**3GPP TSG-RAN WG4 Meeting #116bis R4-2514520  
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 (23)
  + 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 spectrum related WI maintenance

*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. |
| [**R4-2514293**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514293.zip) | Huawei, HiSilicon | Proposal 1: Update the following tables to make UL 25 MHz CBW mandatory at n71.  Table 7.3.2-1a: Two antenna port reference sensitivity QPSK PREFSENS for FDD bands   | 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 | -84.19  -74.8 | -82.59  -67.110 | -80.79  -64.010 |  |  |  | | 30 |  |  | -94.3 | -91.9 | -87.4 | -84.29  -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 3: The requirement is modified by -0.5 dB when the assigned NR channel bandwidth is confined within 1475.9 - 1510.9 MHz.  NOTE 4: Void  NOTE 5: Void  NOTE 6: Values are modified by -0.5dB when carrier channel BW is between 865MHz and 894MHz.  NOTE 7: Void.  NOTE 8: DL channels overlapping the 612-617MHz range have 0.5dB added to the REFSENS  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. | | | | | | | | | | | | |   Table 7.3.2-1c Reference Sensitivity Degradation from PC3 to PC2 for FDD bands for UE not supporting Tx Diversity   | Operating Band | **3**  MHz (dB) | 5  MHz (dB) | 10  MHz (dB) | 15  MHz (dB) | 20  MHz (dB) | 25  MHz (dB) | 30 MHz (dB) | 35 MHz (dB) | 40  MHz (dB) | 45 MHz (dB) | 50  MHz (dB) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | n71 |  | 0.5 | 0.9 | 0.9 | 2.2 | 2.42  2.5 | 2.52  2.43 | 2.92  3.13 |  |  |  | | NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2.4  NOTE 2: Applies to UEs that support a maximum uplink BW of 20 MHz in this band.  NOTE 3: Applies to UEs that support optional symmetric UL/DL for this BW. | | | | | | | | | | | |   Table 7.3.2-1d Reference Sensitivity Degradation from PC3 to PC2 for FDD bands for UE supporting Tx Diversity   | Operating Band | **3**  MHz (dB) | 5  MHz (dB) | 10  MHz (dB) | 15  MHz (dB) | 20  MHz (dB) | 25  MHz (dB) | 30 MHz (dB) | 35 MHz (dB) | 40  MHz (dB) | 45 MHz (dB) | 50  MHz (dB) | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | n71 |  | 1.1 | 1.1 | 1.7 | 5.5 | 5.92  6.9 | 6.22  7.23 | 6.52  7.33 |  |  |  | | NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2G.4  NOTE 2: Applies to UEs that support a maximum uplink BW of 20 MHz in this band.  NOTE 3: Applies to UEs that support optional symmetric UL/DL for this BW. | | | | | | | | | | | | |

