# TSG-RAN Meeting #7
# Madrid, Spain, 13 – 15 March 2000

***RP-000065***

**Title:** **Agreed CRs to TS 25.214(2)**

**Source:** **TSG-RAN WG1**

**Agenda item:** **6.1.3**

| No. | Doc # | Spec | CR | Rev | Subject | Cat | Versio | Versio |
|---|---|---|---|---|---|---|---|---|
| 21 | R1-000409 | 25.214 | 082 | 2 | Emergency Stop of CPCH transmission and Start | B | 3.1.1 | 3.2.0 |
| 22 | R1-000422 | 25.214 | 083 | - | Clean up of USTS related specifications | F | 3.1.1 | 3.2.0 |

**3GPP TSG RAN Meeting #7**
**Madrid, Spain, 13-15 March 2000**

***Document R1-00-0409***
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

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| 25.214 | CR | 082r2 | Current Version: | 3.1.1 |
|---|---|---|---|---|

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

| For submission to: | TSG-RAN #7 | for approval | X | strategic | | (for SMG use only) |
|---|---|---|---|---|---|---|
| *list expected approval meeting # here ↑* | | for information | | non-strategic | | |

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

**Source:** TSG RAN WG1 **Date:** 2000-03-02

**Subject:** Emergency Stop of CPCH transmission and Start of Message Indicator

**Work item:**

**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 | X |
| Release 00 | |

**Reason for change:**
1. Current Emergency Stop of CPCH transmission is not explicit, so that it should be changed into new explicit feature.
2. Start of Message Indictor solves the false mobile problem.

**Clauses affected:** 6.2

**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:**

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## 6.2 CPCH Access Procedures

For each CPCH physical channel in a CPCH set allocated to a cell the following physical layer parameters are included in the System Information message:

- UL Access Preamble (AP) scrambling code.
- UL Access Preamble signature set
- The Access preamble slot sub-channels group
- AP- AICH preamble channelization code.
- UL Collision Detection(CD) preamble scrambling code.
- CD Preamble signature set
- CD preamble slot sub-channels group
- CD-AICH preamble channelization code.
- CPCH UL scrambling code.
- CPCH UL channelization code. (variable, data rate dependant)
- DPCCH DL channelization code.([512] chip)

NOTE: There may be some overlap between the AP signature set and CD signature set if they correspond to the same scrambling code.

The following are access, collision detection/resolution and CPCH data transmission parameters:

Power ramp-up, Access and Timing parameters (Physical layer parameters)

1) N_AP_retrans_max = Maximum Number of allowed consecutive access attempts (retransmitted preambles) if there is no AICH response. This is a CPCH parameter and is equivalent to Preamble_Retrans_Max in RACH.

2) $P_{RACH} = P_{CPCH}$ = Initial open loop power level for the first CPCH access preamble sent by the UE.

   [RACH/CPCH parameter]

3) $\Delta P_0$ = Power step size for each successive CPCH access preamble.

   [RACH/CPCH parameter]

4) $\Delta P_1$ = Power step size for each successive RACH/CPCH access preamble in case of negative AICH. A timer is set upon receipt of a negative AICH. This timer is used to determine the period after receipt of a negative AICH when $\Delta P_1$ is used in place of $\Delta P_0$.

   [RACH/CPCH parameter]

5) $T_{cpch}$ = CPCH transmission timing parameter: This parameter is identical to PRACH/AICH transmission timing parameter.

   [RACH/CPCH parameter]

6) $L_{pc\text{-}preamble}$ = Length of power control preamble (0 or 8 slots)

   [CPCH parameter]

7) $N_{Start\_Message}$ = Number of frames for the transmission of Start of Message Indicator in DL-DPCCH for CPCH

NOTE: It is FFS if $\Delta P_0$ for the CPCH access may be different from $\Delta P_0$ for the RACH access as defined in section 6.1.

