**3GPP TSG-RAN WG4 Meeting #116bis R4-25xxxxx  
Prague, Czech Republic, 13 – 17 Oct 2025**

**Agenda item:** 4.1.1

**Source:** Moderator (OPPO)

**Title:** Topic summary for [116bis][113] R19\_UERF\_maintenance

**Document for:** Information

# Introduction

This is the summary for R19\_UERF\_maintenance under agenda 4.2 and except 4.2.7.

**List of topics below:**

* Discussion papers and corresponding CRs (22)
  + Draft CRs for 38.101-1 (2)
  + Draft CRs for 38.101-2 (5)
  + Draft CRs for 38.101-3 (1)
  + Draft CRs for 38.101-5 (4)
  + Draft CRs for 36.102 (2)
  + Draft CRs for 38.863 (1)

# Topic #1: R19 topics exclude Ku-Band for NR NTN

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2514002**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514002.zip)(R15)  CAT-A:  R4-2514003  R4-2514004  R4-2514005  R4-2514006 | ZTE Corporation,Sanechips | Draft CR for 38.101-2 Correct the descriptions for BWintraCA and A-MPR NS\_202  Moderator: The title in the cover page has a typo, it said the draft CR is for 38.101-1. |
| [**R4-2513845**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513845.zip)(R19) | Apple | For 38.101-5 |
| [**R4-2513846**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513846.zip)(R19) | Apple | For 38.863 |
| [**R4-2513295**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513295.zip) | Murata Manufacturing Co Ltd. | Proposal 1: RAN4 to use MSD tables for 10MHz of n41 in draft CRs (R4-2513296 and R4-2513297) for 38.101-1 and 38.101-3. |
| [**R4-2513296**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513296.zip)(R19) | Murata Manufacturing Co Ltd. | Draft CR 38.101-1 to change MSD for n41 10MHz CBW |
| [**R4-2513297**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513297.zip)(R19) | Murata Manufacturing Co Ltd. | Draft CR 38.101-3 to change MSD for n41 10MHz CBW |
| [**R4-2513322**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513322.zip) | Murata Manufacturing Co Ltd. | Observation: The Tx noise of n71 falling into n5 DL do not increase even change the n71 UL CBW from 20MHz to 25MHz.  Proposal 1: RAN4 to consider the MSD value highlighted in the following table 1 for PC3 CA\_n5A-n71A and PC3 CA\_n71A-n85A for n71 UL CBW 25MHz.  Proposal 2: RAN4 to consider the MSD value highlighted in the following table 2 PC2 CA\_n71A-n85A for n71 UL CBW 25MHz.  Table 1. PC3 MSD for CA\_n5A-n71A and CA\_n71A-n85A   | UL band | DL band | UL Fc | UL BW | SCS of UL band | UL RB Allocation | DL Fc | DL BW | MSD | Cross-band  Interference  source | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | (MHz) | (MHz) | (kHz) | LCRB | (MHz) | (MHz) | (dB) | | n71 | n5 | 685.5 | 25 | 15 | 20 (RBstart=113) | 871.5 | 5 | 2.0 | >ACLR2 | | … | … | … | … | … | … | … | … | … | … | | n71 | n85 | 685.5 | 25 | 15 | 20 (RBstart=113) | 730.5 | 5 | 10.16 | ACLR2 | | n71 | n85 | 680.5 | 35 | 15 | 20 (Rbstart=168) | 730.5 | 5 | 237 | ACLR1 | | NOTE 1: Applicable only when harmonic mixing MSD for this combination is not applied.  NOTE 2: Void  NOTE 3: The requirements only apply for UEs supporting inter-band carrier aggregation with simultaneous Rx/Tx capability. Simultaneous Rx/Tx capability does not apply for UEs supporting band n78 with a n77 implementation.  NOTE 4: Void  NOTE 5: The MSD exceptions are applicable to the case that interference of UL band 3rd order IMD product falls into the affected DL channels.  NOTE 6: Applicable to UE not supporting n71 optional maximum symmetrical UL/DL channel bandwidth  NOTE 7: Applicable to UE supporting n71 optional maximum symmetrical UL/DL channel bandwidth  NOTE 8: Applicable when n41 spectrum is restricted to 2515-2675MHz | | | | | | | | | | |   Table 2. PC2 MSD for CA\_n71A-n85A   | UL band | DL band | UL Fc | UL BW | SCS of UL band | UL RB Allocation | DL Fc | DL BW | MSD | Cross-band  Interference  source | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | (MHz) | (MHz) | (kHz) | LCRB | (MHz) | (MHz) | (dB) | | n71 | n85 | 685.5 | 25 | 15 | 20 (RBstart=113) | 730.5 | 5 | 13.14,6  16.14,7 | ACLR2 | | n71 | n85 | 680.5 | 35 | 15 | 20 (Rbstart=168) | 730.5 | 5 | 265,6  32.35,7 | ACLR1 | | NOTE 1: Applicable only when harmonic mixing MSD for this combination is not applied.  NOTE 2: Void.  NOTE 3: The requirements only apply for UEs supporting inter-band carrier aggregation with simultaneous Rx/Tx capability. Simultaneous Rx/Tx capability does not apply for UEs supporting band n78 with a n77 implementation.  NOTE 4: Applicable to UE not supporting n71 optional maximum symmetrical UL/DL channel bandwidth  NOTE 5: Applicable to UE supporting n71 optional maximum symmetrical UL/DL channel bandwidth.  NOTE 6: Applicable to UE’s supporting PC2 with 1Tx  NOTE 7: Applicable to UE’s supporting PC2 with 2Tx | | | | | | | | | | | |
