

Source: TSG RAN WG1 Chairman

Report from TSG RAN WG1 Ad Hoc on 1.28 Mcps/s UTRA TDD functionality, June 14-15, 2000

Meeting Venue: Hotel Serena Korpilampi, Espoo, Finland.

Host: Nokia

1. Opening of the meeting

The meeting was opened by the TSG RAN WG1 Chairman, Antti Toskala.

2. Approval of the agenda

The meeting agenda in Tdoc R1-00-0802 was approved without changes

3. Approval of the changes done for TR 25.928 based on the revised contributions from TSG RAN WG1#13

There was no new version since the changes had been edited from the approved contributions already in the WG1#13 and approved there.

4. Contributions submitted to TSG RAN WG1#13 but not covered there (or revised version of those)

All the papers in this agenda item were from CWTS. The contributions had most of the comments made via the email included:

Tdoc 811 (revision of 661) was contribution on the power control issues. There were several comments to the paper by the participants, the main points were that open loop power control has been replaced by closed loop power control in the uplink and the reason given has been the use of adaptive antennas. As the adaptive antennas can not be mandatory, the open loop power control, as in the wideband TDD, should be considered as well. Also in the uplink direction it was noted that code channels can be with different spreading factors and the definition of the relative power values needs some further work still. The paper is to be revised as resubmitted as Tdoc 835. See day two for revised papers.

Tdoc 812 (revision of 663) was contribution to the modulation and spreading issues in the TR 25.928. The main comments to be revised document were that with 8-PSK other version of the modulation could be considered, such as shifted version. This is to be reflected in the revised version. Also it was noted that whether sync codes are scrambled or not is not clear. Still further it was commented that the terminology with the interleaving frame is not correct and should be modified. The restrictions with the synch codes with respect to the network planning should be mentioned as well. This was concluded to be revised as Tdoc R1-00-0837 and presented during day 2.

Tdoc 813 (revision of 665) was contribution on the Common physical channels and was agreed to be included with some minor corrections that editor will include in the TR produced for approval. Those included adding the statement "Other methods for BCH indication and their compatibility with models in TSG RAN WG2 are to be considered" and further removing statements along the lines that "smart antennas are strongly recommended" to the direction indicating that smart antennas are a system option and not mandatory in UTRAN.

Tdoc 814 (revision of 666) on the TPC coding reflected the comments made during WG1#13 and had removed the "do-nothing" option from the power control. Also the reference to the modulation section was inserted from the 8-PSSK mapping.

Tdoc 815 (revision of 667), Transmission of TPC presented details of the TPC method. It was commented that the method described is difficult to understand and at this stage it is better to stay at more general level rather than putting such details and delegates find difficult to understand from the proposed description. The editor will exclude the text with the revision marks before Figure 1. First the bullet points after figure 1 were considered to be excluded as well but later it was then concluded that for the explanation elsewhere there were needed and thus they were retained. It was commented in general that with this aspect there is work to be done in the wideband TDD as well. Details of the uplink/downlink coupling are to be covered in later phase of the specification work.

Tdoc 816 (revision of 668) Coding of SS (Synchronisation Shift) was agreed to be included in the TR with minor modifications noted on-line. The first sentences in the rationale were agreed to be replaced by "The SS command is sent in every sub-frame (in case allocated). The command may be updated only after every M sub-frames".

Tdoc 817 (revision of 670) Coding of TFCI was agreed to be included. The statement was decided to be included that other coding schemes are to be considered with 8-PSK. (Later during the meeting on Day 2 the proposal from Samsung on this issues was also reviewed)

Tdoc 818 (revision of 672) General description of physical layer was agreed to be included in the TR.

Tdoc 819 (revision of 673) Requirements for the low chip rate TDD was agreed to be included in the TR. Minor modification that were agreed to be done by the editor were the removal of the teleservices and replacement of the 2G general reference with reference to GSM.

Tdoc 820 (revision of 674) Low chip rate characteristics was agreed to be included. Minor modification was that editor is to exclude the baton handover as it is not really WG1 issue, but rather algorithm issues in RNC which criteria to use as handover criteria.

5. New contributions to TR 25.928 (May continue to day 2)

Tdoc 821 Beacon function was presented by CWTS, it was agreed to be included in the TR.

Tdoc 822 (CWTS) listed several sections of commonalties. All the other sections were agreed to be mentioned so expect the ODMA section which was known to be removed from the specifications.

