TSG-RAN Working Group 1 meeting #7
Hanover, Germany, August 30 – September 3, 1999

TSGR1#7(99)D25

Agenda item: **15**

Source: **Ad Hoc #1**

Title: **Report from Ad Hoc #1: TDD, part 2**

Document for: **Approval**

1 Introduction

Ad hoc #1 meeting on TDD first session, August 31, 1999.
Starting Time: 8:30
End Time: 12:30
Report of this first part included in Tdoc D24/99

Ad hoc #1 meeting on TDD second session, September 1, 1999.
Starting time: 8:30
End time: 12:30

2 Documents relevant for TDD

In the following, the discussion and the results on the presented documents are given.

2.1 Liaison Statements

Tdoc D26/99 "Draft answer to the LS about TDD synchronisation methods", Ad Hoc 1

Conclusion:
- Ad hoc 1 recommends to agree on the liaison statement given in Tdoc D26/99.

2.2 Joint predistortion

Tdoc A82/99 "TDD downlink performance in indoor environments", Bosch

Discussion:
- This contribution gives answers to questions raised at the last meeting.

Conclusion:
- Joint predistortion should be studied further. Besides the WG1 aspects, also the WG2 and WG4 aspects should be considered.

2.3 Hopping of cell parameters

Tdoc C53/99 "Cycling of cell parameters to improve path estimation", Texas Instruments

Discussion:
- It was clarified that the hopping patterns in different cells will be synchronised.
- It was mentioned that there is only little complexity impact for small hopping sequence length.
- The impact on WG4 and WG2 has to be identified.
- It was clarified that the implementation described in the text is only an example.
- It was clarified that this hopping scheme is applicable both for synchronised and non-synchronised systems.

Conclusion:
- The scheme is seen as promising and should be investigated further.

2.4 Cell search

Tdoc A52/99 "Simulations parameters for comparing modulated SSC and CFC 2 techniques for UTRA TDD synchronisation", Interdigital and Texas Instruments

Discussion:
- Document was drafted during the last WG1 meeting and was the basis for the analysis of the SCH schemes.

Tdoc B01/99 "Modulated length 2 and length 4 CFC with greater minimum distance", Texas Instruments and Interdigital

Discussion:
- There was a question on the average monitoring time for handover from GSM to UTRA-TDD. About 4 to 8 synchronisation sequences have to be detected for GSM to TDD handover while for GSM to GSM, in the worst case up to 11 are needed.
- It was clarified that the possibility to handover from UTRA-TDD to GSM is covered by monitoring windows in UTRA-TDD and is independent of the TDD synchronisation scheme.
- It was clarified that for GSM to UTRA handover, the monitoring periods are fixed and the GSM standard will not be changed in this respect. The measurement reporting in GSM will be updated to enable handover to UTRA.

Conclusion:
- Ad hoc 1 recommends to agree on the cell search scheme given in Tdoc B01/99.

Tdoc C33/99 "CPM based cell search scheme for UTRA TDD" and C34 "TDD cell search text proposals for 25.221, 25.223 and 25.224 (CPM based cell search scheme)", Shinsegi Telecomm an Hyundai Electronics Industries

Discussion:
- It was commented that monitoring of UTRA-TDD from GSM is not possible and therefore handover from GSM to UTRA-TDD seems not possible with the proposed CPM scheme.
- There was a question what is required for handover from GSM to UTRA TDD. It was mentioned that the following information has to be decodable: cell code group/ frame timing,/ position of PCCPCH.
- It was confirmed from GSM operator side that handover between GSM and UTRA is essential.
- It was commented that the CPM scheme has an impact on the FDD monitoring requirements for FDD to TDD handover since presently, the FDD monitoring window length is less than 10 ms.
- There was a comment that the schedule for release 99 has to be considered as well. A reworking and readjustment of the CPM scheme seems not possible anymore due to the tight time schedule for release 99.
- Texas Instruments showed first simulation results on CPM which do not confirm the gains shown by Shinsegi of the CPM scheme over the CFC scheme.
- It was mentioned that the CPM scheme was introduced after the last WG1 meeting via the reflector. The deadline for the decision on the cell search scheme was already passed at the last meeting but since there were two promising SCH candidates by Interdigital and by Texas Instruments presented last time, it was agreed at last WG1 meeting to postpone the decison on SCH for TDD to the WG1#7 meeting provided that the proponents come up with mutually agreed results on the proposed schemes. Mutually agreed results are available for the CFC and SSC schemes and even a combined scheme with improved properties has been elaborated, but there was no time left to check the CPM results since the CPM scheme was introduced quite late.