| [**R4-2513325**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513325.zip) (R19) | Murata Manufacturing Co Ltd. | Draft CR 38.101-1 to change MSD for n71 25MHz CBW |
| [**R4-2513841**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513841.zip) | ViaSat Satellite Holdings Ltd | Observation 1: Two sets of requirements have been specified for NR NTN bands n250, n251 and n253 (Annex B) – set 1 based on current ETSI requirements in EN 301 681 [4, Annex A] and set 2 based on requirements likely to be included in the new ETSI standard inferred from [3].  Observation 2: RAN4 has agreed that given that the new ETSI standard has not been completed, the emissions requirements and the NS flags and A-MPR values associated with set 1 requirements (current ETSI requirements in EN 301 681) are in force.  Observation 3: The ETSI emissions requirements specified for bands n251 also apply to NR NTN band n255 but have not been incorporated in TS 38.101-5.  Observation 4: The ETSI emissions requirements specified for bands n251 and n253 also apply to IoT NTN bands 255 and 253 respectively but have not been incorporated in TS 36.102.  Observation 5: The A-MPR assessment for PC2 n255 NR NTN UE was performed without considering the ETSI requirements.  Observation 6: The A-MPR assessment for PC2 and PC1 band 255 IoT NTN UEs was performed without considering the ETSI requirements.  Observation 7: If the ETSI requirements are not specified for n255/b253/b255 operators (like Viasat, Space42) will be unable to signal that the UE needs to comply with additional emission requirements in Region 1 and any other country where ETSI emissions requirements are required to be met.  Observation 8: If proprietary power back-off implementations are implemented to pass regulatory certification, operators will be unable to plan its deployment such that the UE can close the link using the allotted/assigned RBs – this will likely result in severe degradation and/or connectivity failure for its customers.  Proposal 1: Update the n255 specifications in TS 38.101-5 to capture the two sets of requirements and associated NS flags/A-MPR for PC3 NR NTN UE from Rel-17 specifications onwards.    Proposal 2: Update the Rel-19 n255 specifications to specify the A-MPR for PC2 NR NTN UE for the flags associated with the two sets of requirements.  Proposal 3: Update the band 253 and 255 specifications in TS 36.102 to capture the two sets of requirements and associated NS flags/A-MPR for PC3 IoT NTN UE from Rel-18 specifications onwards.    Proposal 4: Update the Rel-19 specifications for b255 to specify the A-MPR for PC2 and PC1 IoT NTN UEs for the flags associated with the two sets of requirements. |
| [**R4-2513842**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513842.zip) (R19) | ViaSat Satellite Holdings Ltd | For 38.101-5  Updates to unwanted emissions specifications for NR NTN band n255 to align with ETSI emissions requirements |
| [**R4-2513843**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513843.zip) (R18) | ViaSat Satellite Holdings Ltd | For 38.101-5  Updates to unwanted emissions specifications for NR NTN band n255 to align with ETSI emissions requirements |
| [**R4-2513844**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513844.zip)(R17) | ViaSat Satellite Holdings Ltd | For 38.101-5  Updates to unwanted emissions specifications for NR NTN band n255 to align with ETSI emissions requirements |
| [**R4-2513858**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513858.zip)(R19) | ViaSat Satellite Holdings Ltd | For 36.102  Updates to unwanted emissions specifications for IoT NTN bands 253 and 255 to align with ETSI emissions regulations |
| [**R4-2513859**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513859.zip)(R18) | ViaSat Satellite Holdings Ltd | For 36.102  Updates to unwanted emissions specifications for IoT NTN bands 253 and 255 to align with ETSI emissions regulations |