Tdoc 823 (CWTS) Downlink TX diversity was agreed to be included, the same changes as with Tdoc 813 should be used still for the section 10.5.3

Tdoc 824 (CWTS) Channel coding presented the channel coding issues. It was noted that the only real difference for the channel coding methods was the use of 1/3 rate convolution coding for the BCH and PCH, whereas wideband TDD uses 1/2 -rate coding. Other coding methods are the same. The reason for the difference was corrected to be the performance, not the payload size, since the narrowband TDD uses two resource units (i.e. codes) for the BCH mapping.

Tdoc 825 (CWTS) Example of multiframe structure was agreed to be included. It was to be inserted as an annex. It was noted that some changes is eventually needed as the described 72 multiframe does not go even with the SFN numbering range (4096 frames). (Valid for the wideband as well)

Tdoc 826 (CWTS) Physical channel mapping was agreed to be included in the TR.

Tdoc 827 (CWTS) Examples of service mapping where agreed to be included with the similar note on the BCH indication as discussed earlier

Tdoc 828 (CWTS) Sub-frame segmentation was agreed to be included in the TR.

Tdoc 829 (CWTS) Structure modification with TR was basically just removing sections that are no longer necessary due changes in the wideband TDD specifications.

Tdoc 830 (CWTS) time slot formats introduced the timeslot formats for the TR.

Tdoc 831 (CWTS) Selection of channel impulse response was addressing the selection of the midamble. The specific reference to a conference paper was noted to be removed. The method itself was clarified to be the same as with narrowband TDD. To be included in the TR.

Tdoc 832 (CWTS) was addressing the possibilities for the range (in no interference conditions) from the timing perspective. Note was added that the values do not consider multipath environment. To be included in the TR.

Tdoc 833 (CWTS) Performance analysis was presenting results with 4 different services for the narrowband TDD. There were some comment and questions of the assumptions, especially on the "Vehicular A channel model with smart antennas", which was concluded needing further elaboration. The contribution was to be revised as Tdoc 838 to provide more information in order to allow to reproduce the results if desired.

Tdoc 834 (CWTS) Dedicated transport channels was agreed to be included in the TR.

Day 1. Was closed around 5 PM, well before the sunset.

Day 2. Start 8.30

Tdoc 806 RACH procedure (Samsung) (was presented for information). This contribution presented other possibility for the narrowband TDD RACH procedure. It was concluded that this proposal should be taken into consideration when entering the detailed specification phase but at this stage it is not to be included in TR. Even if something else is covered in TR, it does not exclude other proposal when starting to create CRs or actual specifications. TR will have a note that other methods are under consideration as especially for other WGs it is useful to know if we have areas were changes are likely to happen identified at this stage in the TR.

Tdoc 807 TFCI coding (Samsung) (was presented for information) This proposal presented another coding method for TFCI with 8-PSK modulation. Specific comment to the proposal was that what is the improvement in Eb/No from the increased minimum distance (16->18) compared to the existing scheme. The proposal is to be considered further when entering the detailed specification phase. Note was included in TR that other methods are under consideration.

Revised from Day 1:

Tdoc 835 (revision of 811) was presented. It was agreed but only change still for the editor is to keep the DL power control range under square brackets as WG4 should deal with the value eventually and confirm whether the same values are valid for narrowband TDD.

Tdoc 837 (revision of 812), modulation and spreading was presented and reflecting the changes needed. This was approved for the inclusion in the TR.

Tdoc 838 (revision of 833), performance analysis was presented to reflect the comments made. Minor clarifications added for the text to point out C/I or Eb/No as way to presents results, the antenna array noted to be the one used in the simulations. The antennas were stated to be correlated in the discussions, but the level of correlation was not mentioned. Also the antenna array was described as circular instead of practical one. To be included in the TR

Tdoc 836 (CWTS) midamble and channelisation code association as agreed to be included with the note that the association principle is the same as with wideband TDD.

Tdoc 839 Paging indicator channel (CWTS, Siemens) as agreed for the TR.

6. Approval of changes to TR 25.928 for TSG RAN submission

TR 25.928 (0.3.0, correct version number 0.2.1) Tdoc 840 was presented by the editor.

TR 25.928 1.0.0 -> the approved version with comments to appear as Tdoc 841 and it will be submitted for TSG RAN (for information). This was agreed.

The following comments were note that need to be covered in the 1.0.0 version.

Section 4

The statement noted earlier was added on the delay spread not considered for the range values (when calculated from guard periods)

Baton handover to be removed as not directly WG1 issue.

Section 5.

Beam forming is mentioned as an option

Minor corrections to section 6 & 7 noted

Section :8

SS (Synchronisation Shift) needs to be written out for the heading

Section 8.1.6 to be made as a section of it's own to have the correct position as in the multiplexing chain, original 8.1.6 (Radio Frame segmentation) to be retained.