Conclusion:
- Based on the current results and given the time schedule for release 99, Ad hoc 1 recommends that the CPM scheme according to Tdocs C33/99 and C34/99 should not be included in the TDD specifications.

Tdoc D42/99 "Synchronisation channel with cyclic hierarchical sequences in UTRA TDD", Nortel

Discussion:
- This scheme was proposed earlier for FDD and was not adopted. There was a question on why this was not adpoted for FDD and what is different with this proposal compared to the earlier proposal for FDD.
- There was a comment that dual mode FDD/TDD equipment has to be taken into account, so harmonisation between FDD and TDD is important. The proposed scheme introduces a difference between FDD and TDD.
- It was commented that one reason for not adopting this scheme for FDD had been that the complexity of the stage 2 is higher

Conclusion:
- Based on the current results and given the time schedule for release 99, Ad hoc 1 recommends that the scheme according to Tdocs D42/99 should not be included in the TDD specifications.

Tdoc B00/99 "TDD cell search and text proposals for 25.221, 25.223 and 25.224," Texas Instruments and Interdigital

Discussion:
- The section numbering should be updated.
- OHG agreement has already been included earlier in the specification.
- It is mentioned that the 3 extra bits in the 10 bit case are used for pointing information. However, they could also be used for other purposes, not only for pointing.
- In Figure 12, the number of codes is termed N, but N is not defined.
- The code c is defined two times.
- Some further editorial changes have been identified.

Conclusion:
- Ad hoc 1 recommends to agree on the text proposal given in Tdoc B00/99 with the changes mentioned above.

2.5 Transmit diversity

Tdoc D44/99 "Text proposal for TS25.224: "Transmit diversity for SCH" -Revised Version," Panasonic

Discussion:
- The section numbering should be corrected.
- In the figure, there are only 13 instead of 15 time slots per frame depicted. This has to be corrected.

Conclusion:
- Ad hoc 1 recommends to agree on the text proposal given in Tdoc D44/99 with the changes mentioned above.

2.6 Physical channel definitions

Tdoc D02/99, "Physical Channel Definitions in TS25.221 - revised," Siemens AG

Conclusion:
- Ad hoc 1 recommends to agree on the text proposal given in Tdoc D02/99.

2.7 Service mapping

Tdoc D28/99, "Inclusion of a clause for detailed channel coding in TDD mode - update," Siemens AG

Discussion:
- There was a question why variable spreading is not also used for the downlink. It was commented that multicode has to be supported in the downlink anyhow and that detection of the active codes is simpler in the case of fixed spreading factor for the downlink.
- It was commented that the document should be presented also at WG4 since it may be relevant for the test cases.

- It was mentioned that these mapping examples are also related to the UE capabilities and that this set of mapping examples should be the basis for release 99.
- The contribution was also seen as important for WG2.

Conclusion:
- Ad hoc 1 recommends to agree on the text proposal given in Tdoc D28/99 to be included in an informative annex in the specification document.
- Siemens AG will send this contribution also to WG4.
- A liaison statement to WG2 should be drafted for both FDD and TDD in order to clarify the need of WG2 with respect to the common control channels in order to be able to finalise the mapping scheme for these channels in WG1. This procedure will be proposed in Ad Hoc 4.

2.8 General requirements

C59/99 „Operator requirements for UMTS TDD mode", Vodafone

- This document was not presented in Ad hoc 1 since the scope is partly beyond Ad hoc 1. It is recommended to present this document in the plenary.

3 Conclusion

It is recommended by Ad Hoc #1 on TDD to modify the existing set of WG1 specifications based on the recommendations given in section 2.