| [**R4-2514315**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514315.zip) | Qualcomm | **Proposal 1**: Modify n71 Channel Bandwidths, REFSENS, and UL RB allocation for REFSENS as follows for Rel-19   | **NR Band** | **SCS (kHz)** | **UE Channel bandwidth (MHz)** | | | | | | | | | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **3** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** | **60** | **70** | **80** | **90** | **100** | | n71 | 15 |  | 5 | 10 | 15 | 20 | 25~~12~~ | 3012 | 3512 |  |  |  |  |  |  |  |  | |  | 30 |  |  | 10 | 15 | 20 | 25~~12~~ | 3012 | 3512 |  |  |  |  |  |  |  |  | | NOTE 12: This UE channel Bandwidth is optional for uplink in this release of the specification. | | | | | | | | | | | | | | | | | |  | **Operating band / SCS / Channel bandwidth** | | | | | | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Operating Band** | **SCS kHz** | **3**  **MHz (dBm)** | **5**  **MHz (dBm)** | **10**  **MHz (dBm)** | **15**  **MHz (dBm)** | **20**  **MHz (dBm)** | **25**  **MHz (dBm)** | **30 MHz (dBm)** | **35 MHz (dBm)** | **40**  **MHz (dBm)** | **45 MHz (dBm)** | **50**  **MHz (dBm)** | | n71 | 15 |  | -97.2 | -94.0 | -91.6 | -86.0 | ~~-84.1~~~~9~~  -74.8~~10~~ | -82.59  -67.110 | -80.79  -64.010 |  |  |  | | 30 |  |  | -94.3 | -91.9 | -87.4 | ~~-84.2~~~~9~~  -74.9~~10~~ | -82.69  -67.210 | -80.89  -64.110 |  |  |  | | NOTE 2: The transmitter shall be set to PUMAX as defined in clause 6.2.4  NOTE 9: Applies to UEs that support a maximum uplink BW of 20 MHz in this band.  NOTE 10: Applies to UEs that support optional symmetric UL/DL for this BW. | | | | | | | | | | | | |  | **Operating band / SCS (kHz) / Channel bandwidth (MHz) / Duplex mode** | | | | | | | | | | | | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Operating Band** | **SCS** | **3** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** | **60** | **70** | **80** | **90** | **100** | **Duplex Mode** | | n71 | 15 |  | 25 | 251 | 201 | 201 | 201~~,6~~ | 201,6 | 201,6 |  |  |  |  |  |  |  |  | FDD | |  | 30 |  |  | 121 | 101 | 101 | 101~~,6~~ | 101,6 | 101,6 |  |  |  |  |  |  |  |  |  | | Note 1: UL resource blocks shall be located as close as possible to the downlink operating band but confined within the transmission bandwidth configuration for the channel bandwidth (Table 5.3.2-1).  Note 3: For DL channel bandwidths that do not have symmetric UL channel bandwidth, highest valid UL configuration with lowest TX-RX separation (Table 5.4.4-1) shall be used unless otherwise specified.  Note 6: UEs supporting the optional symmetrical UL/DL bandwidths shall use this UL configuration. For UEs not supporting this uplink channel bandwidth, the UL configuration of the 20MHz UL channel bandwidth and the nominal Tx-Rx frequency separation specified in Table 5.4.4-1 shall be used, i.e. ΔFTX-RX as defined in clause 5.3.6 does not apply. | | | | | | | | | | | | | | | | | | |   **Proposal 2**: Modify CA\_n5A-n71A MSD with n71 UL as follows for Rel-19   | **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** | | n71 | n5 | ~~688~~685.5 | ~~20~~25 | 15 | 20 (RBstart=86) | 871.5 | 5 | 2.0 | >ACLR2 |   **Proposal 3**: Modify CA\_n71A-n85A MSD with n71 UL as follows   | **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** | | n71 | n85 | 688 | 20 | 15 | 20 (RBstart=86) | 730.5 | 5 | ~~8.2~~116 | ACLR2 | | n71 | n85 | 680.5 | 35 | 15 | 20 (Rbstart=168) | 730.5 | 5 | 237 | ACLR1 | |
| [**R4-2514409**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514409.zip) | ViaSat Satellite Holdings Ltd | Repeat with R4-2513841 |
| [**R4-2514494**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514494.zip) | Skyworks Solutions Inc. | **Proposal 1:** Remove note 12 from Table 5.3.5-1 for 25MHz CBW as highlighted in yellow in the table below.   | **NR Band** | **SCS (kHz)** | **UE Channel bandwidth (MHz)** | | | | | | | | | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **3** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** | **60** | **70** | **80** | **90** | **100** | | n71 | 15 |  | 5 | 10 | 15 | 20 | 25 | 3012 | 3512 |  |  |  |  |  |  |  |  | |  | 30 |  |  | 10 | 15 | 20 | 25 | 3012 | 3512 |  |  |  |  |  |  |  |  | | NOTE 12: This UE channel Bandwidth is optional for uplink in this release of the specification. | | | | | | | | | | | | | | | | | |   **Proposal 2**: For 25MHz CBW, remove optional CBW REFSENS requirement and Note 10 from the REFSENS Table 7.3.2-1a, and remove Note 6 from the UL configuration requirement Table 7.3.2-3 as highlighted in yellow in the tables below.   | **Operating band / SCS / Channel bandwidth** | | | | | | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Operating Band** | **SCS kHz** | **3**  **MHz (dBm)** | **5**  **MHz (dBm)** | **10**  **MHz (dBm)** | **15**  **MHz (dBm)** | **20**  **MHz (dBm)** | **25**  **MHz (dBm)** | **30 MHz (dBm)** | **35 MHz (dBm)** | **40**  **MHz (dBm)** | **45 MHz (dBm)** | **50**  **MHz (dBm)** | | n71 | 15 |  | -97.2 | -94.0 | -91.6 | -86.0 | -74.8 | -82.59  -67.110 | -80.79  -64.010 |  |  |  | | 30 |  |  | -94.3 | -91.9 | -87.4 | -74.9 | -82.69  -67.210 | -80.89  -64.110 |  |  |  | | NOTE 1: Four Rx antenna ports shall be the baseline for this operating band except for two Rx vehicular UE and two Rx antenna port XR UEs indicating UE capability *supportOf2RxXR-r18*. Four Rx antenna ports for (e)RedCap UE is not supported for this operating band.  