7. TSG RAN WG1 view on further progress with 1.28 Mcps/s functionality:

The following was concluded in the issues how to proceed (once issues with TR are sorted)
And this will be reported to TSG RAN as WG1 view:

Separate specifications or CRs to the existing WG1 specifications as agreed as follows:

25.201 should be common

25.221 new specification

25.222 to be decided later (Suggestions for separate and common)

25.223 new specification

25.224 to be decided later (Suggestions for separate and common)

25.225 to be decided later (Suggestions for separate and common)

25.944 TR on multiplexing and channel coding examples should cover also narrowband TDD

The following open items in TR 25.928 were still concluded needing attention before work can proceed to detailed specifications or CRs.

The motivation (i.e. benefits that justify the difference to wideband TDD) of the specific features of narrowband TDD, including:

Uplink synchronisation

Fast TPC for uplink

Beamforming

-GSM measurements to be still clarified (due different frame length)

It was noted that there are also less important details that can be covered in the specification work later and can be solved when proceeding with details.

In general the description (differences/similarities) side made big progress in the TR

8. Meeting close

The meeting was closed around 3 PM.

Annex 1:Tdocs covered:

R1-00-0802	Agenda	TSG RAN WG1 Chairman
R1-00-0806	RACH procedure for narrowband TDD	Samsung
R1-00-0807	TFCI coding for narrowband TDD	Samsung
R1-00-0811	Revision of 661	CWTS
R1-00-0812	Revision of 663	CWTS
R1-00-0813	Revision of 665	CWTS
R1-00-0814	Revision of 666	CWTS
R1-00-0815	Revision of 667	CWTS
R1-00-0816	Revision of 668	CWTS
R1-00-0817	Revision of 670	CWTS
R1-00-0818	Revision of 672	CWTS
R1-00-0819	Revision of 673	CWTS
R1-00-0820	Revision of 674	CWTS
R1-00-0821	Beacon function of physical channel	CWTS
R1-00-0822	Commonality between the two TDD options (continued)	CWTS
R1-00-0823	Downlink transmit diversity	CWTS
R1-00-0824	Channel coding	CWTS
R1-00-0825	Example of multiframe structure	CWTS
R1-00-0826	Physical channel mapping	CWTS
R1-00-0827	Examples of service mapping for low chip rate TDD option	CWTS
R1-00-0828	Sub-frame segmentation	CWTS
R1-00-0829	Structure modification of TR 25.928	CWTS
R1-00-0830	Time slot formats	CWTS
R1-00-0831	Selection of the length of channel impulse response for low chip rate TDD option	CWTS
R1-00-0832	Options for operator to increase the cell range beyond 10 km for low chip rate TDD option	CWTS
R1-00-0833	Performance analysis	CWTS
R1-00-0834	Dedicated transport channels	CWTS
R1-00-0835	Revision of 811	CWTS
R1-00-0836	Midamble and channelisation code association	CWTS
R1-00-0837	Revision of 812	CWTS
R1-00-0838	Revision of 833	CWTS
R1-00-0839	Paging Indicator Channel	CWTS, Siemens
R1-00-0840	TR 25.928	Editor
R1-00-0841	TR 25.928 v 1.0.0	TSG RAN WG1
R1-00-0842	Report of the Ad Hoc on UTRA 12.8 Mchips/s TDD functionality	TSG RAN WG1 Chairman

Annex 2 meeting participants

Aksentijevic Mirko/Nokia
Bahrenburg Stefan/Siemens
Chen Dong/Siemens
Choi Hyung-Nam/Siemens AG
Daqing Wang/Nokia
De Benedittis Rosella/Siemens
Falaki Hamid/LUCENT TECHNOLOGIES
Futaka Toshiyuki/NTT DoCoMo Inc.
Gerstenberger Dirk/Ericsson Radio Systems
Howard Thomas/Motorola
Höynck Andreas/Siemens AG
Hu Jinling/CWTS/CATT
Hwang Sungoh/Samsung Electronics
Koulakiotis Dimitris/Samsung Electronics Research Institute
Kwak Byung-Jae/Samsung Electronics
Kwon Hyuk Joon/LGIC
Le Strat Evelyne/NORTEL NETWORKS
Li Chenguang/CWTS/CATT
Li Feng/CWTS/CATT
Moon Sung Uk/NTT DoCoMo Inc.
Purat Marcus/Siemens AG
Schmidt Malte/Siemens AG
Spaling Gerke/Ericsson
Toskala Antti/Nokia
Yang Guiliang/CWTS/CATT

Note: This list includes all the delegates that provided the registration form and signed the attendance list.