**3GPP TSG-RAN WG4 Meeting # 110 R4-2401062**

**Athens, Greece, 26th Feb. – 1st March, 2024**

**Agenda item:** 6.4

**Source:** Moderator (Meta Ireland)

**Title:** Topic summary for [110][103] R18\_UERF\_maintenance

**Document for:** Information

# Introduction

*Briefly introduce background, the scope of the topic summary discussion (e.g. list of treated agenda items) and provide some guidelines for the topic discussion lists if necessary.*

In the [110][103] R18\_UERF\_maintanance, RAN4 treat the contributions for Rel-18 maintenance for LTE and NR which were already completed in Rel-18 WIs.

Candidate target are listed as follows.

* Topic #1: Maintenance of Spectrum related WIs in Rel-18 (Agenda Item 6.1)
  + Sub-Topic 1-1: High power UE (PC 1.5) for NR TDD bands (2 Tdocs)
  + Sub-Topic 1-2: Enhancement for 700/800/900MHz band combinations (6 Tdocs)
  + Sub-Topic 1-3: Introduction of evolved shared spectrum bands (4 Tdocs)
  + Sub-Topic 1-4: New bands and BW allocation for 5G terrestrial broadcast - part 2 (7 Tdocs)
  + Sub-Topic 1-5: Introduction of 900 MHz NR Band for BS RF in the US (1 Tdoc)
  + Sub-Topic 1-6: Introduction of the satellite L-/S-band for UE RF (3 Tdocs)
  + Sub-Topic 1-7: Introduction of a new FDD band (L+S band) for IoT NTN operation (4 Tdocs)
  + Sub-Topic 1-8: Correction on missing CA band combinations in TS38.101-3 (1 Todc)
* Topic #2: Maintenance of Non-spectrum related WIs in Rel-18 (Agenda Item 6.2)
  + Sub-Topic 2-1: NR Channel raster enhancement for TN (11 Tdocs)
  + Sub-Topic 2-2: NR Channel raster enhancement for NTN (8 Tdocs)
  + Sub-Topic 2-3: NR channel raster for RedCap (2 Tdocs)
  + Sub-Topic 2-4: NB-IoT/eMTC Core requirements for NTN UE (9 Tdocs)
  + Sub-Topic 2-5: NR Support for UAV (7 Tdocs)
  + Sub-Topic 2-6: Enhanced LTE Support for UAV (3 Tdocs)
  + Sub-Topic 2-7: Other dedicated Rel-18 WIs (5 Tdocs)
* Topic #3: Rel-18 TEI (Agenda Item 6.3.2)
  + Sub-Topic 3-1: TEI on UL CA architecture of n5-n8 (1Tdoc)