NOTE 2: The transmitter shall be set to PUMAX as defined in clause 6.2.4  NOTE 9: Applies to UEs that support a maximum uplink BW of 20 MHz in this band.  NOTE 10: Applies to UEs that support optional symmetric UL/DL for this BW. | | | | | | | | | | | | |  | **Operating band / SCS (kHz) / Channel bandwidth (MHz) / Duplex mode** | | | | | | | | | | | | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Operating Band** | **SCS** | **3** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** | **60** | **70** | **80** | **90** | **100** | **Duplex Mode** | | n71 | 15 |  | 25 | 251 | 201 | 201 | 201 | 201,6 | 201,6 |  |  |  |  |  |  |  |  | FDD | |  | 30 |  |  | 121 | 101 | 101 | 101 | 101,6 | 101,6 |  |  |  |  |  |  |  |  |  | | Note 1: UL resource blocks shall be located as close as possible to the downlink operating band but confined within the transmission bandwidth configuration for the channel bandwidth (Table 5.3.2-1).  Note 6: UEs supporting the optional symmetrical UL/DL bandwidths shall use this UL configuration. For UEs not supporting this uplink channel bandwidth, the UL configuration of the 20MHz UL channel bandwidth and the nominal Tx-Rx frequency separation specified in Table 5.4.4-1 shall be used, i.e. ΔFTX-RX as defined in clause 5.3.6 does not apply. | | | | | | | | | | | | | | | | | | |   **Observation**: The MSD requirements for CA\_n71B are not impacted by mandating support of symmetrical UL/DL 25MHz CBW.  **Proposal 3:** In Table 7.3A.6-1 and for CA\_n5-n71, consider replacing the Band n71 20MHz UL CBW MSD test point with the changes highlighted in yellow for the Band n5 PC3 MSD. Due to BCS4/5, attach Note 6 to this requirement.   | **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** | | n71 | n5 | 685.5 | 25 | 15 | 20 (RBstart=113) | 871.5 | 5 | 2.06 | >ACLR2 | | NOTE 6: Applicable to UE not supporting n71 optional maximum symmetrical UL/DL channel bandwidth | | | | | | | | | |   **Proposal 4:** In Table 7.3A.6-1 and for CA\_n71-n85, consider adopting the changes highlighted in yellow for the Band n85 PC3 MSD due to Band n71 25MHz UL CBW cross-band isolation interference.   | **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** | | n71 | n85 | 685.5 | 25 | 15 | 20 (RBstart=113) | 730.5 | 5 | 9.46 | ACLR2 | | n71 | n85 | 680.5 | 35 | 15 | 20 (Rbstart=168) | 730.5 | 5 | 237 | ACLR1 | | NOTE 6: Applicable to UE not supporting n71 optional maximum symmetrical UL/DL channel bandwidth  NOTE 7: Applicable to UE supporting n71 optional maximum symmetrical UL/DL channel bandwidth | | | | | | | | | |   **Proposal 5:** In Table 7.3A.6-1a-1 and for CA\_n71-n85, consider adopting the changes highlighted in yellow for the Band n85 MSD due to Band n71 25MHz UL CBW PC2 cross-band isolation interference.   | **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** | | n71 | n85 | 685.5 | 25 | 15 | 20 (RBstart=113) | 730.5 | 5 | 12.44,6  15.44,7 | ACLR2 | | n71 | n85 | 680.5 | 35 | 15 | 20 (Rbstart=168) | 730.5 | 5 | 265,6  32.35,7 | ACLR1 | | NOTE 4: Applicable to UE not supporting n71 optional maximum symmetrical UL/DL channel bandwidth  NOTE 5: Applicable to UE supporting n71 optional maximum symmetrical UL/DL channel bandwidth.  NOTE 6: Applicable to UE’s supporting PC2 with 1Tx  NOTE 7: Applicable to UE’s supporting PC2 with 2Tx | | | | | | | | | |   **Proposal 6:** In Table 7.3A.6-1a-1 and for CA\_n71-n85, consider correcting the Band n85 5MHz CBW MSD due to Band n71 35MHz UL CBW PC22Tx cross-band isolation interference to 29dB. |
| [**R4-2514499**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514499.zip) | Skyworks Solutions Inc. | Observation: Based on the partial parsing of TS 38.101-1 (cf. Annex), we find that the number of Band n41 MSD requirements that need to be re-evaluated may become significant. The partial parsing of TS 38.101-1 indicates that the band n41 5 MHz CBW MSD ranges from 5.2 dB to ~ 30 dB.  Proposal: To simplify the re-evaluation of a significant number of Band n41 5MHz CBW MSD requirements, application of the following MSD correction factors is proposed:   * 3 dB for n41 5 MHz CBW MSD >10 dB * 2.5 dB for 8 dB ≤ n41 5 MHz CBW MSD ≤ 10 dB * 2.0 dB for 5 dB ≤ n41 5 MHz CBW MSD ≤ 7 dB   The correction factor could be easily extended to MSD less than 5 dB should such a case be found after all MSD tables are parsed. It is proposed that these changes are filed in the same CR that removes the redundant dual-UL IMD MSD requirements. |