## 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

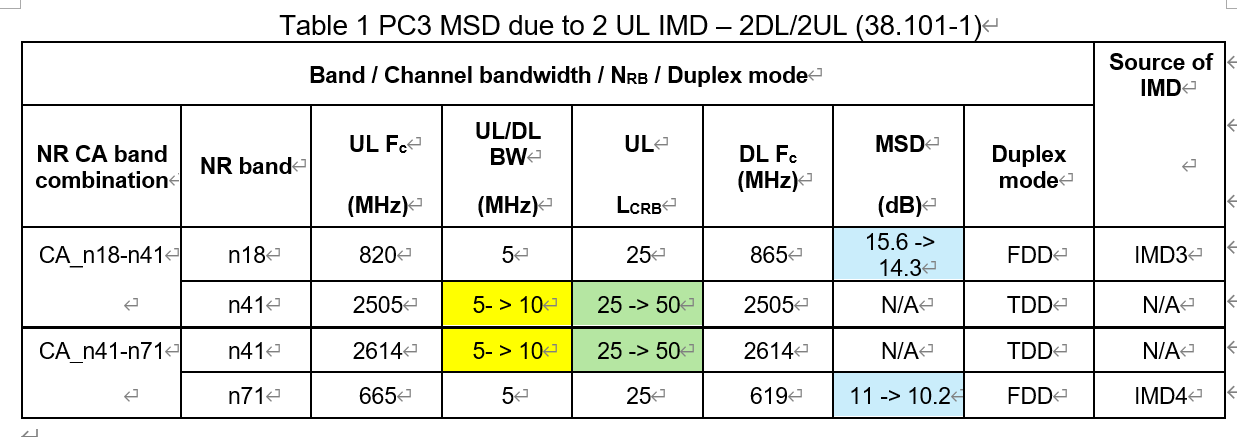
*Sub-topic description:*

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

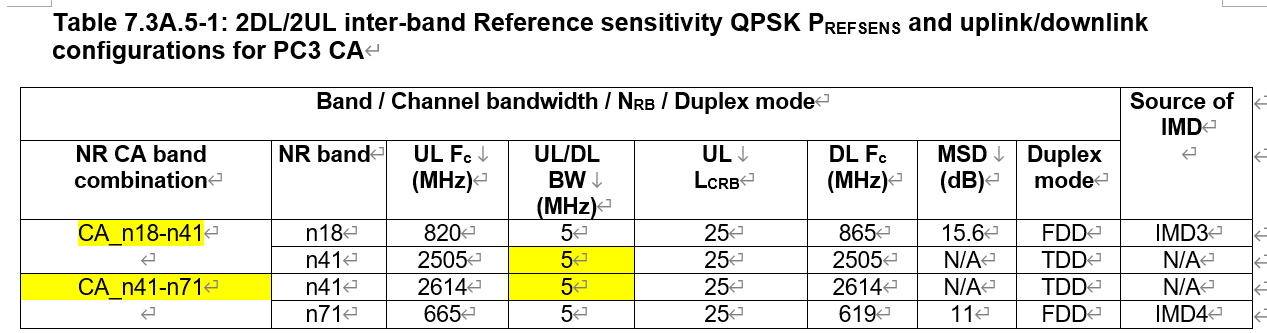
* **Band n41/n90:**
  + **5MHz CBW remains optional. Update 38.101-1 and 38.101-3 MSD test points for 10MHz CBW with CR at next meeting to ensure that the band n41/n90 MSD requirements are no longer specified for 5MHz CBW.**

**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), only copy the table for 2DL/2UL PC3 MSD:



* + 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
  + Discuss whether only the MSD values of n41 with 5Mhz CBW in the BC need re-evaluate as Skyworks’ proposal, or the MSD values of the other Band(s) combined with n41 also need re-evaluate as Murata’s proposal.
* Recommended WF after NWM discussion:
  + MSD for n41 DL within BC:
    - 2dB for n41 5MHz CBW MSD>=10dB
    - 1.5dB for 7dB<= n41 5MHz CBW MSD < 10dB
    - 1dB for n41 5MHz CBW MSD < 7dB
  + MSD for other band(s) aggregated with n41 within BC:
    - 1.5dB for DL band MSD>=10dB
    - 1dB for 7dB<= DL band MSD < 10dB
    - 0.5dB for DL band < 7dB

Skyworks: will work with Murata on a solution and come back next meeting.

Murata: confirm the plan with skyworks and come back next time.