# Topic #1: Maintenance of Spectrum related WIs in Rel-18

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2400229](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400229.zip) (CR) | China Mobile | Title: CR for 38101-1 to add PC1.5 for band n39 and annex L for band n39  **This is a Cat. B CR for TS38.101-1 in Rel-18**  **Proposal:** To add band n39 for supporting of PC1.5 UE class in Table 6.2.1-1 and to add the indication of modified MPR behaviour for band n39 in Annex L. |
| [R4-2401458](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401458.zip)  (CR) | Spreadtrum Communication | Title: (HPUE\_NR\_FR1\_TDD\_R18) CR for TS 38.101-1 to add n39 power class and mpr behavior modified  **This is a Cat. B CR for TS38.101-1 in Rel-18**  Reason: This WI which contains 3 bands, include n34,n39 and n40,and this WI has been concluded,in TS 38.101-1 i40 contains n34 and n40,but omits n39 power class and mpr behavior modified in spec.  **Proposal:** To add band n39 for supporting of PC1.5 UE class in Table 6.2.1-1 and to add the indication of modified MPR behaviour for band n39 in Annex L. |
| [R4-2400053](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400053.zip)  (CR) | CATT | Title: (NR\_700800900\_combo\_enh) Maintenance CR for 700800900: TS 38.101-1  **This is a Cat. F CR for TS38.101-1 in Rel-18**  **Proposal:** Correct the following errors,   1. CA\_n26-n28->CA\_n26A-n28A 2. Typo for “cotiguous” 3. Missing symbol in “roll-off factor ~~~~ α= 0.22” 4. Chage the position for CA\_n8-n20-n28 and CA\_n7-n78-n105 in the table. |
| [R4-2402059](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402059.zip) (CR) | Huawei, Hisilicon | Title: CR for TS 38.101-1 to maintain low band combos  **This is a Cat. F CR for TS38.101-1 in Rel-18**  Reason: The fallback combo CA\_n5A-n28A only suppports BCS0 without n28 25MHz configuration. Thus, there is an issue for the BCS fallback relationship between CA\_n5A-n28A and CA\_n5A-n28A-n105A.and some typos and editorial errors in TS38.101-1.  **Proposal:**   * To add the missing fallback CA\_n5A-n28A BCS1 for higher order combo CA\_n5A-n28A-n105A. * To correct the editorial errors for CA\_n26A-n28A configuration and CA\_n5A-n28A-n105A MSD |
| [R4-2402058](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402058.zip) (Discussion) | Huawei, Hisilicon | Title: Discussion on RF requirements for CA\_n26(2A)  **This is discussion paper to analyse the spurious emission requirement and A-MPR with UTRA ACLR for CA\_n26(2A) based on the dual antenna RF architecture .**  Observation 1: For n26 UL intra-band CA, the spurious emission protection requirements in n26 DL frequency range and 799~803MHz should be same as n26 single carrier since 37dB and 27dB filter attenuation are assumed respectively. In addition, MPR can guarantee -13dBm/MHz SEM. In total, -40dBm/MHz for 799~803MHz and -50dBm/MHz for n26 DL frequency range can be achieved with FOOB exception NOTE 5.  **Proposal 1:** The brackets for UL CA\_n26(2A) in clause 6.5A.3.2.2 can be removed.Observation 2: if power back-off can be 7~9dB, the 36dB URTA ACLR2 can be achieved.  **Proposal 2:** if AMPR requirements for UL CA\_n26(2A) UTRA can be optimized, then 9 dB can be considered as a harmonized requirement. Otherwise, the brackets can be removed and 20dB is applied. |
| [R4-2400368](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400368.zip) (Discussion) | Skyworks | Title: CA\_n26(2A) A-MPR CA\_NC\_NS\_12-15  **This is discussion paper to analyse [20]dB A-MPR for CA\_n26(2A) for CA\_NC\_NS\_12, 13, 14, and 15.**  Observation 1: One-UL NS\_12, 13, 14, and 15 emission requirements apply to dual-UL CA\_n26(2A) BCS0. However, several CBWs specified in NS\_12, 13, 14, and 15 are not supported by CA\_n26(2A) BCS0. Corrections are needed in the CA\_NC\_NS\_12, 13, 14, and 15 requirements to reflect the supported CBW specified in CA\_n26(2A) BCS0.  **Proposal 1:** We suggest RAN4 adopts the CR [1] following changes to the CA\_NC\_NS\_12, 13, 14, and 15 requirements.  Observation 2: For CA\_n26(2A), 20dB A-MPR is needed for UE signaling dualPA architecture. A higher back-off is needed for UEs with 1PA architecture. Only dualPA architecture is assumed for UL CA\_n26(2A). It is important to emphasize this assumption in the A-MPR Table 6.2A.3.1.2-1.  **Proposal 2: For ULCA\_n26(2A), A-MPR, we recommend adding the footnote highlighted in green to Table 6.2A.3.1.2-1.**  **“**NOTE X: Only applicable for dual PA architecture. The UE shall indicate the dualPA-Architecture for UL CA\_n26(2A).” |