## Open issues summary

*Before Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 1-1: 10MHz test points for band n41

*Sub-topic description:*

*In RAN4 #116 meeting, it was agreed in WF R4-2511779*

* **Band n41/n90:**
  + **5MHz CBW remains optional. Update 38.101-1 and 38.101-3 MSD test points for 10MHz CBW with CR at next meeting to ensure that the band n41/n90 MSD requirements are no longer specified for 5MHz CBW.**

**Issue 1-1: Update MSD tables for 10MHz of Band n41**

* Proposals
  + Proposal 1: Check the MSD values for 10MHz of n41 in draft CRs (R4-2513296 and R4-2513297) for 38.101-1 and 38.101-3 (Murata)
  + Proposal 2: To simplify the re-evaluation of a significant number of Band n41 5MHz CBW MSD requirements, application of the following MSD correction factors is proposed: (Skyworks)
    - 3 dB for n41 5 MHz CBW MSD >10 dB
    - 2.5 dB for 8 dB ≤ n41 5 MHz CBW MSD ≤ 10 dB
    - 2.0 dB for 5 dB ≤ n41 5 MHz CBW MSD ≤ 7 dB
* Recommended WF
  + TBA

#### Related CRs

|  |  |  |  |
| --- | --- | --- | --- |
| **T-doc** | **Company** | **Comments collection** | **Recommend** |
| [**R4-2513296**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513296.zip)(R19) | Murata Manufacturing Co Ltd. | Draft CR 38.101-1 to change MSD for n41 10MHz CBW |  |
|  |  |  |  |
| [**R4-2513297**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513297.zip)(R19) | Murata Manufacturing Co Ltd. | Draft CR 38.101-3 to change MSD for n41 10MHz CBW |  |
|  |  |  |  |

### Sub-topic 1-2: n71 UL CBW 25MHz

*Sub-topic description*

*In RAN4 #116 meeting, it was agreed in WF R4-2511779*

* **Band n71:**
  + **Companies are invited to study how to mandate symmetrical UL 25MHz / DL 25MHz CBW for band n71 as mandatory support, in particular**
    - **Study removing Note 10 from the DL 25MHz REFSENS requirement,**
    - **Study the impact on PC3 CA\_n5A-n71A and PC3 PC2 CA\_n71A-n85A cross-band isolation MSD due to BCS4/5 new greatest CBW,**
  + **UL 30MHz and UL 35MHz remain optional CBW,**
  + **No change to the band n71 asymmetric channel bandwidths requirements, i.e.** 
    - **No change to the UL 20MHz / DL 30MHz and UL 20MHz / DL 35MHz REFSENS**
    - **No change to the UL 30MHz / DL 30MHz and UL 35MHz / DL 35MHz REFSENS**
    - **No need to study UL 25MHz / DL 30MHz and UL 25MHz / DL 35MHz REFSENS**

**Issue 1-2-1: n71**

* Proposals
  + Proposal 1: Modify n71 Channel Bandwidths, REFSENS, and UL RB allocation for REFSENS as follows for Rel-19 (Qualcomm, Skyworks)

| **NR Band** | **SCS (kHz)** | **UE Channel bandwidth (MHz)** | | | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **3** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** | **60** | **70** | **80** | **90** | **100** |
| n71 | 15 |  | 5 | 10 | 15 | 20 | 25~~12~~ | 3012 | 3512 |  |  |  |  |  |  |  |  |
|  | 30 |  |  | 10 | 15 | 20 | 25~~12~~ | 3012 | 3512 |  |  |  |  |  |  |  |  |
| NOTE 12: This UE channel Bandwidth is optional for uplink in this release of the specification. | | | | | | | | | | | | | | | | | |