#### 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  NWM comments:  From Skyworks:  We think this CR can not be approved at this meeting, but could be at the next meeting by addressing the following suggestions:  1) Any change needs to be ported to Rel 19.3.0,  2) Some 1UL MSD requirements also need to be revisited, for example the CA\_n39-n41 Rx harmonic mixing MSD requirements,  3) To minimize workload, and yet ensure a certain level of technical correctness, we would like to suggest using a look-up table as proposed in R4-2514499 for cases where the band n41 MSD needs to be corrected,  4) for cases where changing the band n41 CBW impacts the MSD of another DL band, we propose to not change the MSD requirement.  Proposals on 3) and 4) assume that the interference power affecting the MSD of band n41 or another DL band does not change. This may not always be true since when the band n41 UL CBW and UL LCRB are increased , the IMDx total power may be spread across a wider BW, hence its PSD may be lower. We believe this level of technical analysis is not needed especially when the MSDs are high or very high. We are open to further discuss offline. We may be able to find a compromise solution to avoid a WF and come with a joint CR at next meeting?  From Murata:  Response to Skyworks's flag  Thank you, Skyworks for comments.  First of all, Skyworks and Murata had a offline discussion with following agreements.  1) The CRs can be postponed next meeting to be ported to Rel 19.3.0  2) 1UL MSD would be added in CRs in next meeting  3) LUT approach is OK for us as Skyworks paper R4-2514499  4) Based on offline discussion with Skyworks, we agreed to revise the LUT values to compromise Skyworks's assumption (interferer power is same) and Murata's assumption (interferer power is dependent on spectrum spreading factor with IMD order and index for both UL and DL). This approach also applies to n41 UL cases.  n41 DL:  2dB for n41 5MHz CBW MSD>=10dB  1.5dB for 7dB<= n41 5MHz CBW MSD < 10dB  1dB for n41 5MHz CBW MSD < 7dB  n41 UL:  1.5dB for DL band MSD>=10dB  1dB for 7dB<= DL band MSD < 10dB  0.5dB for DL band < 7dB  Finally, if this agreement is OK to other companies, the revised CRs (38.101-1 led by Skyworks and 38.101-3 led by Murata) will be submitted next meeting.  It is very welcome if other interesting companies join the discussion.  From Qualcomm:  Qualcomm [Antti] flags R4-2513296/3297. Please work together with Skyworks on the dB conversion principle, overall numbers are well aligned between Sky and Murata | Postpone |
| **[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 | Postpone |

### 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)
    - Channel bandwidth

| **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. | | | | | | | | | | | | | | | | | |

* + - PC3 REFSENs

| **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. | | | | | | | | | | | | |

* + - Uplink configuration

| **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: Update the following tables to make UL 25 MHz CBW mandatory at n71 (Huawei)
    - PC3 PREFSENS

| 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 | -84.19  -74.8 | -82.59  -67.110 | -80.79  -64.010 |  |  |  |
| 30 |  |  | -94.3 | -91.9 | -87.4 | -84.29  -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 3: The requirement is modified by -0.5 dB when the assigned NR channel bandwidth is confined within 1475.9 - 1510.9 MHz.  NOTE 4: Void  NOTE 5: Void  NOTE 6: Values are modified by -0.5dB when carrier channel BW is between 865MHz and 894MHz.  NOTE 7: Void.  NOTE 8: DL channels overlapping the 612-617MHz range have 0.5dB added to the REFSENS  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. | | | | | | | | | | | | |

* + - RSD from PC3 to PC2 for UE not supporting Tx Diversity

| Operating Band | **3**  MHz (dB) | 5  MHz (dB) | 10  MHz (dB) | 15  MHz (dB) | 20  MHz (dB) | 25  MHz (dB) | 30 MHz (dB) | 35 MHz (dB) | 40  MHz (dB) | 45 MHz (dB) | 50  MHz (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| n71 |  | 0.5 | 0.9 | 0.9 | 2.2 | 2.42  2.5 | 2.52  2.43 | 2.92  3.13 |  |  |  |
| NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2.4  NOTE 2: Applies to UEs that support a maximum uplink BW of 20 MHz in this band.  NOTE 3: Applies to UEs that support optional symmetric UL/DL for this BW. | | | | | | | | | | | |

* + - RSD from PC3 to PC2 for UE supporting Tx Diversity

| Operating Band | **3**  MHz (dB) | 5  MHz (dB) | 10  MHz (dB) | 15  MHz (dB) | 20  MHz (dB) | 25  MHz (dB) | 30 MHz (dB) | 35 MHz (dB) | 40  MHz (dB) | 45 MHz (dB) | 50  MHz (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| n71 |  | 1.1 | 1.1 | 1.7 | 5.5 | 5.92  6.9 | 6.22  7.23 | 6.52  7.33 |  |  |  |
| NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2G.4  NOTE 2: Applies to UEs that support a maximum uplink BW of 20 MHz in this band.  NOTE 3: Applies to UEs that support optional symmetric UL/DL for this BW. | | | | | | | | | | | |

