TSG-RAN Working Group 1 (Radio layer 1) ***TSGR1#7(99)d62***
Hannover (Germany), August 30th - September 3rd 1999

Agenda Item:	ad-hoc 8
Source:	Alcatel
Title:	Text proposal on handover preparation from TDD to GSM
Document for:	Decision

We propose to update section 7.1.5.4.2.1 of TS 25231 version 0.3.1 in order to reflect the change from 16 slots per frame to 15 slots per frame due to harmonization.

********** Beginning of text proposal **********

7.1.5.4.2.1. Low data rate traffic using 1 uplink and 1 downlink slot

<WG1's note : The section evaluates the time to acquire the FCCH if all idle slots are devoted to the tracking of a FCCH burst, meaning that no power measurements is done concurrently. The derived figures are better than those for GSM. The section does not derive though any conclusion. A conclusion may be that the use of the idle slots is a valid option. An alternative conclusion may be that this is the only mode to be used, removing hence the use of the slotted frames for low data traffic or the need for a dual receiver, if we were to considering the monitoring of GSM cells only, rather than GSM, TDD and FDD

If a single synthesiser UE uses only one uplink and one downlink slot, e.g. for speech communication, the UE is not in transmit or receive state during ~~8,75 ms~~13 slots in each frame. According to the time slot~~TS~~ numbers allocated to the traffic, this period can be split into two continuous idle intervals A and B as shown in figure 3.

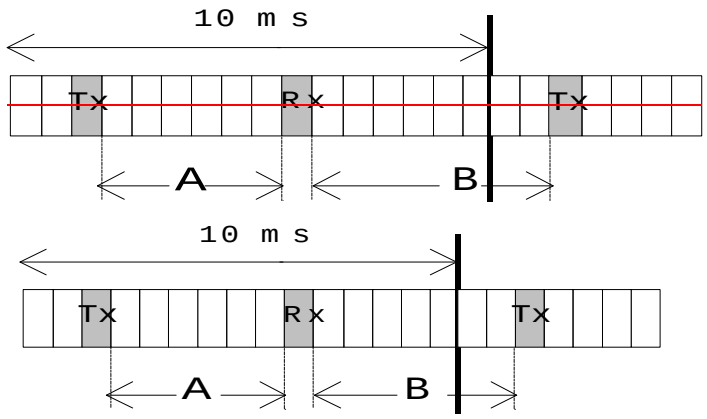

Figure 2: possible idle periods in a ~~16 TS~~ frame with two occupied ~~TS.~~time slots

A is defined as the number of idle slots between the Tx and Rx slots and B the number of idle slots between the Rx and Tx slots. It is clear that A+B=~~14~~ 13 time slots.
In the scope of low cost terminals, a [0.8] ms period is supposed to be required to perform a frequency jump from UMTS to GSM. ~~As detailed in table 1, this will let~~ This lets possibly two free periods of A*Ts~~0,625~~-1.6 ms and B*Ts~~0,625~~-1.6 ms during which the mobile station can monitor GSM, Ts being the

slot period. In this table, the UL traffic is assumed to occupy TS0, and the duration of monitoring periods are indicated for each possible location of the DL TS.
Table Following table evaluates the average synchronisation time and maximum synchronisation time, where the announced synchronisation time corresponds to the time needed to find the FCCH. The FCCH is supposed to be perfectly detected meaning that the FCCH is found if it is entirely present in the monitoring window. The FCCH being found the SCH location is unambiguously known from that point. All the 13 idle slots are assumed to be devoted to FCCH tracking and the UL traffic is supposed to occupy the time slot 0.

DL TS n°	Number of free TS in A	Number of free TS in B	Monitoring period within A (ms)	Monitoring period within B (ms)	Synchronisation average time (ms)	Maximum synchronisation time (ms)
1	0	14	Not Used	7,15	43	140
2	1	13	NU	6,525	48	187
3	2	12	NU	5,900	56	188
4	3	11	NU	5,275	63	188
5	4	10	0.9	4,65	68	189
6	5	9	1,525	4,025	75	233
7	6	8	2,15	3,4	74	189
8	7	7	2,775	2,775	48	189
9	8	6	3,4	2,15	73	189
10	9	5	4,025	1,525	73	235
11	10	4	4,65	0.9	66	186
12	11	3	5,275	NU	61	186
13	12	2	5,900	NU	54	186
14	13	1	6,525	NU	47	186
15	14	0	7,15	NU	43	139

Downlink time slot number	Number of free TS in A	Number of free TS in B	Average synchronisation time (ms)	Maximum synchronisation time (ms)
1	0	13	44	140
2	1	12	50	187
3	2	11	58	188
4	3	10	66	189
5	4	9	70	233
6	5	8	77	234
7	6	7	75	189
8	7	6	75	189
9	8	5	75	235
10	9	4	67	235
11	10	3	63	186
12	11	2	56	186
13	12	1	49	186
14	13	0	43	132

Table: example- monitoring periods and associated of average and maximum synchronisation time in a 16 TS frame with two busy time slots TS per frame and with 0.8 ms switching time (*).

(*) All simulations have been performed with a random initial delay between GSM frames and UMTS frames

Each configuration of TS allocation described above allows a monitoring period sufficient to acquire synchronisation.

********** End of text proposal **********