**3GPP TSG-RAN WG4 Meeting # 102-e R4-2203958**

**Electronic Meeting, February 21 – March 3, 2022**

Title: TP for 38.108: clause 10.5 OTA in-band selectivity and blocking

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# Introduction

This contribution provides a text proposal for 38.108: clause 10.5 OTA in-band selectivity and blocking [1].

# Reference

[1] TR 38.108, 0.0.1

# Text proposal

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## 10.5 OTA in-band selectivity and blocking

### 10.5.1 OTA adjacent channel selectivity

#### 10.5.1.1 General

OTA Adjacent channel selectivity (ACS) is a measure of the receiver's ability to receive an OTA wanted signal at its assigned channel frequency in the presence of an OTA adjacent channel signal with a specified centre frequency offset of the interfering signal to the band edge of a victim system.

#### 10.5.1.2 Minimum requirement for *SAN type 1-O*

The requirement shall apply at the RIB when the AoA of the incident wave of a received signal and the interfering signal are from the same direction and are within the *minSENS RoAoA*.

The wanted and interfering signals apply to each supported polarization, under the assumption o*f polarization match*.

The throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel.

For FR1, the OTA wanted signal and the interfering signal are specified in table 10.5.1.2-1 and table 10.5.1.2-2 for OTA ACS. The reference measurement channel for the OTA wanted signal is further specified in annex A.1. The characteristic of the interfering signal is further specified in annex D.

The OTA ACS requirement is applicable outside the *SAN RF Bandwidth* or *Radio Bandwidth*. The OTA interfering signal offset is defined relative to the *SAN RF Bandwidth edges* or *Radio Bandwidth edges*.

Table 10.5.1.2-1: OTA ACS requirement for *SAN type 1-O*

|  |  |  |
| --- | --- | --- |
| *SAN channel bandwidth* of the *lowest/highest carrier* received (MHz) | Wanted signal mean power (dBm)  (Note 2) | Interfering signal mean power (dBm) |
| 5, 10, 15, 20 (Note 1) | EISminSENS + 6 dB | LEO: -51.3 – ΔminSENS  GEO: -54.4 – ΔminSENS |
| NOTE 1: The SCS for the *lowest/highest carrier* received is the lowest SCS supported by the SAN for that bandwidth  NOTE 2: EISminSENS depends on the *SAN channel bandwidth* | | |

Table 10.5.1.2-2: OTA ACS interferer frequency offset for *SAN type 1-O*

|  |  |  |
| --- | --- | --- |
| *SAN channel bandwidth* of the *lowest/highest carrier* received (MHz) | Interfering signal centre frequency offset from the lower/upper *Base Station RF Bandwidth* edge or *sub-block* edge inside a *sub-block gap* (MHz) | Type of interfering signal |
| 5 | ±2.5025 | 5 MHz DFT-s-OFDM NR signal,  15 kHz SCS, 25 RBs |
| 10 | ±2.5075 |
| 15 | ±2.5125 |
| 20 | ±2.5025 |

### 10.5.2 OTA in-band blocking

#### 10.5.2.1 General

The OTA in-band blocking characteristics is a measure of the receiver's ability to receive a OTA wanted signal at its assigned channel in the presence of an unwanted OTA interferer, which is an NR signal for general blocking or an NR signal with one RB for narrowband blocking.

#### 10.5.2.2 Minimum requirement for *SAN type 1-O*

The requirement shall apply at the RIB when the AoA of the incident wave of a received signal and the interfering signal are from the same direction, and:

- when the wanted signal is based on EISREFSENS: the AoA of the incident wave of a received signal and the interfering signal are within the *OTA REFSENS RoAoA.*

- when the wanted signal is based on EISminSENS: the AoA of the incident wave of a received signal and the interfering signal are within the *minSENS RoAoA*.

The wanted and interfering signals apply to each supported polarization, under the assumption of *polarization match*.

The throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel, with OTA wanted and OTA interfering signal specified in tables 10.5.2.2-1, table 10.5.2.2-2 and table 10.5.2.2-3 for general OTA and narrowband OTA blocking requirements. The reference measurement channel for the OTA wanted signal is identified in clause 10.3.2 and are further specified in annex A.1. The characteristic of the interfering signal is further specified in annex D.

The OTA in-band blocking requirements apply outside the *Base Station RF Bandwidth* or *Radio Bandwidth*. The interfering signal offset is defined relative to the *Base Station RF Bandwidth edges* or *Radio Bandwidth* edges.

For *SAN type 1-O* the OTA in-band blocking requirement shall apply in the in-band blocking frequency range, which is from FUL,low - ΔfOOB to FUL,high + ΔfOOB, excluding the downlink frequency range of the FDD *operating band.* The ΔfOOB for *SAN type 1-O* is defined in table 10.5.2.2-0.

Table 10.5.2.2-0: ΔfOOB offset for SAN *operating bands* in FR1

|  |  |  |
| --- | --- | --- |
| SAN type | *Operating band* characteristics | ΔfOOB (MHz) |
| *SAN type 1-O* | FUL,high – FUL,low < 100 MHz | 20 |

Table 10.5.2.2-1: General OTA blocking requirement for *SAN type 1-O*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *SAN channel bandwidth* of the *lowest/highest carrier* received (MHz) | Wanted signal mean power (dBm)  (Note 1) | Interfering signal mean power (dBm) | Interfering signal centre frequency minimum offset from the lower/upper *Base Station RF Bandwidth edge* or *sub-block* edge inside a *sub-block gap* (MHz) | Type of interfering signal |
|  | EISREFSENS + 6 dB | LEO: -42.3 - ΔOTAREFSENS  GEO: -45.4 - ΔOTAREFSENS | ±7.5 | 5 MHz DFT-s-OFDM NR signal, 15 kHz SCS, 25 RBs |
| 5, 10, 15, 20 | EISminSENS + 6 dB | LEO: -42.3 - ΔminSENS  GEO: -45.4 - ΔminSENS | ±7.5 |

Table 10.5.2.2-2: OTA narrowband blocking requirement for *SAN type 1-O*

|  |  |  |
| --- | --- | --- |
| *SAN channel bandwidth* of the *lowest/highest carrier* received (MHz) | OTA Wanted signal mean power (dBm) | OTA Interfering signal mean power (dBm) |
| 5, 10, 15, 20 | EISREFSENS + 6 dB | LEO: -48.3 - ΔOTAREFSENS  GEO: -51.4 - ΔOTAREFSENS |
| EISminSENS + 6 dB | LEO: -48.3 – ΔminSENS  GEO: -51.4 – ΔminSENS |
| NOTE 1: The SCS for the *lowest/highest carrier* received is the lowest SCS supported by the SAN for that bandwidth. | | |

Table 10.5.2.2-3: OTA narrowband blocking interferer frequency offsets for *SAN type 1-O*

|  |  |  |
| --- | --- | --- |
| *SAN channel bandwidth* of the *lowest/highest carrier* received (MHz) | Interfering RB centre frequency offset to the lower/upper *Base Station RF Bandwidth edge* or *sub-block edge* inside a *sub-block gap* (kHz) (Note 2) | Type of interfering signal |
| 5 | ±(350 + m\*180),  m=0, 1, 2, 3, 4, 9, 14, 19, 24 | 5 MHz DFT-s-OFDM NR signal, 15 kHz SCS, 1 RB |
| 10 | ±(355 + m\*180),  m=0, 1, 2, 3, 4, 9, 14, 19, 24 |
| 15 | ±(360 + m\*180),  m=0, 1, 2, 3, 4, 9, 14, 19, 24 |
| 20 | ±(350 + m\*180),  m=0, 1, 2, 3, 4, 9, 14, 19, 24 |
| NOTE 1: Interfering signal consisting of one resource block is positioned at the stated offset. The channel bandwidthof the interfering signal is located adjacently to the lower/upper *Base Station RF Bandwidth* edge.  NOTE 2: The centre of the interfering RB refers to the frequency location between the two central subcarriers. | | |

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