| **Operating band / SCS / Channel bandwidth** | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Operating Band** | **SCS kHz** | **3**  **MHz (dBm)** | **5**  **MHz (dBm)** | **10**  **MHz (dBm)** | **15**  **MHz (dBm)** | **20**  **MHz (dBm)** | **25**  **MHz (dBm)** | **30 MHz (dBm)** | **35 MHz (dBm)** | **40**  **MHz (dBm)** | **45 MHz (dBm)** | **50**  **MHz (dBm)** |
| n71 | 15 |  | -97.2 | -94.0 | -91.6 | -86.0 | ~~-84.1~~~~9~~  -74.8~~10~~ | -82.59  -67.110 | -80.79  -64.010 |  |  |  |
| 30 |  |  | -94.3 | -91.9 | -87.4 | ~~-84.2~~~~9~~  -74.9~~10~~ | -82.69  -67.210 | -80.89  -64.110 |  |  |  |
| NOTE 2: The transmitter shall be set to PUMAX as defined in clause 6.2.4  NOTE 9: Applies to UEs that support a maximum uplink BW of 20 MHz in this band.  NOTE 10: Applies to UEs that support optional symmetric UL/DL for this BW. | | | | | | | | | | | | |

| **Operating band / SCS (kHz) / Channel bandwidth (MHz) / Duplex mode** | | | | | | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Operating Band** | **SCS** | **3** | **5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** | **60** | **70** | **80** | **90** | **100** | **Duplex Mode** |
| n71 | 15 |  | 25 | 251 | 201 | 201 | 201~~,6~~ | 201,6 | 201,6 |  |  |  |  |  |  |  |  | FDD |
|  | 30 |  |  | 121 | 101 | 101 | 101~~,6~~ | 101,6 | 101,6 |  |  |  |  |  |  |  |  |  |
| Note 1: UL resource blocks shall be located as close as possible to the downlink operating band but confined within the transmission bandwidth configuration for the channel bandwidth (Table 5.3.2-1).  Note 3: For DL channel bandwidths that do not have symmetric UL channel bandwidth, highest valid UL configuration with lowest TX-RX separation (Table 5.4.4-1) shall be used unless otherwise specified.  Note 6: UEs supporting the optional symmetrical UL/DL bandwidths shall use this UL configuration. For UEs not supporting this uplink channel bandwidth, the UL configuration of the 20MHz UL channel bandwidth and the nominal Tx-Rx frequency separation specified in Table 5.4.4-1 shall be used, i.e. ΔFTX-RX as defined in clause 5.3.6 does not apply. | | | | | | | | | | | | | | | | | | |

* Recommended WF
  + Check whether proposal 1 is agreeable.

**Issue 1-2-2: PC3 CA including n71**

* Proposals
  + Proposal 1: MSD values for PC3 CA\_n5A-n71A and PC3 CA\_n71A-n85A when n71 UL CBW is 25MHz. (Murata)

| **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** |
| n71 | n5 | 685.5 | 25 | 15 | 20 (RBstart=113) | 871.5 | 5 | 2.0 | >ACLR2 |
| n71 | n85 | 685.5 | 25 | 15 | 20 (RBstart=113) | 730.5 | 5 | 10.16 | ACLR2 |
| n71 | n85 | 680.5 | 35 | 15 | 20 (Rbstart=168) | 730.5 | 5 | 237 | ACLR1 |

* + Proposal 2: Modify CA\_n71A-n85A MSD with n71 UL as follows (Qualcomm)

| **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** |
| n71 | n5 | ~~688~~685.5 | ~~20~~25 | 15 | 20 (RBstart=86) | 871.5 | 5 | 2.0 | >ACLR2 |
| n71 | n85 | 688 | 20 | 15 | 20 (RBstart=86) | 730.5 | 5 | ~~8.2~~116 | ACLR2 |
| n71 | n85 | 680.5 | 35 | 15 | 20 (Rbstart=168) | 730.5 | 5 | 237 | ACLR1 |

* + Proposal 3: Modify CA\_n71A-n85A MSD with n71 UL as follows (Skyworks)

| **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** |
| n71 | n5 | 685.5 | 25 | 15 | 20 (RBstart=113) | 871.5 | 5 | 2.06 | >ACLR2 |
| n71 | n85 | 685.5 | 25 | 15 | 20 (RBstart=113) | 730.5 | 5 | 9.46 | ACLR2 |
| n71 | n85 | 680.5 | 35 | 15 | 20 (Rbstart=168) | 730.5 | 5 | 237 | ACLR1 |

* Recommended WF
  + Introduce superscript 6 for the MSD value of CA\_n5-n71;
  + Further discuss the MSD value for CA\_n71-n85 based on below table, whether the average value can adopt?

