3GPP TSG-RAN WG4 Meeting # 102-e R4-2205986

Electronic Meeting, 21 Feb – 03 Mar, 2022

**Source:** Huawei

**Title:** TP to TS 38.108: section 7.6 (Rx spur) and section 7.7 (Rx IMD)

**Agenda Item:** 10.13.3.4

**Document for:** Approval

# Introduction

Based on the worksplit agreed in [1] (Issue 3-3-2), in this contribution a TP to TS 38.108 section 7.6 (Rx spur) and section 7.7 (Rx IMD) is provided for approval.

TS 38.108 skeleton in [2] was used as the starting point.

As the Rx spurious emissions requirements was subject to the emission scaling in the NR specification, please refer to the related discussion paper in [3]. As multiple open issues were identified, part of the proposed TP text is captured in [] until the technical conclusion is reached.

# Conclusions

**Proposal 1**: Approve the attached TP to TS 38.108.

# References

[1] R4-2203080 Way Forward on NTN\_solutions\_Part1, RAN4#101bis-e

[2] R4-2203087 Skeleton for TS 38.108 NR Satellite Access Node radio transmission and reception v0.0.1, RAN4#101bis-e

[3] R4-2205978 Discussion on the AAS architecture and consideration of the emissions scaling

# Annex A: TP to TS 38.108

*------------------------------ Modified sections ------------------------------*

### 7.6.1 General

The receiver spurious emissions power is the power of emissions generated or amplified in a receiver unit that appear at the *TAB connector* of the *SAN* *type 1-H*. The requirements apply to all SAN with separate RX and TX *TAB connectors*.

NOTE: In this case for FDD operation the test is performed when both TX and RX are ON, with the TX *TAB connectors* terminated.

[For *SAN type 1-H* manufacturer shall declare *TAB connector RX min cell groups*. Every *TAB connector* of *SAN type 1‑H* supporting reception in an *operating band* shall map to one *TAB connector RX min cell group*, where mapping of *TAB connectors* to cells/beams is implementation dependent.

The number of active receiver units that are considered when calculating the conducted RX spurious emission limits (NRXU,counted) for *SAN type 1-H* is calculated as follows:

 NRXU,counted = *min(NRXU,active , 8* *× Ncells)*

NRXU,countedpercell is used for scaling of *basic limits* and is derived as NRXU,countedpercell = NRXU,counted / Ncells, where Ncells is defined in clause 6.1.

NOTE: NRXU,active is the number of actually active receiver units and is independent to the declaration of Ncells.]

### 7.6.2 *Basic limits*

The receiver spurious emissions *basic limits* are provided in table 7.6.2-1.

Table 7.6.2-1: General SANreceiver spurious emissions limits

| Spurious frequency range | *Basic limits* | *Measurement bandwidth* | Note |
| --- | --- | --- | --- |
| 30 MHz – 1 GHz | -57 dBm | 100 kHz | Note 1 |
| 1 GHz – 12.75 GHz | -47 dBm | 1 MHz | Note 1, Note 2 |
| 12.75 GHz – 5th harmonic of the upper frequency edge of the UL *operating band* in GHz | -47 dBm | 1 MHz | Note 1, Note 2, Note 3 |
| NOTE 1: *Measurement bandwidth*s as in ITU-R SM.329 [2], s4.1.NOTE 2: Upper frequency as in ITU-R SM.329 [2], s2.5 table 1.NOTE 3: This spurious frequency range applies only for *operating bands* for which the 5th harmonic of the upper frequency edge of the UL *operating band* is reaching beyond 12.75 GHz.NOTE 4: The frequency range from ΔfOBUE below the lowest frequency of the SAN transmitter *operating band* to ΔfOBUE above the highest frequency of the SAN transmitter *operating band* may be excluded from the requirement. ΔfOBUE is defined in clause 6.6.1. |

### 7.6.3  Minimum requirement for *SAN type 1-H*

[The RX spurious emissions requirements for *SAN type 1-H* are that for each applicable *basic limit* specified in table 7.6.2-1 for each *TAB connector RX min cell group,* the power sum of emissions at respective *TAB connectors* shall not exceed the SAN limits specified as the *basic limit*s + X, where X = 10log10(NRXU,countedpercell), unless stated differently in regional regulation.

The RX spurious emission requirements are applied per the *TAB connector RX min cell group* for all the configurations supported by the BS.

NOTE: Conformance to the SAN receiver spurious emissions requirement can be demonstrated by meeting at least one of the following criteria as determined by the manufacturer:

1) The sum of the spurious emissions power measured on each *TAB connector* in the *TAB connector RX min cell group* shall be less than or equal to the SAN limit above for the respective frequency span.

Or

2) The spurious emissions power at each *TAB connector* shall be less than or equal to the SAN limit as defined above for the respective frequency span, scaled by -10log10(*n*), where *n* is the number of *TAB connectors* in the *TAB connector RX min cell group*.]

## 7.7 Receiver intermodulation

The requirement is not applicable in this version of the specification.

*------------------------------ End of modified section ------------------------------*