**3GPP TSG-RAN WG4 Meeting # 109 *R4-2319891***

**Chicago, US, November 13 – 17, 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.101-5** | **CR** | **DraftCR** | **rev** | **-** | **Current version:** | **18.3.0** |  |
|  |
| *For* ***[HE](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)******[LP](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)*** *on using this form: comprehensive instructions can be found at <http://www.3gpp.org/Change-Requests>.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:***  | Draft CR for 38.101-5 to introduce clause 10.1~10.3 |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_NTN\_enh-Core |  | ***Date:*** | 2023-11-01 |
|  |  |  |  |  |
| ***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 canbe 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)* |
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| ***Reason for change:*** | To introduce the following requirements in clause 10.1, 10.2 and 10.3 for Ka band VSAT.1. The general description is proposed on where to verify the receiver characteristics.
2. For Polarization characteristics, the minimum requirements on the receiver characteristics apply under one polarization.
3. OTA reference sensitivity level is introduced with full UL/DL RB allocation and EISREFSENS\_PerMHz + 10log10(NRB x SCS x 12 x 0.001).
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| ***Summary of change:*** | To introduce the following requirements in clause 10.1, 10.2 and 10.3 for Ka band VSAT.1. The general description is proposed on where to verify the receiver characteristics.
2. For Polarization characteristics, the minimum requirements on the receiver characteristics apply under one polarization.
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| ***Consequences if not approved:*** | Current Phase continuity requirements specified in clause 6.4.2.5 of TS 38.101-1 are not applicable to NTN UE. |
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| ***Clauses affected:*** | 10.1, 10.2 and 10.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** | **X** |  |  Test specifications | TS 38.521-5 |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

## **<<Start of Change for TS 38.101-5>>**

# 10 Radiated receiver characteristics

## 10.1 General

Unless otherwise stated, the receiver characteristics are specified over the air (OTA) at the RIB for Ka bands fixed and mobile VSAT. The reference effective isotropic sensitivity (EIS), wanted signals and interference is defined assuming a 0 dBi reference antenna located at the center of the quiet zone.

## 10.2 Polarization characteristics

The minimum requirements on the receiver characteristics apply under one polarization.

## 10.3 OTA reference sensitivity level

### 10.3.1 General

The OTA REFSENS requirement is a *directional requirement* and is intended to ensure the minimum OTA reference sensitivity level at the centre of the quiet zone in the RX beam peak direction. The OTA reference sensitivity power level EISREFSENS is the minimum mean power received over the air at the RIB, at which the throughput shall meet or exceed the requirements for a specified reference measurement channel.

### 10.3.2 Minimum requirement 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 OP.1 FDD for the DL-signal as described in Annex A.5.2.1) with peak reference sensitivity specified in Table 10.3.2-1]. The requirement is verified with the test metric of EIS (Link=RX beam peak direction, Meas=Link Angle).

Table 10.3.2-1: OTA reference sensitivity requirement for mobile VSAT

|  |  |  |  |
| --- | --- | --- | --- |
| *Operating band* | *VSAT channel bandwidth* (MHz) | UL/DL RB allocation | OTA reference sensitivity level, EISREFSENS(dBm) |
| n512, n511 | 50, 100, 200, 400 | Full RB allocation NRB as specified in clause 5.3.2 | EISREFSENS\_PerMHz + 10log10(NRB x SCS x 12 x 0.001) |
|  |

For Mobile VSAT communication with GSO, EISREFSENS\_PerMHz is -150.2 dBm.

### 10.3.3 Minimum requirement 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 FDD for the DL-signal as described in Annex A.5.2.1) with peak reference sensitivity specified in Table 10.3.3-1]. The requirement is verified with the test metric of EIS (Link=RX beam peak direction, Meas=Link Angle).

Table 10.3.3-1: OTA reference sensitivity requirement for fixed VSAT

|  |  |  |  |
| --- | --- | --- | --- |
| *Operating band* | *VSAT channel bandwidth* (MHz) | UL/DL RB allocation | OTA reference sensitivity level, EISREFSENS(dBm) |
| n512, n511, n510 | 50, 100, 200, 400 | Full RB allocation NRB as specified in clause 5.3.2 | EISREFSENS\_PerMHz + 10log10(NRB x SCS x 12 x 0.001) |
|  |

For fixed VSAT communication with GEO and LEO, EISREFSENS\_PerMHz is -150.2 dBm.

For fixed VSAT communication with LEO only, EISREFSENS\_PerMHz is -124 dBm.

## **<<End of Change>>**