| **UL band** | **DL band** | | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD (dB)** | | | | **Cross-band**  **Interference**  **source** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | Murata | Qualcomm | Skyworks | **Average** |
| n71 | n5 | | 685.5 | 25 | 15 | 20 (RBstart=113) | 871.5 | 5 | 2.0 | 2.0 | 2.06 |  | >ACLR2 |
| n71 | n85 | | 685.5 | 25 | 15 | 20 (RBstart=113) | 730.5 | 5 | 10.16 | 116 | 9.46 | 10.2 | ACLR2 |
|  | | NOTE 6: Applicable to UE not supporting n71 optional maximum symmetrical UL/DL channel bandwidth | | | | | | | | | | | |

**Issue 1-2-3: PC2 CA including n71**

* Proposals
  + Proposal 1: MSD value for PC2 CA\_n71A-n85A when n71 UL CBW is 25MHz. (Murata)

| **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** |
| n71 | n85 | 685.5 | 25 | 15 | 20 (RBstart=113) | 730.5 | 5 | 13.14,6  16.14,7 | ACLR2 |
| n71 | n85 | 680.5 | 35 | 15 | 20 (Rbstart=168) | 730.5 | 5 | 265,6  32.35,7 | ACLR1 |

* + for CA\_n71-n85, consider adopting the changes highlighted in yellow for the Band n85 MSD due to Band n71 25MHz UL CBW PC2 cross-band isolation interference. (Skyworks)

| **UL band** | **DL band** | **UL Fc** | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD** | **Cross-band**  **Interference**  **source** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(MHz)** | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | **(dB)** |
| n71 | n85 | 685.5 | 25 | 15 | 20 (RBstart=113) | 730.5 | 5 | 12.44,6  15.44,7 | ACLR2 |
| n71 | n85 | 680.5 | 35 | 15 | 20 (Rbstart=168) | 730.5 | 5 | 265,6  ~~32.3~~295,7 | ACLR1 |
| NOTE 4: Applicable to UE not supporting n71 optional maximum symmetrical UL/DL channel bandwidth  NOTE 5: Applicable to UE supporting n71 optional maximum symmetrical UL/DL channel bandwidth.  NOTE 6: Applicable to UE’s supporting PC2 with 1Tx  NOTE 7: Applicable to UE’s supporting PC2 with 2Tx | | | | | | | | | |

* Recommended WF
  + Further discuss the MSD value for PC2 CA\_n71A-n85A when n71 UL CBW is 25MHz, whether the average values can adopt
  + Check whether MSD value need update for PC2 with 2Tx CA\_n71A-n85A when n71 UL CBW is 35MHz

| **UL band** | **DL band** | **UL Fc** | | **UL BW** | **SCS of UL band** | **UL RB Allocation** | **DL Fc** | **DL BW** | **MSD (dB)** | | | **Cross-band**  **Interference**  **source** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(MHz)** | | **(MHz)** | **(kHz)** | **LCRB** | **(MHz)** | **(MHz)** | Murata | Skyworks | **Average** |
| n71 | n85 | 685.5 | | 25 | 15 | 20 (RBstart=113) | 730.5 | 5 | 13.14,6  16.14,7 | 12.44,6  15.44,7 | 12.8  15.8 | ACLR2 |
| n71 | n85 | 680.5 | | 35 | 15 | 20 (Rbstart=168) | 730.5 | 5 | 265,6  32.35,7 | 265,6  ~~32.3~~295,7 |  | ACLR1 |
|  |  | | NOTE 4: Applicable to UE not supporting n71 optional maximum symmetrical UL/DL channel bandwidth  NOTE 5: Applicable to UE supporting n71 optional maximum symmetrical UL/DL channel bandwidth.  NOTE 6: Applicable to UE’s supporting PC2 with 1Tx  NOTE 7: Applicable to UE’s supporting PC2 with 2Tx | | | | | | | | | |

#### Related CRs

|  |  |  |  |
| --- | --- | --- | --- |
| **T-doc** | **Company** | **Comments collection** | **Recommend** |
| [**R4-2513325**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513325.zip) (R19) | Murata Manufacturing Co Ltd. | Draft CR 38.101-1 to change MSD for n71 25MHz CBW |  |
|  |  |  |  |

### Sub-topic 1-3: ETSI emission requirements for IoT NTN bands 253 and 255 and NR NTN band n255

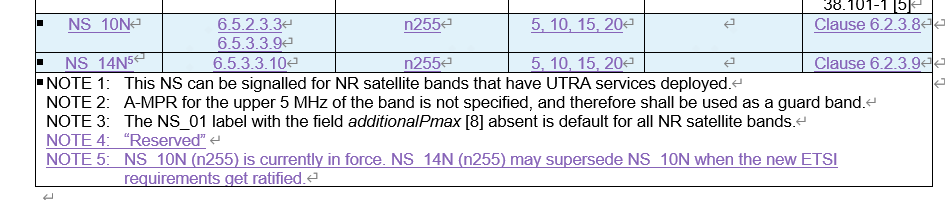
*Sub-topic description*

*In RAN4 #116 meeting, NS\_09N/NS\_13N for new bands n253 and n250, NS\_10N/NS\_14N for new band n251 had been introduced in Rel-19 CR R4-2511961.*

