Agenda Item: **4.2 AH14**

Source: **Golden Bridge Technology**

Title: **Proposed text modifications to 25.214 to include sub RACH-channel scheme to CPCH**

Document for: **Discussion and Approval**

Remove section 4.6 and transfer to 25.211

4.6 ~~PCPCH Synchronisation~~

~~Transmission of random access bursts on the PCPCH is aligned with access slot times. The timing of the access slots is derived from the received Primary CCPCH timing The transmit timing of access slot n starts n×10/N ms after the frame boundary of the received Primary CCPCH, where n = 0, 1, N-1, and N is the number of access slots per 10 ms. For more details on the PCPCH/AICH timing refer to section 7.4 of 25.211.~~

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.

- AP- AICH preamble channelization code ~~set~~.

- UL CD preamble scrambling code ~~set~~.

- 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)

- Access slot sub-channel group. (Access slot sub-channel group is a set of access slot sub-channels as defined for the RACH using the SFN and Table 6 in section 6.1.)

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]

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 selects an AP signature from the signature set for this CPCH channel and also an uplink access slot from the access slot subchannel group for this CPCH channel. The selection scheme for the signature is random while the selection scheme for the access slot is the same as described for RACH, in section 6.1

~~3.~~6. The UE transmits the AP using the ~~MAC supplied~~ uplink access slot, signature, ~~and~~ initial preamble transmission power.

~~4.~~7. If the UE does not detect the positive or negative acquisition indicator corresponding to the selected signature in the downlink access slot associated with ~~corresponding to~~ the selected uplink access slot, the UE:

a Selects the next~~a new uplink~~ access slot from the access slot sub-channel group. ~~This new access slot must be one of the available access slots.~~ There must be ~~also~~ 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. Any access slots in the assigned subchannel group which occur within this minimum distance cannot be used. The selection scheme of this new access slot is the same as described for RACH, in section 6.1~~TBD~~.

b Increases the preamble transmission power with the specified offset ΔP ~~P~~$_0$. 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.

5.8. If the UE detects the AP-AICH_nak (negative acquisition indicator) corresponding to with the selected signature in the downlink access slot associated with 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.

6.9. Upon reception of AP-AICH_ack in the associated downlink slot with the selected signature, the access segment ends and the contention resolution segment begins. In this segment, the UE PHY randomly selects one of 16 signatures and transmits a CD Preamble, then waits for a CD-AICH from the base Node.

7.10. 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.

8.11. 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.

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

10.13. During CPCH Packet Data transmission, the UE and UTRAN perform closed loop power control on both the CPCH UL and the DPCCH DL.

11.14. 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.

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