TSG-RAN Working Group 1 meeting #7bis **TSGR1#7bis(99)g03**

Kiongju (Korea), Oct 4th – Oct 5th 99

Agenda Item	**:**	
Source	**:**	**Nortel Networks and Golden Bridge Technology**
Title	**:**	CPCH access procedure for change of 25.214
Document for	**:**	Approval

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1. Introduction

At the last WG1 meeting a text proposal to introduce a description of the CPCH access procedure into 25.214 was approved. However it was noted that the text needed to be modified later since it should be consistent with the RACH sub-channels. A WG1 note was added in order to reflect the recommendation from WG1 on this point.

In RAN1#7bis two different contributions concerning section 6.2 of TS25.214 were discussed. R1-99f05 from Golden Bridge and R1-99f30 from Nortel suggested different changes to incorporate access slot subchannels for CPCH access. This proposal represents the result of discussions to merge the above two contributions.

2. Text proposal

6.2 CPCH Access Procedures

<Editor's note: The following text should be revised to include the RACH sub-channel scheme as accepted for the RACH, and to be in line with OHG recommendations.>

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 ~~set~~.
- UL Access Preamble signature set
- The Access preamble slot sub-channels group
- AP- AICH preamble channelization code ~~set~~.
- UL Collision Detection (CD) preamble scrambling code ~~set~~.
- CD Preamble signature set
- CD preamble slot sub-channels group
- CD-AICH preamble channelization code ~~set~~.
- CPCH UL scrambling code ~~set~~.
- CPCH UL channelization code ~~set~~. (variable, data rate dependant)
- DPCCH DL channelization code ~~set~~.([512~~256~~] 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: ~~The range of T_{cpch} values is TBD.~~ This parameter is identical ~~similar~~ to PRACH/AICH transmission timing parameter.

[RACH/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.~~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.

~~2.~~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 **Error! Reference source not found.** 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~~.~~

~~3.~~7)The UE transmits the AP using the ~~MAC supplied uplink~~ selected access slot, signature, and initial preamble transmission power.

~~4.~~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 ~~a new~~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.]

~~aThis new access slot must be one of the available access slots. There must be also a 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. The selection scheme of this new access slot is TBD.~~

~~b~~b) Increases the preamble transmission power with the specified offset ~~ΔP_0~~ΔP . Power offset ΔP_0 s is used unless the negative AICH timer is running, in which case ΔP_1 is used instead..

~~c~~c) Decrease the Preamble Retransmission Counter by one.

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

~~5.~~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

~~6.~~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.~~selects one of 16 signatures~~ and transmits a CD Preamble, then waits for a CD-AICH from the ~~base~~ Node B.

~~7.~~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.

~~8.~~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.

~~9.~~13) 9. If the UE receives a CD-AICH with a matching signature, the UE transmits the power control preamble $\tau_{\text{cd-p-pc-p}}$ 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.

~~10.~~14) During CPCH Packet Data transmission, the UE and UTRAN perform inner-loop power control on both the CPCH UL and the DPCCH DL.

~~11.~~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.

~~12.~~16) If the UE completes the transmission of the packet data, the UE sends a success message to the MAC layer.