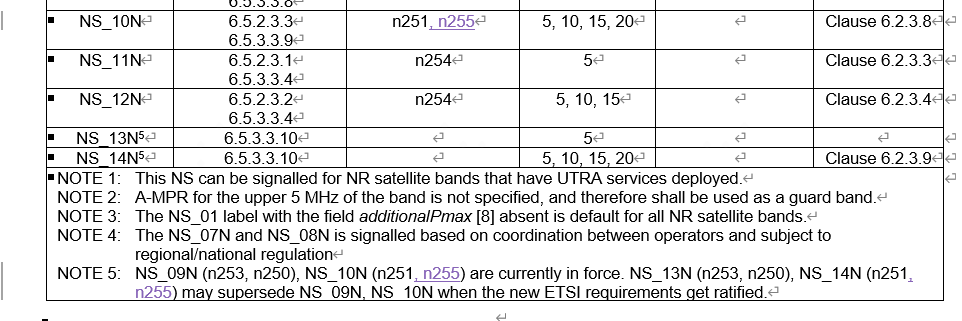
*Open issues and candidate options before meeting:*

**Issue 1-3-1: n255**

* Proposals
  + Proposal 1: Update the n255 specifications in TS 38.101-5 to capture the two sets of requirements and associated NS flags/A-MPR for PC3 NR NTN UE from Rel-17 specifications onwards. (ViaSat)



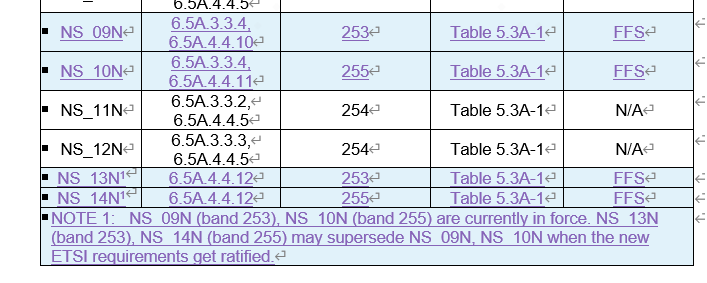
* + Proposal 2: Update the Rel-19 n255 specifications to specify the A-MPR for PC2 NR NTN UE for the flags associated with the two sets of requirements. (ViaSat)



* Recommended WF
  + TBA

**Issue 1-3-2: 253 and 255**

* Proposals
  + Proposal 1: Update the band 253 and 255 specifications in TS 36.102 to capture the two sets of requirements and associated NS flags/A-MPR for PC3 IoT NTN UE from Rel-18 specifications onwards. (ViaSat)



* + Proposal 2: Update the Rel-19 specifications for b255 to specify the A-MPR for PC2 and PC1 IoT NTN UEs for the flags associated with the two sets of requirements. (ViaSat)
* Recommended WF
  + TBA

#### Related CRs

|  |  |  |  |
| --- | --- | --- | --- |
| **T-doc** | **Company** | **Comments collection** | **Recommend** |
| [**R4-2513844**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513844.zip)(R17)  CAT-A: (had submitted)  [**R4-2513843**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513843.zip) (R18)  [**R4-2513842**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513842.zip) (R19) | ViaSat Satellite Holdings Ltd | For 38.101-5  Updates to unwanted emissions specifications for NR NTN band n255 to align with ETSI emissions requirements |  |
|  |  |  |  |
| [**R4-2513859**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513859.zip)(R18)  CAT-A: (had submitted)  [**R4-2513858**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513858.zip)(R19) | ViaSat Satellite Holdings Ltd | For 36.102  Updates to unwanted emissions specifications for IoT NTN bands 253 and 255 to align with ETSI emissions regulations |  |
|  |  |  |  |

### Sub-topic 1-4: CRs for mmW in NR

|  |  |  |  |
| --- | --- | --- | --- |
| **T-doc** | **Company** | **Comments collection** | **Recommend** |
| [**R4-2514002**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514002.zip)(R15)  CAT-A:  R4-2514003  R4-2514004  R4-2514005  R4-2514006 | ZTE Corporation,Sanechips | Draft CR for 38.101-2 Correct the descriptions for BWintraCA and A-MPR NS\_202  Moderator: The title in the cover page has a typo, it said the draft CR is for 38.101-1. |  |
|  |  |  |  |

### Sub-topic 1-5: CRs for NR-NTN L-bands

|  |  |  |  |
| --- | --- | --- | --- |
| **T-doc** | **Company** | **Comments collection** | **Recommend** |
| [**R4-2513845**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513845.zip)(R19) | Apple | For 38.101-5 |  |
|  |  |  |  |
| [**R4-2513846**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513846.zip)(R19) | Apple | For 38.863 |  |
|  |  |  |  |