The CPCH -access procedure in the physical layer is:

1) The UE MAC function selects a CPCH transport channel from the channels available in the assigned CPCH set The CPCH channel selection includes a dynamic persistence algorithm (similar to RACH) for the selected CPCH channel.

2) The UE MAC function builds a transport block set for the next TTI using transport formats which are assigned to the logical channel with data to transmit. The UE MAC funtion sends this transport block set to the UE PHY function for CPCH access and uplink transmission on the selected CPCH transport channel.

3) The UE sets the preamble transmit power to the value $P_{CPCH\_}$ which is supplied by the MAC layer for initial power level for this CPCH access attempt.

4) The UE sets the AP Retransmission Counter to N_AP_Retrans_Max (value TBD).

5) The UE randomly selects a CPCH-AP signature from the signature set for this selected CPCH channel. The random function is TBD.

6) The UE Derives the available CPCH-AP access slots in the next two frames, defined by SFN and SFN+1 in the AP access slot sub-channel group with the help of SFN and table 7 in section 6.1. The UE randomly selects one access slot from the available access slots in the next frame, defined by SFN, if there is one available. If there is no access slot available in the next frame, defined by SFN then, randomly selects one access slot from the available access slots in the following frame, defined by SFN+1. Random function is TBD

7) The UE transmits the AP using the MAC supplied uplink access slot, signature, and initial preamble transmission power.

8) If the UE does not detect the positive or negative acquisition indicator corresponding to the selected signature in the downlink access slot corresponding to the selected uplink access slot, the UE:

   a) Selects the next uplink access slot from among the access slots in the CPCH-AP sub-channel group, as selected in 4.1. There must be a minimum distance of three or four access slots from the uplink access slot in which the last preamble was transmitted depending on the CPCH/AICH transmission timing parameter. [NOTE: Use of random function here to select access slot is FFS for RACH and CPCH.].

   b) Increases the preamble transmission power with the specified offset $\Delta P$ . Power offset $\Delta P_0$ s is used unless the negative AICH timer is running, in which case $\Delta P_1$ is used instead..

   c) Decrease the Preamble Retransmission Counter by one.

   d) If the Preamble Retransmission Counter < 0, the UE aborts the access attempt and sends a failure message to the MAC layer.

9) If the UE detects the AP-AICH_nak (negative acquisition indicator) corresponding to the selected signature in the downlink access slot corresponding to the selected uplink access slot, the UE aborts the access attempt and sends a failure message to the MAC layer. The UE sets the negative AICH timer to indicate use of $\Delta P_1$ use as the preamble power offset until timer expiry

10) Upon reception of AP-AICH, the access segment ends and the contention resolution segment begins. In this segment, the UE randomly selects a CD signautre from the signature set and also select one-CD access slot sub-channel from the CD sub-channel group supported in the cell.and transmits a CD Preamble, then waits for a CD-AICH from the Node B.

11) If the UE does not receive a CD-AICH in the designated slot, the UE aborts the access attempt and sends a failure message to the MAC layer.

12) If the UE receives a CD-AICH in the designated slot with a signature that does not match the signature used in the CD Preamble, the UE aborts the access attempt and sends a failure message to the MAC layer.

13) If the UE receives a CD-AICH with a matching signature, the UE transmits the power control preamble $\tau_{cd\text{-}p\text{-}pc\text{-}p}$ ms later as measured from initiation of the CD Preamble. . The transmission of the message portion of the burst starts immediately after the power control preamble.

14) The UE shall test the value of Start of Message Indicator received from DL-DPCCH for CPCH during the first $N_{Start\_Message}$ frames after Power Control preamble. Start of Message Indicator is a known sequence repeated on a frame by frame basis. The value of $N_{Start\_Message}$ shall be provided by the higher layers.

15) If the UE does not detect Start of Message Indicator in the first $N_{Start\_Message}$ frames of DL-DPCCH for CPCH after Power Control preamble, the UE aborts the access attempt and sends a failure message to the MAC layer. Otherwise, UE continuously transmits the packet data.

