

Agenda item: Release 2000 issues / AH 21
Source: Telia, Vodafone Group, BT, Mannesmann Mobilfunk, Telenor
Title: Coexistence between the 3.84 Mcps TDD option and the 1.28 Mcps TDD option
Document for: Discussion & Decision

1 Introduction

The 1.28 Mcps TDD option is a work item for release 2000 of 3GPP. The basis for the work has been the proposal from CWTS. The work aims at having a harmonised TDD mode. The requirements have, however, not been established in wording. This makes the meaning of the word harmonisation somewhat unclear. The release 1999 specifications of the FDD and TDD modes have been harmonised on service level, implementation aspects of multi-mode terminals and spectrum usage issues. This paper focuses on one of the important operator issues, namely co-existence for the harmonisation of the two TDD options. Since the 1.28 Mcps TDD and the 3.84 Mcps TDD options need to coexist in the same and adjacent frequency bands, the requirements are that the operation between operators and within the same operators network can be done with minimum capacity loss and minimum co-ordination in the same geographical area.

2 What has been done and some comments

Possible coexistence scenarios have already been defined in RAN WG1, and WG 4 was asked [1] to study the effects of interference with respect to the different deployment scenarios. The 5 scenarios will not be detailed here. The issue of the co-existence and the problems of interference falls back to the basic physical frame structure where the 1.28 Mcps TDD option has a 5 ms structure with 7 traffic time slots and the 3.84 Mcps TDD option has the normal 10 ms structure and 15 time slots. The low chip rate has in addition to the traffic time slots also two physical control time slots, essential for operation, which is not of the same size that makes the slot sizes unequal.

The interpretation of the answer from WG4 [2] is that the physical frame structure and co-existence problems due to differences in timeslot arrangements and frame structure is not an WG4 issue. The received answer was only noted in WG1 and it seems therefore that the issue is still open and not solved.

An LS [3] based on the technical report on the 1.28 Mcps TDD option only notices the fact that the frame structure and time slot arrangements are different between the options.

One easy way to ensure minimum level of destructive interference, i.e. BS-to-BS and MS-to-MS, between TDD systems is to verify that if the systems are operated synchronous the level of interference should be insignificant. This is not possible between the two TDD options as of today. The only way to ensure this is to have the same physical frame structure.

4 Proposal

Since the issue of coexistence aspects is still not analysed with respect to the operation of the TDD options in various deployment scenarios as described in [1] it is proposed to analyse those consequences before any decision is made on frame and timeslot structures for the 1.28 Mcps TDD option. It would be beneficial that this issue is addressed in [4].

References:

[1] RAN WG1, "LS on low chip rate TDD interference/deployment scenarios," Doc. TSGR1#12(00)0614, TSG-RAN Working Group 1 Meeting #12

[2] RAN WG4, "LS answer on low chip rate TDD interference/deployment scenarios," Doc. TSGR1-00-0773, TSG-RAN Working Group 1 meeting No. 13

[3] RAN WG1, "LS to WG2, WG3, and WG4: Progress Report of the WI 'Low Chip Rate TDD, physical layer' and request for support," Doc. TSGR1#14(00)0961, TSG-RAN Working Group 1 Meeting #14

[4] RAN WG1, 3G TR 25.928 V1.1.0 (2000-07), "1.28Mcps functionality for UTRA TDD Physical Layer", Doc. TSGR1#14 R1-00-0960