| [R4-2400372](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400372.zip) (Discussion) | Skyworks | Title: On CA\_NC\_NS\_100  **This is discussion paper to analyse UTRA\_ACLR1&2 for CA\_n26(2A) for CA\_NC\_NS\_100.**  Observation 1: For intra-band non-contiguous CA, the applicability of UTRA ACLR in the gap presents similarities with the spectrum emission mask requirement. We observe that:   * For Wgap=10MHz, the UTRAACLR1 of each CC can be verified, but not the UTRAACLR2. * For Wgap=20MHz, both the UTRAACLR1 and the UTRAACLR2 requirements can be verified in the gap.   **Proposal 1:** We suggest RAN4 to discuss whether the UTRA ACLR requirements for intra-band non-contiguous CA should be clarified with regards to its applicability in the gap “Wgap” that separates the two uplink component carriers. As a preliminary input, we propose to consider the following cases:   * 1. **In case the gap bandwidth Wgap between 2 uplink CCs is equal to 10MHz then UTRA ACLR1 requirement applies is the gap;**   2. **In case the gap bandwidth Wgap between 2 uplink CCs is greater of equal to 20MHz then both UTRA ACLR1 and UTRA ACLR2 requirements apply is the gap.** |
| [R4-2400362](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400362.zip) (CR) | Skyworks | Title: CR to TS 38.101-1 Rel-18 CA\_NC\_NS\_12-15  **This is a Cat. F CR for TS38.101-1 in Rel-18**  Reason: In clause 6.5A.3.3.2.2, 6.5A.3.3.2.3, 6.5A.3.3.2.4, 6.5A.3.3.2.5: clarify that the CA\_NC\_NS\_12,13,14,15 requirements can only apply to the channel bandwidth supported by CA\_n26(2A) for BCS0.  **Proposal:** correct some typos and add explicit supporting uplink Channel bandwidths of BCS0 |
| [R4-2400174](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400174.zip) (CR) | Apple, Charter Communications Inc. | Title: Adding support for the VLP mode in US  **This is a Cat. F CR for TS38.101-1 in Rel-18**  Reason: To support the VLP mode in US a new NS flag is needed becase the US regulations limit the VLP mode to U-NII-5 and U-NII-7 sub-bands within the 6GHz unlicensed band.  Proposals:   1. Define NS\_70 for VLP mode in n96 band in US 2. NS\_70 is added to Table 6.2F.1-2 capturing the additional requirements for transmit power density and the frequency ranges. 3. NS\_70 is added to Table 6.2F.3.1-1. 4. A-MPR values from clause 6.2F.3.16 are added for NS\_70 🡪 reuse A-MPR for NS\_67 (Brazil). 5. Emission limits specified in clause 6.5F.3.3.5 are added for NS\_70.   Please detail analysis for VLP mode in US n96 in [R4-2400173](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400173.zip)  **Observation**: Brazil VLP requirements are similar to US VLP. The differences are with respect to maximum mean EIRP for in-band emissions and the operational frequency range. The first one specifies 14dBm for US instead of 17dBm and US defines two frequency ranges. |
| [R4-2400175](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400175.zip) (CR) | Apple, Charter Communications Inc. | Title: Adding support for the VLP mode in US  **This is a Cat. F CR for TR38.849 in Rel-18**  Reason: To support the VLP mode in US a new NS flag is needed becase the US regulations limit the VLP mode to U-NII-5 and U-NII-7 sub-bands within the 6GHz unlicensed band.  Proposals:   1. Define NS\_70 instead of NS\_66in Table 6.1.1-1 for VLP mode in n96 band in US |
