TSG RAN Working Group 1#11 **TSGR1(00)0205**
San Diego, CA
February 29 – March 3, 2000

Agenda Item	**6**
Source	**GBT**
Title	**CR058 25.214** **Incorporation of Status Broadcast feature into CPCH and some editorial changes**
Document for	**Approval**

This CR is a combination of three 24.214 and CPCH-related CRs discussed in WG1#10 in Beijing, China. Two CRS from GBT (R10032, CR046, R10031, CR045) which were primarily editorial changes to 25.214. The other CR was from Philips (R10052, CR22r1) which focused on incorporation of Status Broadcast feature into CPCH Access Procedure. These CRs are combined into one CR which are in the category of UE Channel Selection Method for CPCH. However, GBT has incorporated some further clarifications to align the text with the CPCH model provided by WG2.

3GPP TSG RAN WG1 Meeting#11
San Diego, USA, February 28-March2, 2000

Document R1-00-205
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.214	CR	058	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		

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: GBT, Philips **Date:** Feb 10, 2000

Subject: Incorporation of CPCH status broadcast in CPCH access procedure and some editorial changes

Work item:

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	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: In order to make use of broadcast CPCH status information, some changes are needed to the CPCH access procedure. There are also some editorial changes to this section.

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:

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) ΔP_0 = Power step size for each successive CPCH access preamble.

   [RACH/CPCH parameter]

4) ΔP_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 ΔP_1 is used in place of ΔP_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]

~~NOTE: It is FFS if ΔP_0 for the CPCH access may be different from ΔP_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.~~

1. Upon receipt of a Status-REQ message from the MAC layer, the UE shall receive the CSICH to determine the availability of the transport formats in the transport format subset included in the Status-REQ message. UTRAN transmits availability of each PCPCH channel over the CSICH. Upper layers will supply the UE with information to map the transport formats to the PCPCHs. The UE shall send a Status-CNF message to the MAC layer containing the transport format subset listing the transport formats of the requested subset which are currently indicated as 'available'.

2) Upon receipt of an Access-REQ message from the MAC layer, the UE shall test the value(s) of the most recent transmission of the Status Indicator(s) corresponding to the channel(s) for the identified tranport format included in the Access-REQ message. If this indicates that no channel is 'available' the UE shall abort the access attempt and send a failure message to the MAC layer.

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 set of signatures ~~set~~ for the transport format identified in the Access-REQ message.~~this selected CPCH channel.~~ The random function is TBD.

6) Using the AP access slot subchannel group for the selected AP signature, t~~T~~he UE d~~D~~erives 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.~~ . The UE shall test the value of the most recent transmission of the Status Indicator corresponding to the identified CPCH transport channel immediately before AP tranmission. If this indicates that the channel is 'not available' the UE shall abort the access attempt and send a failure message to the MAC layer. Otherwise the UE transmits the AP using the UE selected uplink signature and access slot, ~~and the MAC supplied signature~~ and the initial preamble transmission power from step 3, above.

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 shall test the value of the most recent transmission of the Status Indicator corresponding to the identified CPCH transport channel immediately before AP transmission. If this indicates that the channel is 'not available' the UE shall abort the access attempt and send a failure message to the MAC layer. Otherwise the following steps shall be executed:

:

a) Selects the next uplink access slot from among the access slots in the CPCH-AP sub-channel group for the selected AP signature, as described in step 6, above~~, as selected in 4.1~~. There must be a minimum distance of three or four (per Tcpch parameter) 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 ΔP . Power offset ΔP_0 s is used unless the negative AICH timer is running, in which case ΔP_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 ΔP_1 use as the preamble power offset until timer expiry

10) Upon reception of AP-AICH ack with matchin signature, the access segment ends and the contention resolution segment begins. In this segment, the UE randomly selects a CD signatu~~t~~re from the CD signature set and also selects 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-~~A~~ICH from the Node B.

11) If the UE does not receive a CD-~~A~~ICH 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-~~A~~ICH 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-~~A~~ICH 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. NOTE: If the $L_{pc\text{-}preamble}$ parameter indicates a zero length preamble, then there is not power control preamble and the message portion of the burst starts $\tau_{cd\text{-}p\text{-}pc\text{-}p}$ ms after the initiation of the CD Preamble.

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

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