TSG RAN 1#7 **TSGR1#7(99)D94**
Hannover, Germany
Aug 30 – Sep 3, 1999

Source: **GBT ~~Ad-hoc 14~~**

Title: **Proposed CPCH-related insertions into 25.211 (revision of D72)**

Agenda item: **Plenary**

Document for: **Approval**

Add to section 3.3 Abbreviations

AP Access Preamble

CD Collision Detection

CPCH Common Packet Channel
PCPCH Physical Common Packet Channel

Add a new Section 4.2.5 CPCH – Common Packet Channel

The CPCH is an uplink transport channel that is used to carry small and medium sized packets. CPCH is a contention based random access channel used for transmission of bursty data traffic. CPCH is associated with a dedicated channel on the downlink which provides power control for the uplink CPCH.

Add a new Section 5.2.2.2 Physical Common Packet Channel

The Physical Common Packet Channel (PCPCH) is used to carry the CPCH.

Add a new Section 5.2.2.2.1 CPCH transmission

The CPCH transmission is based on DSMA-CD approach with fast acquisition indication. The UE can start transmission at a number of well-defined time-offsets, relative to the frame boundary of the received BCH of the current cell. The access slot timing and structure is identical to RACH in section 5.2.2.1.1 [Figure 2]. The structure of the CPCH random access transmission is shown in Figure 4. The CPCH random access transmission consists of one or several Access Preambles [A-P] of length 1 ms, one Collision Detection Preamble (CD-P) of length 1 ms, a [10] ms DPCCH Power Control Preamble (PC-P) and a message of length N x10 ms, where N < = N_Max_frames. **The value of N_Max_Frames is TBD. Editor's note: [The value of N is not known by UTRAN].**

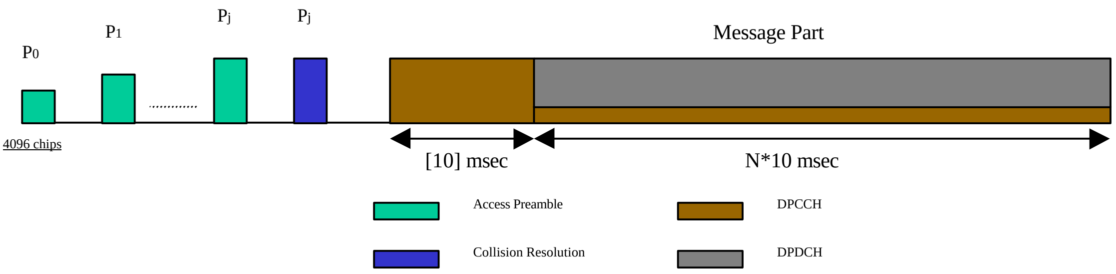

Figure 4: Structure of the CPCH random access transmission.

Add a new section 5.2.2.2.2 CPCH access preamble part

Similar to 5.2.2.1.2 (RACH preamble part). The RACH preamble signature sequences could be ~~are~~ used. The number of sequences used could be less than the ones used in the RACH preamble. The scrambling code could either be ~~is~~ chosen to be a different code segment of the Gold code used to form the scrambling code of the RACH preambles (see TS 25.213 for more details) or could be the same scrambling code in case the signature set is shared. ~~.~~

Add a new Section 5.2.2.2.3 CPCH collision detection preamble part

Similar to 5.2.2.1.2 (RACH preamble part). The RACH preamble signature sequences -are ~~are~~ used. The scrambling code is ~~is~~ chosen to be a different code segment of the Gold code used to form the scrambling code for the RACH and CPCH preambles (see TS 25.213 for more details). ~~.~~

Add a new section 5.2.2.2.4 CPCH power control preamble part

A 10 ms DPCCH Power Control Preamble (PC-P). Row 2 of Table 2 [section 5.2.1] is the recommended DPCCH fields which only includes Pilot and TPC bits. **Power Control Preamble length is ffs.**

Add a new section 5.2.2.2.5 CPCH message part

Figure 1 in section 5.2.1 shows the structure of the CPCH message part. Each message consists of N_Max_frames 10 ms frames. Each 10 ms frame is split into 15 slots, each of length T_{slot} = 2560 chips. ~~0.666 ms.~~ Each slot consists of two parts, a data part that carries Layer 2 information and a control part that carries Layer 1 control information. The data and control parts are transmitted in parallel.

The data part consists of $10*2^k$ bits, where k=2,3,4,5,6, corresponding to spreading factors of 64, and 32, 16,8, 4 respectively. . Note that various rates might be mapped to different signature sequences.

. The spreading factor for the DPCCH (message control part) will be 256. The entries in Table 1 corresponding to spreading factors of 64 and below and Table 2 [both in section 5.2.1] apply to the DPDCH and DPCCH fields respectively for the CPCH message part.