| [R4-2400522](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400522.zip) (CR) | Apple | Title: CR to TS38.101-1 Rel-18 CAT-F: On corrections for NR-U R18 A-MPR requirements  **This is a Cat. F CR for TS38.101-1 in Rel-18**  Reason: To consider the PSD requirements are explicitely referenced together with the emission requirements.  **Proposal:** Added the clause 6.2F.1 for requirement reference for NS\_64, NS\_66 and NS\_67 in Table 6.2F.3.1-1 A-MPR requirements. |
| [R4-2400148](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400148.zip) (CR) | Apple | Title: Corrections for the LTE based 5G terrestrial broadcast  **This is a Cat. F CR for TS36.101 in Rel-18**  Reason: For ACS level of 6,7,8MHz PMCH channel, no conclusion was reached at last RAN4 meeting, but instead some tentative values were put in [ ]. Apple measured the ACS values for the PMCH channel 6,7 and 8MHz bandwidth in accordance with the baseline assumption of using the 10MHz filter for Band 107 and Band 108 at the UE side and proposed.  **Proposal:** Update REFSENS and ACS requirements in TS36.101 as follow:      Please find detail ACS measurements results and REFSENS analysis in [R4-2400147](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400147.zip) (Discussion paper) |
| [R4-2400282](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400282.zip) (CR)  [R4-2400715](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400715.zip) (QC Discussion)  [R4-2401883](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401883.zip) (R&S Discussion) | Qualcomm Incorporated, SWR, EBU, Rohde & Schwarz | Title: CR for 36101 Bracket removal 5G Broadcast  **This is a Cat. F CR for TS36.101 in Rel-18**  Reason: Brackets removed from refsens numbers in 7.3.1.H and acs in 7.5.1H for LTE Broadcast. Also, typo in table name was fixed.  **Proposal:** CR to remove brackets from ACS and REFSENS for 5G terrerstrial broadcast. Also typo in the table names for spurious response were corrected.      Please find detail ACS test results and REFSENS analysis in [R4-2400715](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400715.zip) (QC Discussion paper) and [R4-2401883](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401883.zip) (R&S Discussion paper) |
| [R4-2401561](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401561.zip) (CR) | Ericsson | Title: (LTE\_terr\_bcast\_bands\_part2-Core) CR to 36.101: Correction of EARFCN for bands 107 and 108  **This is a Cat. F CR for TS36.101 in Rel-18**  Reason: The EARFCN for bands 107 and 108 are corrected to account for the range already allocated to band 106.  **Proposal:** Update EARFCN Table 5.7.3H-1 for 107 and 108 bands since the previous EARFCN was overlapped with 106. |
| [R4-2401562](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401561.zip) (CR) | Ericsson | Title: (LTE\_terr\_bcast\_bands\_part2-Core) CR to 36.104: Correction of EARFCN for bands 107 and 108  **This is a Cat. F CR for TS36.104 in Rel-18**  Reason: The EARFCN for bands 107 and 108 are corrected to account for the range already allocated to band 106.  **Proposal:** Update EARFCN Table 5.7.3-1 for 107 and 108 bands since the previous EARFCN was overlapped with 106. |
| [R4-2402231](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402231.zip) (CR) | ZTE Corporation | Title: CR to TS37.145-1: Addition of missing band n106  **This is a Cat. F CR for TS37.145-1 in Rel-18**  Reason: Band n106 is missing in Table 7.5.5.2-4.  **Proposal:** Add band n106 in Table 7.5.5.2-4. Also, delete the repetitive words ‘or’ in Table 7.5.5.1.2-1 and 7.5.5.2-4. |
| [R4-2400149](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400149.zip) (CR) | Apple Inc., Globalstar Inc. | Title: Correction of the A-MPR values for the satellite band n254  **This is a Cat. F CR for TS38.101-5 in Rel-18**  Reason: A-MPR values are revised and […] are removed from NS\_03, NS\_04 and NS\_05 associated with the NTN band n254.  **Proposal:** For the DFT-s-OFDM modulations 16QAM and higher an extra 0.5dB is added. And remove [ ] in A-MPR values. |
