TSG-RAN Working Group1 meeting #6
Espoo, Finland, 13-16, July 1999

TSGR1#6(99)871

Agenda Item:

Source: **SAMSUNG Electronics Co.**

Title: **Text proposal of DPCCH gating in Control Only Substate**

Document for: **Discussion**

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1. Introduction

This paper includes a text proposal for gated transmission of DPCCH in Control Only Substate(COS).

------- Text proposal for 25.214 ------

10 Gated transmission in DCH/DCH Control Only Substate

10.1 General

The gated transmission of DPCCH in Control Only Substates(COS) initiated by UTRAN reduces transmission rate of Pilot, TPC, TFCI and FBI while maintaining power controlled air-link between UTRAN and UE

10.2. DPCCH channel with gated transmission mode

The downlink and uplink DPCCH can be transmitted with the gated transmission mode enabled or disabled as described in Figure 1.

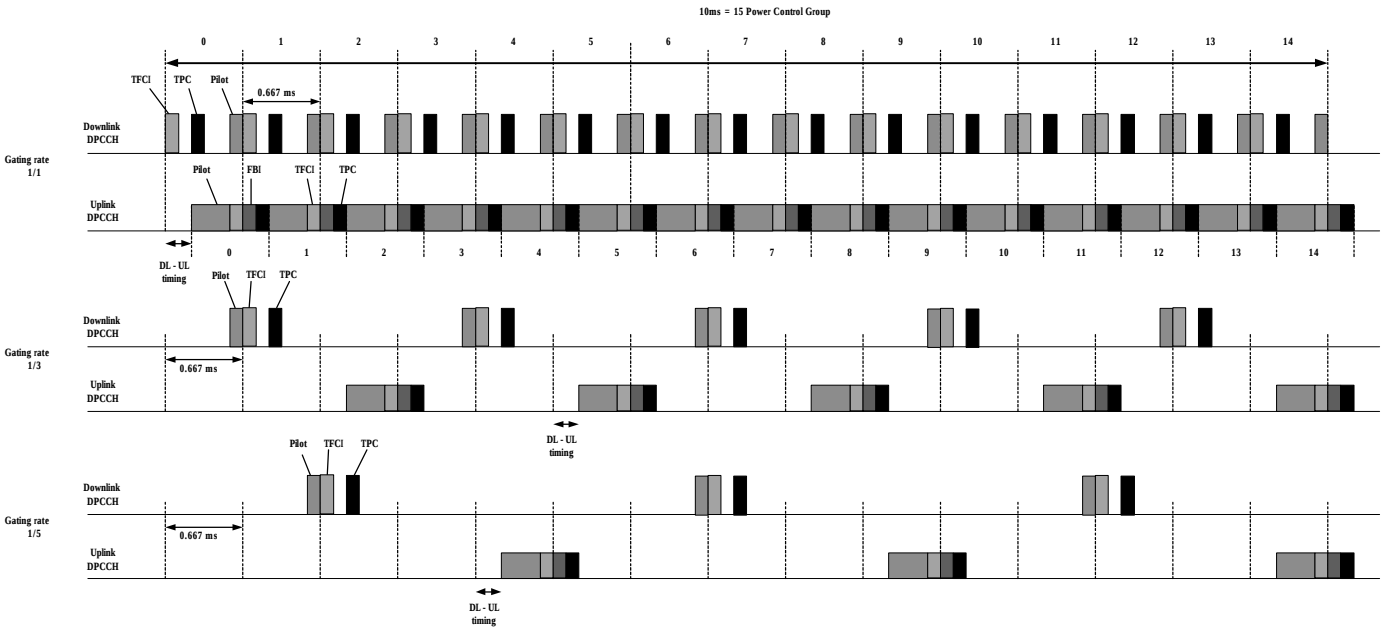

Figure 1. Downlink and uplink DPCCH transmission timing

When the gated transmission mode is disabled(gating rate =1), the UTRAN and UE shall transmit the DPCCH in every power control group. When the gated transmission mode is enabled, the UTRAN and UE shall transmit the DPCCH only in the power control groups that are gated on as specified in Figure 1. The relative timings of the downlink and uplink DPCCH transmission when the gated transmission mode is enabled and disabled are depicted in Figure 1.

Gating rate	Downlink DPCCH allocations (power control group numbers 0-14)	
	pilot	TFCI, TPC
1	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 ,1 1, 12 ,1 3, 14
1/3	0, 3, 6, 9, 12	1, 4, 7, 10, 13
1/5	1, 6, 11	2, 7, 12

Table 1. Downlink DPCCH allocations

Gating rate	Uplink DPCCH allocations (power control group numbers 0-14)	
	pilot	TFCI, FBI, TPC
1	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 ,1 1, 12 ,1 3, 14
1/3	2, 5, 8, 11, 14	2, 5, 8, 11, 14
1/5	4, 9, 14	4, 9, 14

Table 2. Uplink DPCCH allocations

When transmitting only on the DPCCH in gated mode, the UTRAN and UE shall periodically gate off certain power control groups of DPCCH at a rate specified by gating rates, which may be continuous(=1 rate), 1/3 rate, or 1/5 rate. The downlink DPCCH allocations are given in Table 1 and the uplink DPCCH allocations are given in Table 2.

