CR-Form-v3

CHANGE REQUEST

✎ **25.221**   CR **042**   ✎ rev **-** ✎   Current version: **3.5.0** ✎

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ✎ symbols.*

Proposed change affects: ✎   (U)SIM ☐   ME/UE ☐   Radio Access Network **X**   Core Network ☐

Title: ✎	Introduction of the cell sync burst
Source: ✎	Siemens
Work item code: ✎	RANimp-NBsync ***Date:*** ✎ 10.01.2001
Category: ✎ **B**	***Release:*** ✎ REL-4

Use <u>one</u> of the following categories:
   F (essential 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 <u>one</u> 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)

Reason for change: ✎	The use of the cell sync burst is not described yet
Summary of change: ✎	The use of the cell sync burst in the PRACH is described
Consequences if not approved: ✎	Work item Node B synchronisation is not feasible

Clauses affected: ✎	
Other specs affected: ✎	**X** Other core specifications ✎ 25.223, 25.331 ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

5.3.3 The physical random access channel (PRACH)

The RACH as described in subclause 4.1.2 is mapped onto one or more uplink physical random access channels (PRACH). In such a way the capacity of RACH can be flexibly scaled depending on the operators need.

In case of Node B synchronisation the PRACH may be used for the transmission of a cell sync burst [8] based on a higher layer schedule. The cell sync burst shall be transmitted at the beginning of a timeslot. In this case the transmission of a RACH may be prohibited on higher layer command.

This description of the physical properties of the PRACH also applies to bursts carrying other signaling or user traffic if they are scheduled on a time slot which is (partly) allocated to the RACH.

5.3.3.1 PRACH Spreading

The uplink PRACH uses either spreading factor SF=16 or SF=8 as described in subclause 5.2.1.1. The set of admissible spreading codes for use on the PRACH and the associated spreading factors are broadcast on the BCH (within the RACH configuration parameters on the BCH).

5.3.3.2 PRACH Burst Type

The UEs send uplink access bursts of type 3 randomly in the PRACH. TFCI and TPC are not applied for the PRACH.

5.3.3.3 PRACH Training sequences

The training sequences, i.e. midambles, of different users active in the same time slot are time shifted versions of a single periodic basic code. The basic midamble codes for burst type 3 are shown in Annex A. The necessary time shifts are obtained by choosing either *all* k=1,2,3...,K' (for cells with small radius) or *uneven* k=1,3,5,...?K' (for cells with large radius). Different cells use different periodic basic codes, i.e. different midamble sets.

For cells with large radius additional midambles may be derived from the time-inverted Basic Midamble Sequence. Thus, the second Basic Midamble Code m_2 is the time inverted version of Basic Midamble Code m_1.

In this way, a joint channel estimation for the channel impulse responses of all active users within one time slot can be performed by a maximum of two cyclic correlations (in cells with small radius, a single cyclic correlator suffices). The different user specific channel impulse response estimates are obtained sequentially in time at the output of the cyclic correlators.

5.3.3.4 PRACH timeslot formats

For the PRACH the timeslot format is only spreading factor dependent. The timeslot formats 60 and 66 of table 5b are applicable for the PRACH.