| [R4-2400150](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400150.zip) (CR) | Apple Inc., Globalstar Inc. | Title: Correction of the A-MPR values for the satellite band n254  **This is a Cat. F CR for TR38.741 in Rel-18**  Reason: to update A-MPR values and […] are removed from NS\_03, NS\_04 and NS\_05 associated with the NTN band n254.  **Proposal:** Update A-MPR values for n254 in TR38.741 as same with above TS38.101-5. |
| [R4-2402223](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402223.zip) (CR) | ZTE Corporation | Title: CR to TS38.101-5: Addition of some missing bands in UE spurious emissions coexistence clause  **This is a Cat. F CR for TS38.101-5 in Rel-18**  Reason: some bands are missing in UE spurious emission requirements for n254, n255 and n256.  **Proposal:** Add some missing bands in UE spurious emission requirements for n254, n255 and n256 in Table 6.5.3.2-1. |
| [R4-2402226](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402226.zip) (CR) | ZTE Corporation | Title: CR to TS36.181 Introduction of a new FDD band (L+S band) for IoT NTN operation  **This is a Cat. B CR for TS36.181 in Rel-18**  Reason: Add the missing 254 SAN operating band in the SAN conformance test specification in TS36.181.  **Proposal:** To add band 254 to the SAN conformance testing for the new FDD band (L+S band) for IoT NTN operation into the spec TS36.181.  Besides, revise the NR band numbers to LTE band numbers in clause 6.6.4.5. |
| [R4-2402613](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402613.zip) (CR) | MediaTek | Title: (IoT\_NTN\_FDD\_LS\_band-Perf) CR to TS 36.181 on introduction of a new FDD band (L+S band) for IoT NTN operation  **This is a Cat. B CR for TS36.181 in Rel-18**  Reason: update the SAN operating band in clause 6.6.4.5.  **Proposal:** Refer the SAN operating bands in Table 5.2-1 in TS36.108 for clause 6.6.4.5 in TS36.181. |
| [R4-2402614](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402614.zip) (CR) | MediaTek | Title: (IoT\_NTN\_FDD\_LS\_band-Core) CR to TS 36.102 for additional spurious emission for band 254  **This is a Cat. F CR for TS36.102 in Rel-18**  Reason: In Table 6.5B.4.4.4-1, it is not clear for the upper edge, which should be within the out-of-domain range.  **Proposal:** Add clarification texts in the paragraph before Table 6.5B.4.4.4-1 in TS36.102. |
| [R4-2402393](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402393.zip) (Discussion) | Sony | Title: Measurement bandwidth for NB-IoT in IoT NTN band b254  **Proposal 1: 3GPP shall keep the AMPR value as TBD until further information from ETSI is received as agreed in previous meeting.**  **Proposal 2: Allow smaller MBW for NS\_04N and NS\_05N by adding the following note to NS\_04N and NS\_05N.**  ***Note. As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth may be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.*** |
| [R4-2400640](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400640.zip) (CR) | Qualcomm | Move to AI 7.10 and treat in [110][107]Topic summary. |
| [R4-2402634](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402634.zip) (CR) | Skyworks | Move to AI 7.10 and treat in [110][107]Topic summary. |
| [R4-2402815](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402815.zip) (CR) | Skyworks | Move to AI 7.10 and treat in [110][107]Topic summary. |
| R4-2402819 | Inmarsat, Viasat, Omnispace, Terrestar Solutions, Thuraya, Ligado Networks, Hughes/Echostar, Thales | Move to AI 5.3 and treat in [110][102]Topic summary. |
| R4-2402821 | Inmarsat, Viasat, Omnispace, Terrestar Solutions, Thuraya, Ligado Networks, Hughes/Echostar, Thales | Move to AI 5.3 and treat in [110][102]Topic summary. |
| [R4-2400205](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400205.zip) (CR) | Samsung, AT&T | Title: Rel18 Cat F CR for 38.101-3 Add the missing combination CA\_n12A-n260G  **This is a Cat. F CR for TS38.101-3 in Rel-18**  Reason: This combination was introduced in Rel-17 while inadvertently removed in Rel-18, hence this Rel-18 correction CR is submitted.  **Proposal:** Add the missing combination CA\_n12A-n260G in TS38.101-3. |

