TSG RAN1#7 **TSGR1#7(99)A73**
Hannover, Germany
Aug 30 – Sept 3, 1999

TSG RAN WG1#6 **TSGR1#6(99)A47~~xxx~~**
Epsoo, Finland
13-18 July 1999

Source:	**Ad-Hoc 14**
Title:	**Proposed CPCH-related changes to 25.214 (revised version) (Resubmission)**
Document for:	**Approval**
Agenda Item:	~~**Plenary**~~

Section 3.3 Abbreviations:
Add the following abbreviations:
AP Access Preamble
CD Collision Detection
CPCH Common Packet Channel

PCPCH Physical Common Packet Channel

Add a new section 4.6 PCPCH Synchronisation

Transmission of random access bursts on the PCPCH is done 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.

Move all of existing section 6, Random access Procedure, into a new section named:

6.1 RACH Random Access Procedures

Add a new section 6.2 titled: "CPCH Physical Layer Access Procedures":

6.2 CPCH Access Procedures (new section)

The following temporal description is normal access procedure and entails both the UE and UTRAN side.

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

~~– CPCH Set ID to which this CPCH belongs.~~

- UL Access Preamble (AP) code (256 chip)
- AP- AICH preamble code (256 chip)
- UL CD preamble code (256 chip)
- CD-AICH preamble code (256 chip)
- CPCH UL scrambling code (40,960 chip)
- CPCH UL channelization code (variable, data rate dependant)
- DPCCH DL channelization code (256, ~~256,~~ 512 chip)

~~– Data rate (spreading factor) (64 kbps, 128Kbps, 256Kbps, 384Kbps, or 2 Mbps)~~

~~– N_frames_max: Maximum packet length in frames [TBD]~~

~~– Persistency value: assigned by RNC to control congestion and for load balancing~~

- ~~Signature set: set of preamble signatures (up to 16, 16 bits long) for AP to access this CPCH~~

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

[RACH/CPCH]

5. T_{cpch} = CPCH transmission timing parameter: The range of T_{cpch} values is TBD. This parameter is similar to PRACH/AICH transmission timing parameter.

~~[CPCH timing values associated with T_{cpch}]~~

~~$\tau_{p\text{-}p}$ = Time between Access Preamble (AP) to the next AP.~~

~~= 3.75ms + 1.25ms X Tcpch (CPCH timing parameter)~~

~~$\tau_{p\text{-}a1}$ = Time between Access Preamble and AP-AICH~~

~~= 1.75 ms + 1.25ms X Tcpch~~

~~$\tau_{a1\text{-}cdp}$ = Time between receipt of AP-AICH and transmission of the CD Preamble.~~

~~= $\tau_{a2\text{-}pcp}$~~

~~= 2.0 ms~~

~~$\tau_{p\text{-}cdp}$ = Time between the last AP and CD Preamble.~~

~~= $\tau_{p\text{-}p}$~~

~~= 3.75ms + 1.25ms X Tcpch~~

~~τ_{cdp-a2} = Time between the CD Preamble and the CD-AICH~~

~~= τ_{p-a1}~~

~~= 1.75 ms + 1.25ms X Tcpch~~

~~$\tau_{cdp-pcp}$ = Time between CD Preamble and the start of the Power Control Preamble~~

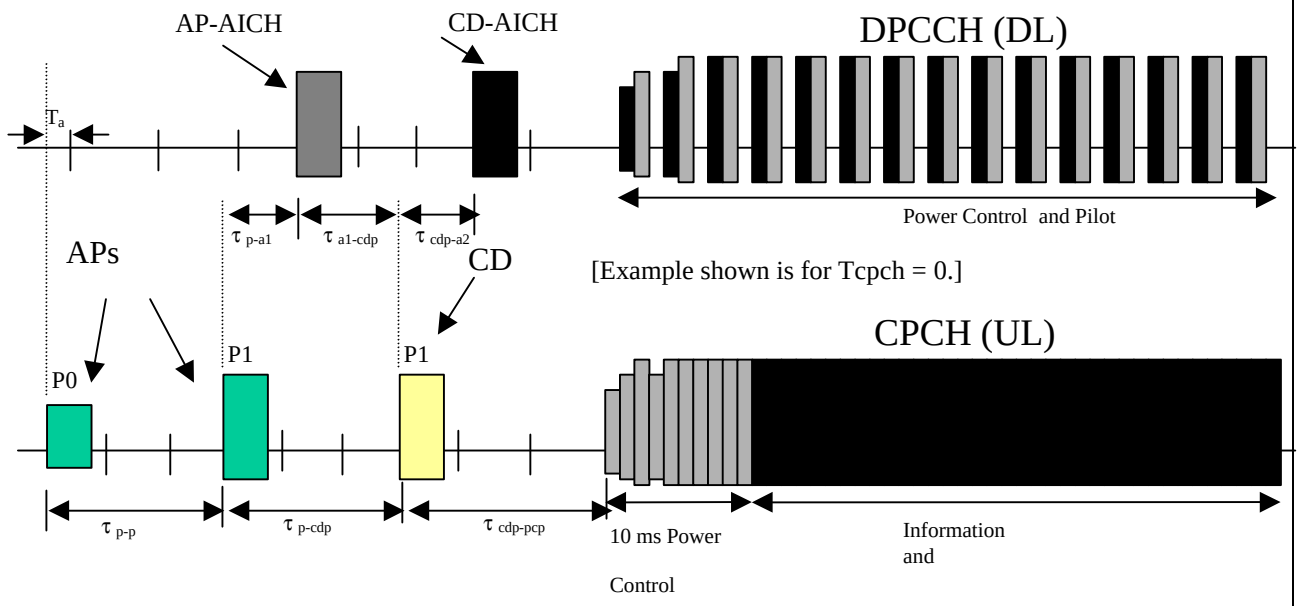
~~= τ_{p-p}~~

~~= 3.75ms + 1.25ms X Tcpch~~

~~T_a = fixed offset value between uplink and downlink access slots.~~

~~= 0.5 ms~~

~~Figure 30 shows the timing of the CPCH uplink transmission with the associated DPCCH control channel in the downlink.~~



~~Figure 30: Timing of PCPCH and AICH transmission as seen by the UE, with AICH transmission~~

The CPCH -access procedure in the physical layer is:

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

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

4. 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 uplink access slot. This 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. Increases the preamble transmission power with the specified offset ΔP_0.

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. If the UE detects the 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.

6. Upon reception of AP-AICH, the access segment ends and the contention resolution segment begins. In this segment, the UE randomly selects one of 16 signatures and transmits a CD Preamble, then waits for a CD-AICH from the base Node.

7. 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. 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. 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.

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

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