Add to section 5.3.3.7 Acquisition Indication Channel (AICH) [**the bold parts]**

The Acquisition Indicator channel (AICH) is a physical channel used to carry Acquisition Indicators (AI). Acquisition Indicator AI_i corresponds to signature **on the PRACH or PCPCH. Note that for PCPCH, the AICH is either in response to an access preamble or a CD preamble. The corresponding to the access preamble AICH is the AP-AICH and the corresponding to the CD preamble AICH is the CD-AICH. The AP-AICH and CD-AICH use different channelization codes** see further 25.213, Section 4.3.3.2

Error! Reference source not found. illustrates the frame structure of the AICH. Two AICH frames of total length 20 ms consist of 15 *access slots* (AS), each of length 20 symbols (5120 chips). Each access slot consists of two parts, an *Acquisition-Indicator* (AI) part and an empty part.

Add to the end of section 7 titled “timing relationship between physical channels”

PCPCH/CPCH timing relation:

Everything in the previous section [PRACH/RACH] applies to this section as well. The timing relationship between preambles, AICH, and the message is the same as PRACH/RACH. Note that the collision resolution preambles follow the access preambles in PCPCH/CPCH. However, the timing relationships between CD-Preamble and CD-AICH is identical to RACH Preamble and AICH. The timing relationship between CD-AICH and the Power Control Preamble in CPCH is identical to AICH to message in RACH. However, the set of values for T_{cpch} is TBD. As an example, when T_{cpch} is set to one, one of the T_{cpch} values could corresponds to the following:

Note that a1 corresponds to AP-AICH and a2 corresponds to CD-AICH.

[CPCH timing values associated with T_{cpch}]

$\tau_{p\text{-}p}$ = Time between Access Preamble (AP) to the next AP. is either 3 or 4 access slots, depending on the AICH transmission timing value.

$\tau_{p\text{-}a1}$ = Time between Access Preamble and AP-AICH has two alternative values: 7680 chips or 12800 chips, depending on the AICH transmission timing value.

$\tau_{a1\text{-}cdp}$ = Time between receipt of AP-AICH and transmission of the CD Preamble has one value: 7680 chips.

$\tau_{p\text{-}cdp}$ = Time between the last AP and CD Preamble. is either 3 or 4 access slots, depending on the AICH transmission timing value.

$\tau_{cdp\text{-}a2}$ = Time between the CD Preamble and the CD-AICH has two alternative values: 7680 chips or 12800 chips, depending on the AICH transmission timing value.

$\tau_{cdp\text{-}pcp}$= Time between CD Preamble and the start of the Power Control Preamble is either 3 or 4 access slots, depending on the AICH transmission timing value.

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

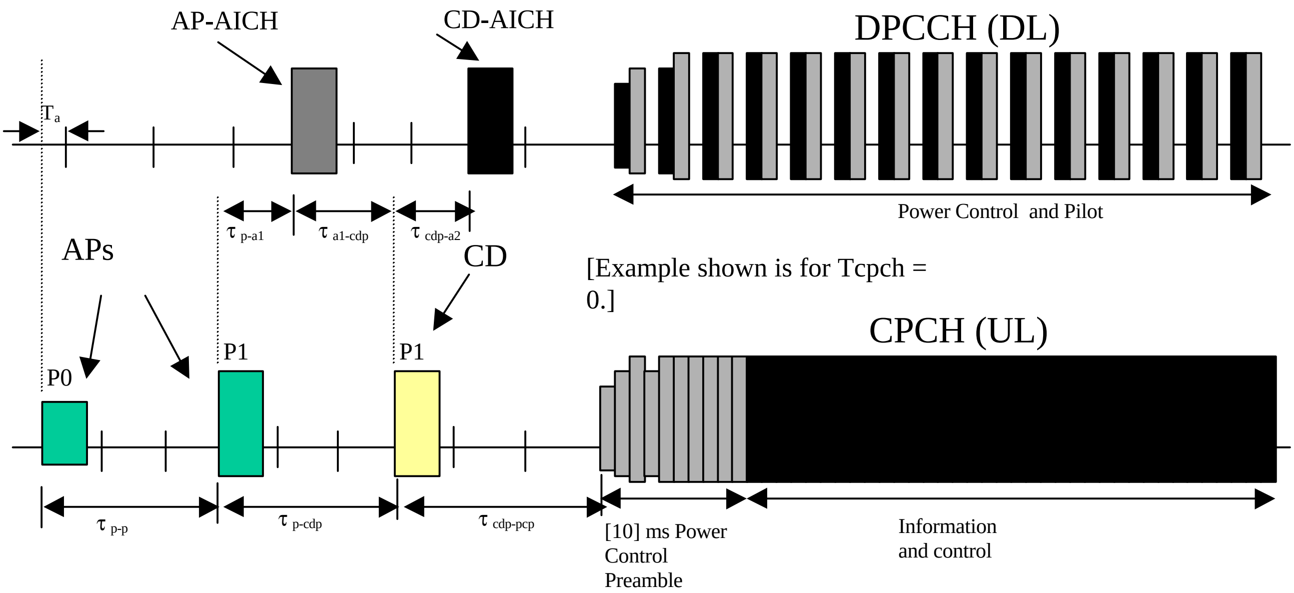

Figure 30: Timing of PCPCH and AICH transmission as seen by the UE, with AICH transmission