10.2. DPCCH gating during DPDCH transmission

Gating patterns for the downlink DPCCH with gating rate of 1, 1/3, and 1/5 are depicted in Figure 2. Gating patterns for the uplink DPCCH with gating rate of 1, 1/3, and 1/5 are depicted in Figure 3. When there is transmission on the DPDCH, the DPCCH shall be gated on for the duration of the active DPDCH frame as depicted in Figure 2 and 3. However, downlink TPC shall continue gate off with gating rate during downlink DPDCH transmission. Uplink TPC and FBI shall continue gate off with gating rate during uplink DPDCH transmission.

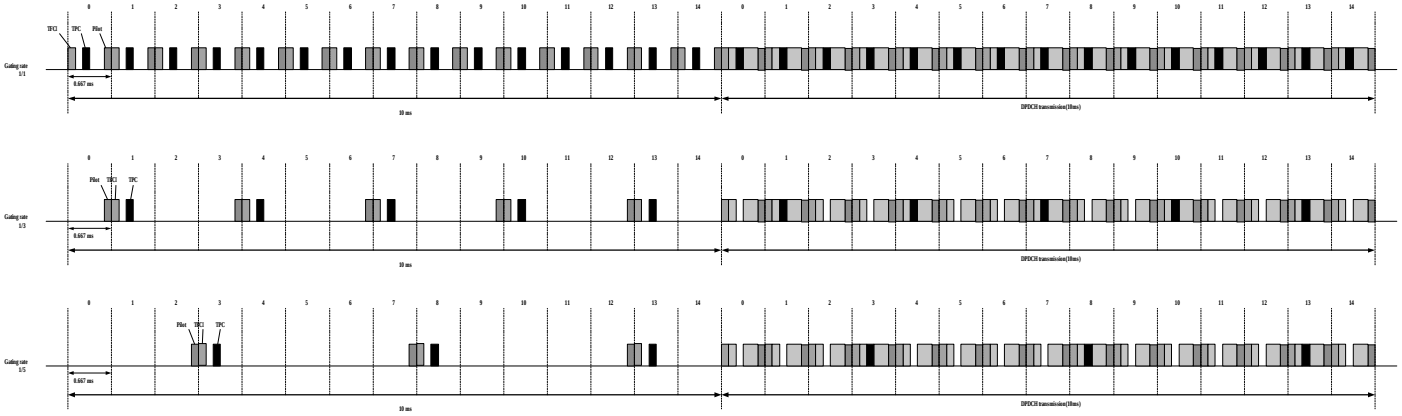

Figure 2. Downlink DPCCH gating during DPDCH transmission

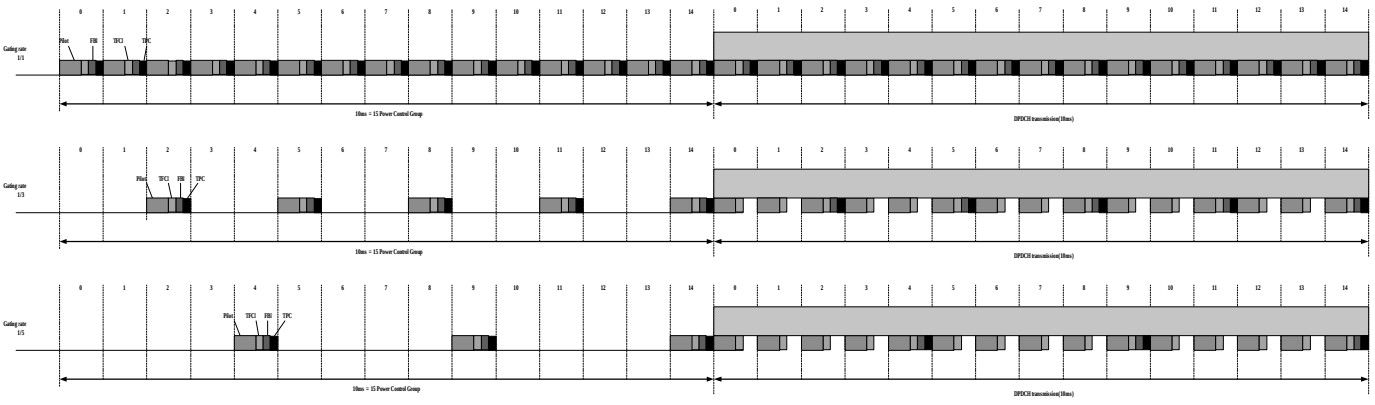

Figure 3. Uplink DPCCH gating during DPDCH transmission

---------- End of text proposal ----------

2. Reference

[1] TSGR1#4(99)669, “Performance evaluation of uplink/downlink DPCCH gating”, SAMSUNG.
[2] 3GPP RAN 25.211 v2.1.0(1999-06), “Physical channels and mapping of transport channels onto physical channels”.
[3] 3GPP RAN 25.214 v1.1.0(1999-06), “Physical layer procedures”.
[4] TSGR2#4(99)439, “RRC procedures and parameters for gated transmission of uplink/downlink DPCCH in control only substate”.

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