**3GPP TSG-RAN WG4 Meeting #100-e DRAFT R4-2115646**

Online, 16 - 27 Aug 2021

**Title:** LS on New blocking requirement for Band 1 BSs for protection from RMR in 1900-1910

**Response to:** LS R4-2111719 on New blocking requirement for Band 1 BSs for protection from RMR in 1900-1910 from ETSI MSG TFES

**Work Item:** -

**Source:** 3GPP RAN WG4

**To:** ETSI MSG TFES

**Cc:** ETSI TC RT

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**Attachments:** None

**1. Overall Description:**

RAN WG4 would like to thank ETSI MSG TFES for the opportunity to give feedback on the new blocking requirement for coexistence between future Railway systems and MFCN in Band 1. TSG RAN WG4 has looked at the four issues brought up in the LS in R4-2111719 (TFES(21)000058r1) and would like to give the following feedback:

1. Is a 10 MHz EUTRA channel supported by current signal generators in the labs?

Signal generators support generating all channel bandwidths in 3GPP, including 10 MHz EUTRA channel.

1. Does a 10 MHz EUTRA interferer definition differ significantly from the current 5 MHz EUTRA interferer definition in TS36.104 clause 7.6.1.1 specifically table 7.6.1.1-2?

Except for the 10 MHz channel bandwidth and the resulting *Transmission bandwidth configuration* of 50 PRBs, a “10 MHz E-UTRA signal” would have the same characteristics as a 5 MHz interfering signal. The characteristics of the interfering signal are described in annex C of 3GPP TS 36.141 specified the interferer definition.

For E-UTRA or E-UTRA with NB-IoT (in-band and/or guard band operation) BS, the interfering signal shall be a PUSCH containing data and reference symbols. Normal cyclic prefix is used. The data content shall be uncorrelated to the wanted signal and modulated according to clause 5 of TS36.211. Mapping of PUSCH modulation to receiver requirement are specified in table C-1.1.

Table C-1: Modulation of the interfering signal

|  |  |
| --- | --- |
| Receiver requirement | Modulation |
| In-channel selectivity | 16QAM |
| Adjacent channel selectivity and narrow-band blocking | QPSK |
| Blocking | QPSK |
| Receiver intermodulation | QPSK |

This definition can be applied to any E-UTRA channel BW so simply defining the interferer channel BW as 10MHz is sufficient.

1. Is the measurement uncertainty for a test with -30 dBm interferer and 1 dB desens (option 1) different from the measurement uncertainty for a test with -19.5 dBm and 6 dB desens
(option 2) for a test of blocking performance?

The RAN 4 measurement uncertainty calculation for in-band blocking below 3Gz is as follows:

$$MU=\sqrt{MU\_{Wanted}^{2}+MU\_{Interfer}^{2}}+ACLR effect\_{}$$

$$MU=\sqrt{0.7^{2}+1^{2}}+0.4=1.6dB$$

Applying this methodology both option 1 and option 2 would have the same MU as the existing in-band blocking requirement. Although the higher interferer level in option 2 may present additional test set up challenges in order to maintain the same interferer accuracy and ACLR effect contributions.

1. Does the new requirement present a testing issue compared to existing blocking performance requirements?

The test procedure as such would be identical to the present in-band blocking test. The wider interfering signal and the change in wanted and interfering signal levels would not introduce any testing issues.

3GPP RAN4 would like to also inform MFG/TFES that a detailed background of MU calculations for the BS radiated requirements is documented in the TR 37.941 “Radio Frequency (RF) conformance testing background for radiated Base Station (BS) requirements”. Whilst focussed on the radiated requirements this document also offers insight into how the conducted requirements were derived.

**2. Actions:**

**None.**

**3. Date of Next TSG-RAN4 Meetings:**

TSG-RAN4 Meeting #101-e November 01 – 12, 2021 Online