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**Agenda item:** Ad hoc 9  
**Source:** Philips  
**Title:** Text proposal on power control in compressed mode  
**Document for:** Decision

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### Introduction

This text proposal for TS25.214 updates the description of power control in compressed mode for consistency with the descriptions of Algorithm 1 power control and Algorithm 2 power control.

The text is as originally included in [1].

### References

[1] TSGR1(99)b42 "Text proposal on power control", Philips, August 1999

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#### 5.1.2.3 Transmit power control in compressed mode

< Note: The following is a working assumption of WG1. >

The aim of uplink power control in downlink or/and uplink compressed mode is to recover as fast as possible a signal-to-interference ratio (SIR) close to the target SIR after each transmission gap.

In downlink compressed mode, no power control is applied during transmission gaps, since no downlink TPC command is sent. Thus, the transmit powers of the uplink DPDCH(s) and DPCCH are not changed during the transmission gaps.

In simultaneous downlink and uplink compressed mode, the transmission of uplink DPDCH(s) and DPCCH is stopped during transmission gaps. <Note: the initial transmit power of each uplink DPDCH or DPCCH after the transmission gap is FFS. >.

After each transmission gap, 2 modes are possible for the power control algorithm. The power control mode (PCM) is fixed and signalled with the other parameters of the downlink compressed mode (see TS 25.231). The different modes are summarised in the table 1:

**Table 1. Power control modes during compressed mode.**

Mode	Description
0	Ordinary <u>transmit</u> power control is applied with step size $\Delta_{\text{TPC}}$
1	<u>If algorithm 1 is being used, Ordinary transmit power control is applied with step size <math>\Delta_{\text{RP-TPC}}</math> during one or more slots after each transmission gap.</u>  <u>If algorithm 2 is being used, algorithm 1 is applied with step size 1dB during one or more slots after each transmission gap.</u>

~~<Note: The exact power control algorithm in compressed mode when concatenation of TPC commands are used in normal mode is still FFS. The current description only applies when no concatenation is done in normal mode.>~~

For mode 0, the step size is not changed and the ordinary transmit power control is still applied during compressed mode (see subclause 5.1.2.2), using the same algorithm for processing TPC commands as in normal mode (see sections 5.1.2.2.2 and 5.1.2.2.3).

If algorithm 2 (section 5.1.2.2.3) is being used, the sets of 5 slots shall remain aligned to the frame boundaries in the compressed frame. If the transmission gap results in a set of five slots not containing 5 TPC<sub>i</sub> commands, no TPC<sub>temp</sub> command will be determined for that set of slots, and there will be no change in transmit power level for that set of slots.

For mode 1, if algorithm 1 (section 5.1.2.2.2) is being used, then during one or more slots after each transmission gap, called the recovery period, the ~~ordinary same~~ power control algorithm is applied but with a step size  $\Delta_{RP-TPC}$  instead of  $\Delta_{TPC}$ , where  $\Delta_{RP-TPC}$  is called recovery power control step size and is expressed in dB. The step size  $\Delta_{RP-TPC}$  is equal to the minimum value of 3 dB and  $2\Delta_{TPC}$ . If algorithm 2 (see section 5.1.2.2.3) is being used, then during one or more slots after each transmission gap, called the recovery period, algorithm 1 (section 5.1.2.2.2) is applied with a step size of 1dB.

After the recovery period the ordinary transmit power control ~~algorithm~~ with step  $\Delta_{TPC}$  is performed.

The recovery period length (RL) determination is still FFS and is to be chosen between the two following possibilities:

- The recovery period length is fixed and derived as a function of the Transmission mode parameters mostly the transmission gap period and possibly the spreading factor.
- The recovery period length is adapted and ends when the current and previous received power control commands are opposite or after TGL slots after the transmission gap.