

Hannover (Germany), Aug 30th - Sept 3rd 99

Agenda Item : ad-hoc 9
Source : ad-hoc 9 Chairman¹
Title : Proposal for change of change of 25.214 on power control
Document for : Approval

Reason for change

The ad-hoc 9 agreed the following modification of 25.214 :

- The 3dB power control step should not be used in normal mode.
- Update a modification of the section dealing with downlink power offset as follows : 1) No signalling to inform the UE of the use and values of the Power offset. 2) A working assumption was agreed to allowed the power offsets to vary in time.

Proposal for change

5.1.2.2 Ordinary transmit power control

5.1.2.2.1 General

The initial uplink transmit power to use is decided using an open-loop power estimate, similar to the random access procedure. < *Editor's note: This needs to be elaborated, how is the estimate derived?* >

The maximum transmission power at the maximum rate of DPDCH is designated for uplink and control must be performed within this range. < *Editor's note: The necessity of this range needs to be confirmed.* > The maximum transmit power value of the closed-loop TPC is set by the network using higher layer signalling.

The uplink closed-loop power control adjusts the UE transmit power in order to keep the received uplink signal-to-interference ratio (SIR) at a given SIR target, SIR_{target} . An higher layer outer loop adjusts SIR_{target} independently for each cell in the active set.

The serving cells (cells in the active set) should estimate signal-to-interference ratio SIR_{est} of the received uplink DPCH . The serving cells then generates TPC commands and transmits the commands once per ms slot according to the following rule: if $SIR_{est} > SIR_{target}$ then the TPC command to transmit is '0', while if $SIR_{est} < SIR_{target}$ then the TPC command to transmit is '1'.

If multiple TPC commands are received, then upon reception of these TPC commands, the UE combines the received commands into a single TPC command, TPC_cmd. The combination process depends on whether the transmitted TPC commands are known to be the same or not. The combination process for each of these two cases is described in subclauses 5.1.2.2.2 and 5.1.2.2.3 respectively.

¹ Evelyne Le Strat, Nortel Networks

The step size Δ_{TPC} is a UE specific parameter that can have the values 1 dB or 2 dB.

Note : the maximum power control step to be support by the UE shall be 3 dB, 3 dB being allowed for the compressed mode. It is FFS whether the 3 dB should also be allowed in normal mode.

Two algorithms shall be supported by the UE and are described in the following sections :

5.2.3 DPCCH/DPDCH

5.2.3.1 General

The downlink transmit power control procedure controls simultaneously the power of a DPCCH and its corresponding DPDCHs. The power control loop adjusts the power of the DPCCH and DPDCHs with the same amount, i.e. the relative power difference between the DPCCH and DPDCHs is not changed.

The relative transmit power offset between DPCCH fields and DPDCHs is determined by the network ~~and signalled to the UE using higher layer signalling~~. The TFCI, TPC and pilot fields of the DPCCH are offset relative to the DPDCHs power by PO1, PO2 and PO3 dB respectively. The power offsets may vary in time. *<Note : variation in time of the power offsets is a Working assumption>Editor's note: The range and need for signaling with power offsets is FFS.>*