TSG-RAN Meeting #7 ***RP-000197***
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(R1-000614, copy TSG-RAN) LS on low chip rate TDD interference/deployment scenarios

Title: LS on low chip rate TDD interference/deployment secenarios

Source: TSG-RAN WG1

To: TSG-RAN WG4

CC: TSG-RAN

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TSG RAN WG1 would like to inform TSG RAN WG4 that they have had some discussion about deployment/interference scenarios for the low chip rate option of TDD, cf. the annex. However, since the expertise for interference scenarios is within WG4, WG1 would like to ask WG4 to perform work on the interference scenarios and include the results in their technical report on the low chip rate TDD option.

WG1 has attached discussed scenarios since they may be useful as an input for WG4's continuing work on elaborating the narrowband and narrowband/wideband scenarios.

Annex

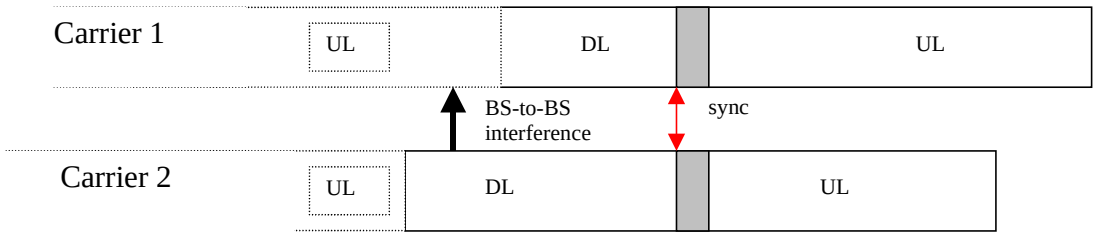
4.3.1 Deployment scenarios

In this section a number of deployment scenarios for NB TDD and mixed NB/WB TDD scenarios are described. The physical layer of the WB option is described in detail in 3GPP TSG RAN TS25.221-225 and the NB option is described in detail elsewhere in this document.
Co-ordinated operation is understood as relating to co-ordination between the nodeBs involved in the scenarios (e.g. synchronisation, knowledge of cell planning etc.). Uncoordinated operation is understood as that there is no co-ordination between the nodeBs involved in the scenarios. In both co-ordinated and uncoordinated cases the nodeBs can be from the same or a different operator.
The purpose of this section is to show potential usage of the currently defined NB option and provide a background for the standardisation discussions.

Scenario 1: NB TDD vs. co-ordinated NB TDD in adjacent bands

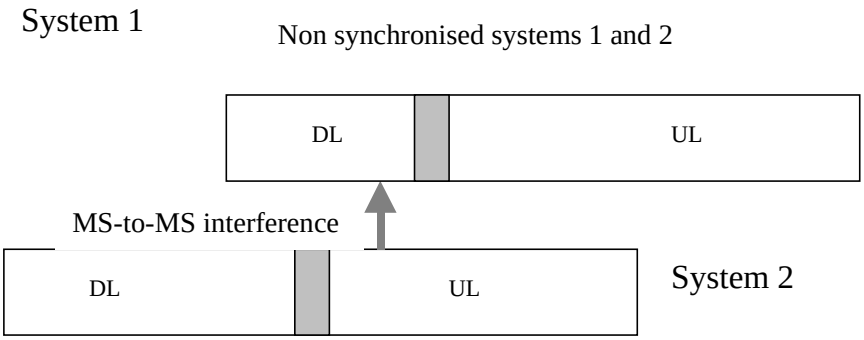
In this basic operation scenario the NB TDD carriers are used in a co-ordinated way, that is, the control slots of the systems are aligned to minimise the interference between the two systems. This means that the respective signalling slots are aligned in both the systems regardless of the current configuration of up- and downlink slots. That is, the configuration changes by shifting of the start of the sub frame boundaries.

Synchronised carriers 1 and 2. Synchronisation of signaling slots



Scenario 2: NB TDD vs. uncoordinated NB TDD in adjacent bands

In this scenario different operators run the two interfering NB TDD systems in adjacent bands. The relative frame boundaries are unknown and there is no synchronisation between the two systems.

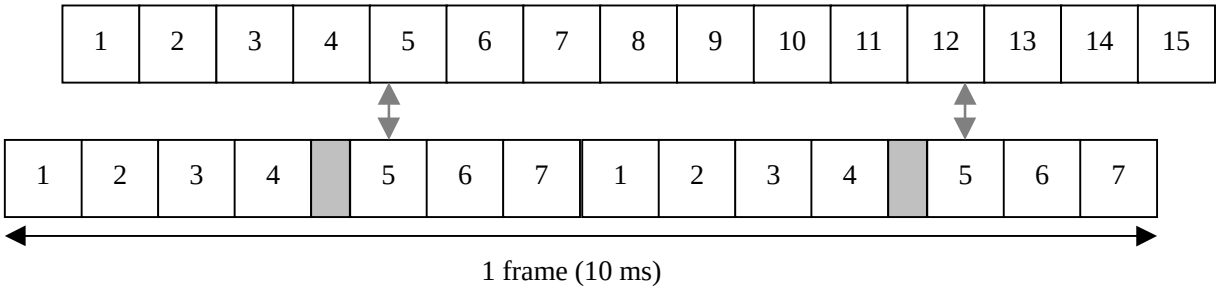


Scenario 3: NB TDD vs. uncoordinated NB TDD in same band

This scenario is feasible when one operator owns a spectrum band and rents it out to private operators for example running corporate business systems. These systems are run in an uncoordinated way but possibly with some geographical distance between them.

Scenario 4: NB TDD vs. WB TDD in uncoordinated operation in adjacent bands

Scenario 4 is similar to Scenario 2 except that we consider a WB TDD and a NB TDD system and the cross interference between them.



Scenario 5: NB TDD vs. WB TDD in uncoordinated operation in same band

The business model behind this scenario is similar as for Scenario 3 but with different types of interfering TDD systems.