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Agenda Item:	**8.5**
Source:	**ITU-R Ad Hoc**
Title:	**Proposed response to ITU-R WP8F on coexistence Between IMT-2000 TDD and FDD Radio Interface Technologies Within the Frequency Range 2 500-2 690 MHz Operating in Adjacent Bands and in the Same Geographical Area**
Document for:	**Approval**

[ITU Member][1]

RESPONSE TO ITU-R WP8F ON COEXISTENCE BETWEEN IMT-2000 TDD AND FDD RADIO INTERFACE TECHNOLOGIES WITHIN THE FREQUENCY RANGE 2 500-2 690 MHZ OPERATING IN ADJACENT BANDS AND IN THE SAME GEOGRAPHICAL AREA

3GPP TSG RAN thanks ITU-R WP8F for the note on coexistence Between IMT-2000 TDD and FDD Radio Interface Technologies Within the Frequency Range 2 500-2 690 MHZ Operating in Adjacent Bands and in the Same Geographical Area.

3GPP TSG RAN study at the moment requirements for TDD only, respectively FDD only usage within the 2500 – 2690 MHz band in its Study Item "Feasibility Study considering the viable deployment of UTRA in additional and diverse spectrum arrangements". RF Requirements for supporting TDD – FDD co-existence within the 2500 – 2690 MHz band are currently not studied (not specified) in RAN, however, they may be studied in a future Study Item/Work Item.

3GPP TSG RAN has checked consistency between IMT.MITIGATION and the current 3GPP material and they would like to provide the following comments regarding the draft new report:

1. Section 3.1.3, Table 1 "Summary of parameters for the problematic coexistence cases": The values reported in the table have been updated in RAN4. The table should be changed consequently taking into account of the current version RAN 4 specification

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[1] This contribution was developed in 3GPP TSG RAN.

2. Section 4.1.1.1, “To mitigate that tight coupling, it is recommended to down tilt the antennas so that they would not be in each other’s respective boresight in the vertical plane”: this could affect coverage. Down-tilting in order to get a substantial gain reduction in the horizontal plane, subsequently reduces coverage in that direction. If the sites are not at the same radiation centers, and antenna beams roll off gradually, the isolation may not be assured with tilting because of antenna pattern distortion.
3. Section 4.1.1.1 “In the case of macro and micro BS antennas, mitigating the strong antenna coupling can be achieved by mounting the antennas at different heights. For example, the macro antenna could be mounted on a pole on the roof, while the micro antenna would be possibly on the building outer wall closer to street level. Thus the effective gain that determines the coupling between the two is less than the algebraic sum of the gains.”: This scenario cannot be general, depending whether the assumptions are in line with real deployement.
4. Section 4.3.1:“RAN has not defined 30 dB as co-location, it is a commonly agreed value (see [1], [2], [3]). This last comment applies also for 4.1.1.2, which could be mis-leading in the definition of “colocated antennas”.
5. Section 4.3.1:“Filtering and/or linearization techniques “:A comparison is made with the filters used in the 1900 MHz band, but it should be noted that these are two very different scenarios and there is a substantial difference in amount of guard band between FDD/GSM in 1900 MHz and FDD/TDD.
6. Section 5.1.1.1 Collocating antennas: this section refers to site engineering techniques and not to “co-location”.
7. Section 5.1.1.1 Collocating antennas: “While it is not always possible to coordinate the collocation process between competing operators, doing so could yield, on the average, 60 dB of isolation”: it is not possible to prove that 60 dB can be achieved on “average”.
8. Section 5.1.1.2.2 Macro, downtown BS and outdoor micro BS: “The isolation is obtained for >90% of the deployments between in outdoor micro BSs located “: RAN4 does not base Node B requirements on 90 % scenarios.
9. Section 5.1.2: Use of orthogonal polarization: This technique in not valid in case of receiver- transmitter diversity techniques
10. Section 5.3.1.1, Table 3: The speculative nature in assuming TDD/FDD Band I requirements for the 2500 – 2690 MHz band notwithstanding, it was also noted these have been in some cases misinterpreted in Sect 5.3 “Effect of improved equipment specifications” of the draft report IMT.MITIGATION:
    - Table 3
        - values of the Adjacent Carrier leakage power for the WA TDD BS should be –36 dBm @ 5 MHz, not –33 dBm

- ✍ values of the Adjacent Carrier leakage power for the LA TDD BS should be –33 dBm @ 10 MHz, not –36 dBm
- ✍ values of the Adjacent Carrier leakage power for the WA TDD BS should be –43 dBm @ > 15 MHz, not –40 dBm

o Table 4: due to previous error, results are not applicable

11. Section 5.3.1.2: FDD BS receiver filtering assumptions
    - ✍ The derivation of a required additional FDD BS receiver filtering of 31 dB due to the +16 dBm blocking requirements for the GSM1800 band is not appropriate. TS 25.104, is fact, does not allow such derivation. The partitioning between FDD BS receiver filtering and linearity of the receiver chain is a BS implementation matter and no particular splitting is mandated by TS 25.104. TS 25.104 formulates an optional blocking requirement (+16 dBm @ 6 dB desensitisation) to protect the FDD BS receiver against co-located GSM1800 BS.
    - ✍ Table 5: all quoted values are not derivable from TS 25.104 due to the previous comment
    - ✍ Note to Table 5: it is not anticipated that RAN WG4 will specify any filter values as such to become requirements for BS blocking performance. It is likely that also for future requirements covering the 2.5 GHz bands, appropriate blocking values to be met at the BS antenna connector will be formulated and that the partitioning between FDD BS receiver filtering and linearity of the receiver chain remains a BS implementation matter as well for the 2.5 GHz band requirements.
    - ✍ Table 6: due to previous comment, values are not supported by TS 25.104
12. Section 5.3.1.2: Table 7: FDD BS ACS requirement according to TS 25.104 is –52 dBm interferer level @ 6 dB desensitization for a WA BS. For medium range BS, recent agreement in RAN WG4 for ACS interferer level is –42 dBm; for LA BS –38 dBm. The quoted values of Table 7 are not in line with this.
13. As a general consideration, the concept of “proximity” should be replaced by the concept of “in the same geographical area”.

Reference

[1] 3GPP TR 25.942 3.3.0: " RF System Scenarios ".

[2] 3GPP TAG RAN WG4 Tdoc 631/99: "Antenna-to-Antenna Isolation Measurements".

[3] ETSI/STC SMG2 Tdoc 48/93: "Practical Measurement of Antenna Coupling Loss".