## 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

*Sub-topic description:* **High power UE (PC 1.5) for NR TDD bands**

*Open issues and candidate options before meeting:*

**Issue 1-1-1:** CR to add n39 for supporting PC1.5 and add modified MPR behaviour in Annex L in TS38.101-1

* Proposals
  + Option 1: Based on CR ([R4-2400229](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400229.zip) & [R4-2401458](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401458.zip)), RAN4 can add n39 and update modified MPR behaviour for n39 in Annex L in TS38.101-1.
  + Option 2: This proposal is related to the HP UE WI objective in Rel-18. If n39 was already captured in the objective, then it can be acceptable. However, if n39 band is not included in Rel-18 WI objectives, then it will be treated in Rel-19.
* Recommended WF
  + TBD. If the CR contents are fine to all interested companies, the CR [R4-2400229](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400229.zip) can be treated for agreement and [R4-2401458](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401458.zip) will be merged into CR [R4-2400229](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400229.zip).

### Sub-topic 1-2

*Sub-topic description*: **Enhancement for 700/800/900MHz band combinations**

*Open issues and candidate options before meeting:*

**Issue 1-2-1:** Correction CR ([R4-2400053](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400053.zip)) for CA\_n26A-n28A in TS38.101-1

* Proposals
  + Option 1: Based on CR ([R4-2400053](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400053.zip), CATT), RAN4 update the contents inTS38.101-1 in Rel-18.
* Recommended WF
  + Option 1. The CR ([R4-2400053](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400053.zip)) is agreeable to correct the errors in TS38.101-1.

**Issue 1-2-2:** Correction CR ([R4-2402059](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402059.zip)) for low band CA combinations in TS38.101-1

* Proposals
  + Option 1: Based on CR ([R4-2402059](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402059.zip), Huawei), RAN4 update the contents inTS38.101-1 in Rel-18.
* Recommended WF
  + Option 1. The CR ([R4-2402059](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402059.zip)) is revised to remove the duplicated contents in [R4-2400053](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400053.zip). Then the other contents can be agreeable to correct the errors in TS38.101-1.

**Issue 1-2-3:** Discussion on Spurious emission Requirements of CA\_n26(2A) in [R4-2402058](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402058.zip)

* Proposals
  + Option 1: RAN4 can remove [ ] in Note 5 for CA\_n26 combination in Table 6.5A.3.2.2-1 in TS38.101-1.
  + Option 2: RAN4 still keep the [ ] in Note 5
  + Option 3: The spurious emission issues will be treated as package with issue 1-2-4 and 1-2-5.
* Recommended WF
  + TBD.

**Issue 1-2-4:** Discussion on A-MPR requirements of CA\_n26(2A) in [R4-2402058](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402058.zip) & R4-2400368

* Proposals
  + Option 1: RAN4 can remove [ ] within 20dB A-MPR Table 6.2A.3.1.2-1 in TS38.101-1.
  + Option 2: RAN4 can define 9dB A-MPR as harmonised requirements considering with UTRA ACLR2
  + Option 3: Keep 20dB A-MPR and add Note X as follow

“NOTE X: Only applicable for dual PA architecture. The UE shall indicate the dualPA-Architecture for UL CA\_n26(2A).”

* + Option 4: The A-MPR issues will be treated as package with issue 1-2-3 and 1-2-5.
* Recommended WF
  + TBD.

**Issue 1-2-5:** Discussion on UTRA\_ACLR1&ACLR2 of CA\_n26(2A) in [R4-2402058](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402058.zip) & R4-2400372

* Proposals
  + Option 1: If RAN4 consider 7~9dB A-MPR, then both ACLR1 & ACLR2 can be achieved.
  + Option 2: When the Wgap between CC1 and CC2 is =10MHz, the ACLR1 is only applied. Also, Wgap between CC1 and CC2 is >=20MHz, the both ACLR 1 and ACLR2 are applied.
  + Option 3: The UTRA\_ACLR1&ACLR2 issues will be treated as package with issue 1-2-3 and 1-2-4.
* Recommended WF
  + TBD.

**Issue 1-2-6**: CR on CA\_n26(2A) with BCS0 in TS38.101-1

* Proposals
  + Option 1: Based on CR([R4-2400362](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400362.zip), SKW), RAN4 can add the explicit supporting uplink channel bandwidths for BCS0 in TS38.101-1.
  + Option 2: The contents will be merged in CR([R4-2402059](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402059.zip), Huawei).
* Recommended WF
  + Option 2 is agreeable and the contents can be merged in [R4-2402059](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402059.zip) if the contents are agreeable.