~~14~~16) During CPCH Packet Data transmission, the UE and UTRAN perform inner-loop power control on both the CPCH UL and the DPCCH DL.

~~15)~~ 17) After the first $N_{Start\_Message}$ frames after Power Control preamble, upon the detection of an Emergency Stop command sent by UTRAN, the UE halts CPCH UL transmission, aborts the access attempt and sends a failure message to the MAC layer.

~~15)~~ 18) If the UE detects loss of DPCCH DL during transmission of the power control preamble or the packet data, the UE halts CPCH UL transmission, aborts the access attempt and sends a failure message to the MAC layer.

~~16~~19) If the UE completes the transmission of the packet data, the UE sends a success message to the MAC layer.

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***Document R1-00-0422***
*e.g. for 3GPP use the format TP-99xxx*
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**25.214** **CR** **083** Current Version: 3.1.1

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

For submission to: TSG-RAN #7 for approval [X] strategic [ ] *(for SMG use only)*
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**Proposed change affects:** *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

**Source:** TSG RAN WG1 **Date:** 2000-03-03

**Subject:** Clean up of USTS related specifications

**Work item:**

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

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

**Release:**

| | |
|---|---|
| Phase 2 | [ ] |
| Release 96 | [ ] |
| Release 97 | [ ] |
| Release 98 | [ ] |
| Release 99 | [X] |
| Release 00 | [ ] |

**Reason for change:** USTS is Release-00 item. Therefore USTS related specifications shall be removed in Release-99.

**Clauses affected:** 9

**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:**

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# 9 Uplink synchronous transmission

## 9.1 General

<Note: This scheme is not a base line implementation capability.>

UplinkSynchronous Transmission Scheme(USTS) is an alternative technology applicable for low mobility terminals. USTS can reduce uplink intra-cell interference by means of making a cell receive orthogonalized signals from UEs. To orthogonalize receiving signals from UEs,

- the same scrambling code is allocated to all dedicated physical channels in a cell,
- different channelization codes are allocated to all dedicated physical channels across all UEs in a cell and the spreading factor and code number of channelization code are delivered from network to each UE
- the channelization codes for DPDCH and DPCCH in a UE are chosen from either upper half part or the lower half part of the OVSF code tree in a UE to reduce peak to average power ratio,
- additional scrambling codes can be allocated if all channelization codes are occupied, and
- the signal transmission time of each UE is adjusted.

The spreading and modulation scheme for USTS is same as section 4 of TS 25.213. In case of USTS, the long scrambling code described in section 4.3.2.2. of TS 25.213 is used. However, this long scrambling code is not UE specific, but cell specific. In order to generate the cell specific long scrambling code, the initial loading value of PN generator is determined by the network

The channelization codes are Orthogonal Variable Spreading Factor (OVSF) codes that preserve the orthogonality between USTS uplink channels of different rates and spreading factors.

The transmission time control is carried out by two steps. The first step is initial synchronization and the second is tracking.

1) Initial synchronization: Adjust transmission time through the initial timing control message over FACH
2) Tracking Process (Closed Loop Timing control): Adjust the transmission time through the Time Alignment Bit (TAB) over DPCCH.

## 9.2 Initial synchronisation

- When the cellreceives signal from UE over RACH, cell measures the difference in time between the received timing and the reference time in the unit of 1/8 chip duration..
- The message for initial synchronization, which contains the difference in time, is delivered to UE via FACH.
- UE adjust its transmission time according to the message.

## 9.3 Tracking process

- Cell periodically compares the reference time with received signal timing from UE.
- When the received timing is earlier than the reference time, Time Alignment Bit (TAB) = "0". When this is later than the reference time, TAB = "1".
- TAB replaces the TPC bit every timing control period of 20 msecand the last TPC bit of every two frames is replaced by TAB.
- At the UE, hard decision on the TAB shall be performed, and when it is judged as "0", the transmission time shall be delayed by 1/8 chip, whereas if it is judged as "1", the transmission time shall be advanced by 1/8 chip.