. The structure was copied from TS25.224 vers. 3.3.0. In addition to that the proposals that were agreed in principle from WG1#14 to WG1#15 were included in this CR.

help.doc

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# 2	References

<For clarity, this chapter will currently collect only the references that are needed in addition to the already existing abbreviations. In its last version this chapter has to be modified, so that it includes the revisions with respect to the latest versions of TS25.224.>

# 3	Abbreviations

<For clarity, this chapter will currently collect only the abbreviations that are needed in addition to the already existing abbreviations. In its last version this chapter has to be modified, so that it includes the revisions with respect to the latest versions of TS25.224.>

# 4	Physical layer procedures for the 3.84 Mcps option(TDD)

<No changes will be made in this chapter in this CR, only the title has to be changed. >

5 Physical layer procedures for the 1.28 Mcps option

5.1 Transmitter Power Control

5.1.1 Uplink Control

5.1.1.1 General limits

5.1.1.2 UpPTS

5.1.1.3 PRACH

5.1.1.4 DPCH and PUSCH

5.1.1.4.1 Out of synchronization handling

5.1.2 Downlink Control

5.1.2.1 P-CCPCH, PICH

5.1.2.2 S-CCPCH

5.1.2.3 DPCH, PDSCH

5.1.2.3.1 out of synchronisation handling

5.2 Timing Advance

5.2.1 With UL Synchronization

5.2.1.1 General limits

5.2.1.2 UpPTS

5.2.1.3 PRACH

5.2.1.4 DPCH and PUSCH

5.2.1.4.1 Out of synchronization handling

5.2.1.5 The establishment of uplink synchronization

5.2.1.5.1 Preparation of uplink synchronization (downlink synchronization)

5.2.1.5.2 Establishment uplink synchronization

5.2.1.6 Maintenance of uplink synchronisation

5.3   Synchronisation procedures

5.3.1   Cell search

During the initial cell search, the UE searches for a cell. It then determines the DwPTS synchronization, scrambling and basic midamble code identification, control multi-frame synchronisation and then reads the BCH. How cell search is typically done is described in Annex D.

5.3.2   DCH synchronization

5.3.2.1   Synchronization primitives

5.3.2.1.1   General

5.3.2.1.2   Downlink synchronization primitives

5.3.2.1.3   Uplink synchronization primitives

5.3.2.2   Radio link monitoring

5.3.2.2.1   Downlink radio link failure

5.3.2.2.2   Uplink radio link failure/restore

5.4   (DTX) of Radio Frames

5.5   Downlink Transmit Diversity

5.5.1   Transmit Diversity for DPCH

5.5.2   Transmit Diversity for DwPTS

5.5.3   Transmit Diversity for FPACH

5.6   Random Access Procedure

5.6.1   Preparation of random access

5.6.2   Random access procedures

5.6.3   Random access collision

Annex C (informative):
Cell search procedure for 3.84Mcps TDD

<No changes will be made in this chapter in this CR, only the title has to be changed. >

Annex D (informative):
Cell search procedure for 1.28Mcps TDD

During the initial cell search, the UE searches for a cell. It then determines the DwPTS synchronization, scrambling and basic midamble code identification, control multi-frame synchronisation and then reads the contents in BCH. This initial cell search is carried out in 4 steps:

Step 1: Search for DwPTS

During the first step of the initial cell search procedure, the UE uses the SYNC-DL (in DwPTS) to acquire DwPTS synchronization to a cell. This is typically done with one or more matched filters (or any similar device) matched to the received SYNC-DL which is chosen from PN sequences set. A single or more matched filter (or any similar device) is used for this purpose. During this procedure, the UE needs to identify which of the 32 possible SYNC-DL sequences is used.

Step 2: Scrambling and basic midamble code identification

During the second step of the initial cell search procedure, the UE receives the midamble of the P-CCPCH.The P-CCPCH is followed by the DwPTS. In the 1.28Mcps TDD each SYNC-DL code corresponds to a group of 4 different basic midamble code. Therefore there are total 128 midamble codes and these codes are not overlapping with each other. Basic midamble code number divided by 4 gives the SYNC-DL code number. Since the SYNC-DL and the group of basic midamble codes of the P-CCPCH are related one by one (i.e, once the SYNC-DL is detected, the 4 midamble codes can be determined), the UE knows which 4 basic midamble codes are used. Then the UE can determine the used basic midamble code using a try and error technique. The same basic midamble code will be used throughout the frame. As each basic midamble code is associated with a scrambling code, the scrambling code is also known by that time. According to the result of the search for the right midamble code, UE may go to next step or go back to step 1.

Step 3: Control multi-frame synchronisation

During the third step of the initial cell search procedure, the UE searches for the MIB(Master Indication Block) of multi-frame of the BCH in the P-CCPCH indicated by QPSK phase modulation of the burst in the DwPTS with respect to the P-CCPCH midamble. The control multi-frame is positioned by a sequence of QPSK symbols modulated in the DwPTS. [n] consecutive DwPTS are sufficient for detecting the current position in the control multi-frame. According to the result of the control multi-frame synchronisation for the right midamble code, UE may go to next step or go back to step 2.

Step 4: Read the BCH

The (complete) broadcast information of the found cell in one or several BCHs is read. According to the result the UE may move back to previous steps or the initial cell search is finished.