* Recommended WF
  + Check whether below proposals are agreeable:
    - Channel bandwidth

| **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. | | | | | | | | | | | | | | | | | |

* + - Uplink configuration

| **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. | | | | | | | | | | | | | | | | | | |

* + Further discuss whether the PC3 REFSFNS and PC2 RSD for DL CBW 25MHz under the configuration of the maximum uplink BW of 20 MHz is needed when UL CBW 25MHz become mandatory.
    - PC3 REFSENs

| **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 | -84.19  -74.8~~10~~ | -82.59  -67.110 | -80.79  -64.010 |  |  |  |
| 30 |  |  | -94.3 | -91.9 | -87.4 | -84.29  -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. | | | | | | | | | | | | |

* + - RSD from PC3 to PC2 for UE not supporting Tx Diversity

| Operating Band | **3**  MHz (dB) | 5  MHz (dB) | 10  MHz (dB) | 15  MHz (dB) | 20  MHz (dB) | 25  MHz (dB) | 30 MHz (dB) | 35 MHz (dB) | 40  MHz (dB) | 45 MHz (dB) | 50  MHz (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| n71 |  | 0.5 | 0.9 | 0.9 | 2.2 | 2.42  2.5 | 2.52  2.43 | 2.92  3.13 |  |  |  |
| NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2.4  NOTE 2: Applies to UEs that support a maximum uplink BW of 20 MHz in this band.  NOTE 3: Applies to UEs that support optional symmetric UL/DL for this BW. | | | | | | | | | | | |

* + - RSD from PC3 to PC2 for UE supporting Tx Diversity

| Operating Band | **3**  MHz (dB) | 5  MHz (dB) | 10  MHz (dB) | 15  MHz (dB) | 20  MHz (dB) | 25  MHz (dB) | 30 MHz (dB) | 35 MHz (dB) | 40  MHz (dB) | 45 MHz (dB) | 50  MHz (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| n71 |  | 1.1 | 1.1 | 1.7 | 5.5 | 5.92  6.9 | 6.22  7.23 | 6.52  7.33 |  |  |  |
| NOTE 1: The transmitter shall be set to PUMAX as defined in clause 6.2G.4  NOTE 2: Applies to UEs that support a maximum uplink BW of 20 MHz in this band.  NOTE 3: Applies to UEs that support optional symmetric UL/DL for this BW. | | | | | | | | | | | |

**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  NWM comments:  From Skyworks:  R4-2513325 (Skyworks flag):  Thank you Murata for this CR. This can not be agreed as this meeting as many other RF requirements are impacted by mandating the support of 25MHz CBW for band n71.  All other TDocs:  It seems like a WF is needed to gather all inputs and reach consensus where we have different proposals, like MSD evaluations for example.  From Murata:  Response to Skyworks flog  Thank you Skyworks for comment.  We are OK to reach an agreement for MSD first and postpone CR to next meeting.  From Qualcomm:  Qualcomm [Antti} flags R4-2513325. Lets average MSD numbers among QC, Sky, Murata | Postpone |