### Sub-topic 1-3

*Sub-topic description*: **Introduction of evolved shared spectrum bands**

*Open issues and candidate options before meeting:*

**Issue 1-3-1**: VLP mode in n96 in US in TS38.101-1

* Proposals
  + Option 1: Based on CR([R4-2400174](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400174.zip), Apple, Charter Communications), RAN4 can add NS\_70 and reuse A-MPR requirements of NS\_67 for VLP UE in n96 in US.
  + Option 2: TBA
* Recommended WF
  + TBD.

**Issue 1-3-2**: VLP mode in n96 in US in TR38.849

* Proposals
  + Option 1: Based on CR([R4-2400175](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400175.zip), Apple, Charter Communications), RAN4 can update NS\_70 instead of NS\_66 in Table 6.1.1-1 for VLP UE in n96 in US.
  + Option 2: TBA
* Recommended WF
  + TBD.

**Issue 1-3-3**: PSD limits for A-MPR requirements of NR-U UE in TS38.101-1

* Proposals
  + Option 1: Based on CR([R4-2400522](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400522.zip), Apple), RAN4 can add PSD limits reference for NS\_64, NS\_66 and NS\_67 in A-MPR requirements Table 6.2F.3.1-1.
  + Option 2: TBA
* Recommended WF
  + TBD.

### Sub-topic 1-4

*Sub-topic description*: **New bands and BW allocation for 5G terrestrial broadcast - part 2**

*Open issues and candidate options before meeting:*

**Issue 1-4-1**: Correction on REFSENS and ACS requirements for 5G Terrestrial broadcast bands in TS36.101

* Proposals
  + Option 1: Based on CR([R4-2400148](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400148.zip), Apple), RAN4 can update REFSENS and ACS requirements for 5G Terrestrial broadcast bands in TS36.101.
  + Option 2: Based on CR([R4-2400282](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400282.zip), Qualcomm, SWR, EBU, R&S), RAN4 can remove [ ] in REFSENS and ACS requirements for 5G Terrestrial broadcast bands in TS36.101.
* Recommended WF
  + TBD.

**Issue 1-4-2**: Correction on EARFCN for band 107 and Band 108 in TS36.101

* Proposals
  + Option 1: Based on CR([R4-2401561](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401561.zip), Ericsson), RAN4 can update EARFCN for band 107 and Band 108 in TS36.101.
  + Option 2: TBA
* Recommended WF
  + Option 1 is agreeable.

**Issue 1-4-3**: Correction on EARFCN for band 107 and Band 108 in TS36.104

* Proposals
  + Option 1: Based on CR([R4-2401562](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401562.zip), Ericsson), RAN4 can update EARFCN for band 107 and Band 108 in TS36.104.
  + Option 2: TBA
* Recommended WF
  + Option 1 is agreeable.

### Sub-topic 1-5

*Sub-topic description*: **Introduction of 900 MHz NR Band for BS RF in the US**

*Open issues and candidate options before meeting:*

**Issue 1-5-1**: Addition of missing band n106 in TS37.145-1

* Proposals
  + Option 1: Based on CR([R4-2402231](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402231.zip), ZTE), RAN4 can add n106 in Table 7.5.5.2-4 and update the editorial corrections in TS37.145-1.
  + Option 2: TBA.
* Recommended WF
  + Option 1 is agreeable.

### Sub-topic 1-6

*Sub-topic description*: **Introduction of the satellite L-/S-band for UE RF**

*Open issues and candidate options before meeting:*

**Issue 1-6-1**: Update A-MPR values for n254 in TS38.101-5

* Proposals
  + Option 1: Based on CR([R4-2400149](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400149.zip), Apple), RAN4 can update A-MPR values for n254 with NS\_03, NS\_04 and NS\_05 in TS38.101-5.
  + Option 2: TBA.
* Recommended WF
  + TBD.

