**3GPP TSG-RAN WG4 Meeting # 109 [R4-2321971](http://10.10.10.10/ftp/RAN/RAN4/Inbox/R4-2321971.zip)**

**Chicago, USA, Nov 13 – Nov 17, 2023**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.101-5** | **CR** |  | **rev** | **1** | **Current version:** | **18.3.0** |  |
|  | | | | | | | | |
| *For* ***[HE](http://www.3gpp.org/3G_Specs/CRs.htm" \l "_blank)******[LP](http://www.3gpp.org/3G_Specs/CRs.htm" \l "_blank)*** *on using this form: comprehensive instructions can be found at  <http://www.3gpp.org/Change-Requests>.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Draft CR to TS 38.101-5 Clause 10.6 Blocking requirement | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE Corporation | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_NTN\_enh-Core | | | | |  | ***Date:*** | | | 2023-10-31 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | This CR introduces VSAT requirements for NTN Ka bands according to the agreed work split. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | To introduce the NTN VSAT receiver blocking requirements | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The NTN ka-bands won’t be correctly supported | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 10.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*<Start of the change>*

## 10.6 Blocking characteristics

### 10.6.1 General

The blocking characteristic is a measure of the receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the spurious response or the adjacent channels, without this unwanted input signal causing a degradation of the performance of the receiver beyond a specified limit. The blocking performance shall apply at all frequencies except those at which a spurious response occurs.

The requirement applies at the RIB when the AoA of the incident wave of the wanted signal and the interfering signal are both from the direction where peak gain is achieved.

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

### 10.6.2 Minimum In-band blocking requirement for mobile VSAT

In-band blocking is a measure of a receiver's ability to receive a NR signal at its assigned channel frequency in the presence of an interferer at a given frequency offset from the centre frequency of the assigned channel.

For mobile VSAT, the throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.3.2 and A.3.3.2 (with one sided dynamic OCNG Pattern for the DL-signal as described in Annex A.5.2.1). The requirement is verified with the test metric of EIS (Link=RX beam peak direction, Meas=Link angle).

Table 10.6.2-1: In band blocking requirements for VSAT type 4 and type 5

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rx parameter | Units | Channel bandwidth | | | |
|  |  | 50 MHz | 100 MHz | 200 MHz | 400 MHz |
| Power in Transmission Bandwidth Configuration | dBm | REFSENS + 14 dB | | | |
| BWInterferer | MHz | 50 | 100 | 200 | 400 |
| PInterferer  for bands n512, n511 | dBm | REFSENS + [TBD] dB | REFSENS + [TBD] dB | REFSENS + [TBD] dB | REFSENS + [TBD] dB |
| FInterferer (offset) | MHz | ≤ -100 & ≥ 100  NOTE 5 | ≤ -200 & ≥ 200  NOTE 5 | ≤ -400 & ≥ 400  NOTE 5 | ≤ -800 & ≥ 800  NOTE 5 |
| FInterferer | MHz | FDL\_low + 25  to  FDL\_high - 25 | FDL\_low + 50  to  FDL\_high - 50 | FDL\_low + 100  to  FDL\_high - 100 | FDL\_low + 200  to  FDL\_high - 200 |
| NOTE 1: The interferer consists of the Reference measurement channel specified in Annex A.3.3.2 with one sided dynamic OCNG Pattern as described in Annex A.5.2.1 and set-up according to Annex C.  NOTE2: The REFSENS power level is specified in Clause 10.3.2, which are applicable according to different VSAT types.  NOTE 3: The wanted signal consists of the reference measurement channel specified in Annex A.3.3.2 with one sided dynamic OCNG pattern as described in Annex A.5.2.1 and set-up according to Annex C.  NOTE 4: Void  NOTE 5: The absolute value of the interferer offset FInterferer (offset) shall be further adjusted (CEIL(|FInterferer(offset)|/SCS) + 0.5)\*SCS MHz with SCS the sub-carrier spacing of the wanted signal in MHz. Wanted and interferer signal have same SCS.  NOTE 6: FInterferer range values for unwanted modulated interfering signals are interferer center frequencies.  NOTE 7: The transmitter shall be set to 4 dB below the PUMAX,f,c as defined in clause 9.2.3, with uplink configuration specified in Table 10.3.2.1-2. | | | | | |

### 10.6.3 Minimum In-band blocking requirement for fixed VSAT

In-band blocking is a measure of a receiver's ability to receive a NR signal at its assigned channel frequency in the presence of an interferer at a given frequency offset from the centre frequency of the assigned channel.

For fixed VSAT, the throughput shall be ≥ 95 % of the maximum throughput of the reference measurement channels as specified in Annexes A.2.3.2 and A.3.3.2 (with one sided dynamic OCNG Pattern OP.1 TDD for the DL-signal as described in Annex A.5.2.1). The requirement is verified with the test metric of EIS (Link=RX beam peak direction, Meas=Link angle).

Table 10.6.3-1: In band blocking requirements for VSAT type 1, type 2 and type 3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rx parameter | Units | Channel bandwidth | | | |
|  |  | 50 MHz | 100 MHz | 200 MHz | 400 MHz |
| Power in Transmission Bandwidth Configuration | dBm | REFSENS + 14 dB | | | |
| BWInterferer | MHz | 50 | 100 | 200 | 400 |
| PInterferer  for bands n512, n511, n510 | dBm | REFSENS + [TBD] dB | REFSENS + [TBD] dB | REFSENS + [TBD] dB | REFSENS + [TBD] dB |
| FInterferer (offset) | MHz | ≤ -100 & ≥ 100  NOTE 5 | ≤ -200 & ≥ 200  NOTE 5 | ≤ -400 & ≥ 400  NOTE 5 | ≤ -800 & ≥ 800  NOTE 5 |
| FInterferer | MHz | FDL\_low + 25  to  FDL\_high - 25 | FDL\_low + 50  to  FDL\_high - 50 | FDL\_low + 100  to  FDL\_high - 100 | FDL\_low + 200  to  FDL\_high - 200 |
| NOTE 1: The interferer consists of the Reference measurement channel specified in Annex A.3.3.2 with one sided dynamic OCNG Pattern as described in Annex A.5.2.1 and set-up according to Annex C.  NOTE2: The REFSENS power level is specified in Clause 10.3.2, which are applicable according to different VSAT types.  NOTE 3: The wanted signal consists of the reference measurement channel specified in Annex A.3.3.2 with one sided dynamic OCNG pattern as described in Annex A.5.2.1 and set-up according to Annex C.  NOTE 4: Void  NOTE 5: The absolute value of the interferer offset FInterferer (offset) shall be further adjusted (CEIL(|FInterferer(offset)|/SCS) + 0.5)\*SCS MHz with SCS the sub-carrier spacing of the wanted signal in MHz. Wanted and interferer signal have same SCS.  NOTE 6: FInterferer range values for unwanted modulated interfering signals are interferer center frequencies.  NOTE 7: The transmitter shall be set to 4 dB below the PUMAX,f,c as defined in clause 9.2.3, with uplink configuration specified in Table 10.3.2.1-2. | | | | | |

*<End of the change>*