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

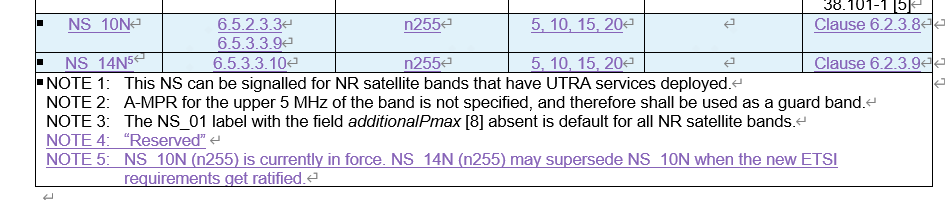
*Sub-topic description*

*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.*

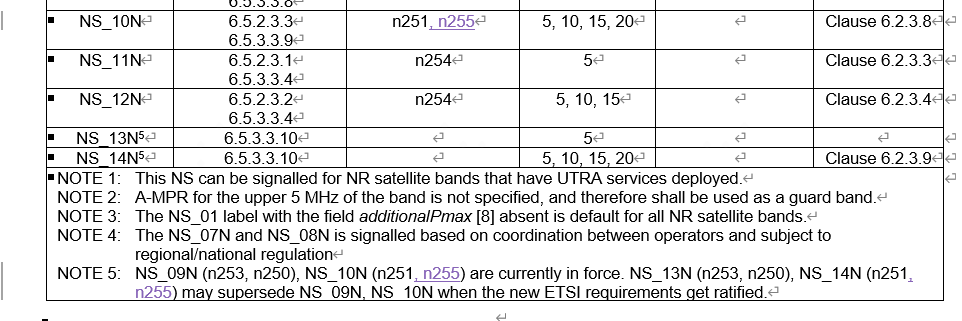
*Open issues and candidate options before meeting:*

**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)

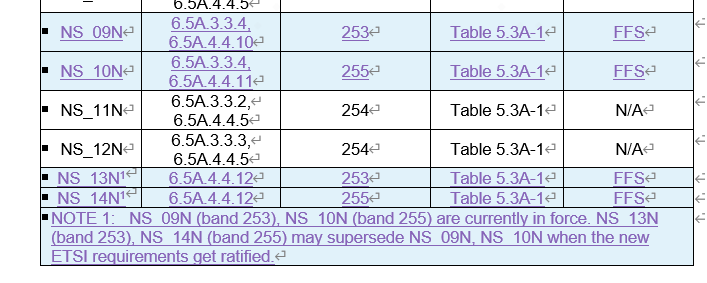


ViaSat:the CR is to address the regulatory requirement

* Recommended WF
  + TBA
* Recommended WF after NWM discussion:
  + Whether introduce new NS flags in frozen release
    - Option 1: Rel-17/18 are frozen releases. Adding NS flags would be NBC. New NS flags can be added to the open release and enabled for earlier releases via Rel-Independent mechanism. (Huawei)
    - Option 2: Further evaluations are needed on which release a potential change could be done considering existing implementations. (Qualcomm)

**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

|  |  |  |  |
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| **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  NWM comments:  From Huawei:  Huawei (Jin) flags all CRs from ViaSat. Rel-17/18 are frozen releases. Adding NS flags would be NBC. New NS flags can be added to the open release and enabled for earlier releases via Rel-Indep mechnism.  From Skyworks:  (Dominique) Flag R4-2513843, R4-2513844, R4-2513858, R4-2513859  As discussed today offline, there should not be any band number associated to NS\_13 and NS\_14 in all A\_MPR NS tables as agreed in last RAN4#116 meeting.  From Qualcomm:  Qualcomm (Toni) flag R4-2513842, R4-2513843, R4-2513844, R4-2513858 and R4-2513859. Further discussions are needed on which requirements are needed for n255/255 and when changes should be made considering also the timeline in ETSI. Further evaluations are needed on which release a potential change could be done considering existing implementations. | Postpone |
| **[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 | Postpone |

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

|  |  |  |  |
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| **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. | Endorse |

### 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  NWM comments:  Qualcomm (Toni) flag R4-2513845. The changes leave refsens for wider DL CBW untested. As such, instead of only removing the erroneous UL configuration, refsens for wider DL CBW should be verified with 5 MHz UL configuration aligned with the approach used in TN. Flexible Tx-RX test points need changes as there cannot be UL 20 MHz + DL 20 MHz test point. | Revised |
| **[R4-2513846](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513846.zip)** (R19) | Apple | For 38.863 | Agreeable |