**Issue 1-6-2**: Update A-MPR values for n254 in TR38.741

* Proposals
  + Option 1: Based on CR([R4-2400150](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400150.zip), Apple), RAN4 can update A-MPR values for n254 with NS\_03, NS\_04 and NS\_05 in TR38.741.
  + Option 2: TBA.
* Recommended WF
  + TBD.

**Issue 1-6-3**: Adding of some missing bands in UE spurious emission requirements for n254, n255 and n256 in TS38.101-5

* Proposals
  + Option 1: Based on CR([R4-2402223](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402223.zip), ZTE), RAN4 can add some missing bands in UE spurious emission requirements for n254, n255 and n256 in Table 6.5.3.2-1.
  + Option 2: TBA.
* Recommended WF
  + Option 1 is agreeable.

### Sub-topic 1-7

*Sub-topic description*: **Introduction of a new FDD band (L+S band) for IoT NTN operation**

*Open issues and candidate options before meeting:*

**Issue 1-7-1**: Add SAN operating band 254 of a new FDD band (L+S band) for IoT NTN operation in TS36.181

* Proposals
  + Option 1: Based on CR([R4-2402226](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402226.zip), ZTE), RAN4 can add 254 and revise NR band to LTE band for clause 6.6.4.5 in TS36.181.
  + Option 2: Based on CR([R4-2402613](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402613.zip), MTK), RAN4 can refer the SAN operating bands in Table 5.2-1 in TS36.108 for clause 6.6.4.5 in TS36.181.
* Recommended WF
  + Either option is fine. Majority supporting CR is treated for agreement.

**Issue 1-7-2**: Update the additional spurious emission requirements for band 254 in TS36.102

* Proposals
  + Option 1: Based on CR([R4-2402614](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402614.zip), MTK), RAN4 can update the additional spurious emission for band 254 with the clarification contents in TS36.102.

“the power of any UE emission shall not exceed the levels specified in 6.5A.4.4.4 where BWchannel is replaced with 200 kHz, and FOOB (MHz) is replaced with 1.7MHz, in addition to the additional requirements specified in Table 6.5B.4.4.4-1 which applies for the frequency ranges that are less than FOOB (MHz) from the edge of the channel bandwidth.

* Recommended WF
  + Option 1 is agreeable.

**Issue 1-7-3**: Emission limit difference between current ETSI emission limits and 3GPP in LTE band 254

* Proposals
  + Option 1: Based on the ([R4-2402393](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402393.zip), Sony), RAN4 can wait to finalize the ETSI regulation requirements in LTE band 254.
  + Option 2: Others
* Recommended WF
  + TBD.

### Sub-topic 1-8

*Sub-topic description*: **Correction on missing CA band combinations in TS38.101-3**

*Open issues and candidate options before meeting:*

**Issue 1-7-1**: Add CA\_n12A-n260G in TS38.101-3 in Rel-18

* Proposals
  + Option 1: Based on CR([R4-2400205](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400205.zip), Samsung, AT&T), RAN4 add CA\_n12A-n260G in TS38.101-3.
  + Option 2: TBA.
* Recommended WF
  + CR([R4-2400205](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400205.zip), Samsung, AT&T) is agreeable since the CA band combinations already captured in TS38.101-3 in Rel-17.

# Topic #2: Maintenance of Non-spectrum related WIs in Rel-18

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2400151](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400151.zip) (Discussion) | Apple | Title: Remaining issues for enhanced channel raster  **This is a discussion paper for enhanced channel raster to support new 10kHz raster in some NR operating bands in Rel-18 as mandatory or optional features.**  **Proposal 1:** Introduce a new column to the table with a list with bands supporting enhanced channel raster to indicate whether the enhanced channel raster is mandatory or not.  **Proposal 2:** If enhanced channel raster can be mandatory for earlier releases, we ask RAN WG4 to decide how it will be captured in earlier releases. |
| [R4-2400218](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400218.zip) (CR) | Apple | Title: Clarification for the mandatory support of enhanced channel raster  **This is a Cat. F CR for TS38.101-1 in Rel-18**  **Reason:** In last RAN4 meeting, RAN4 concluded to support the 10kHz new channel raster as mandatory feature in some NR bands.  **Proposal:** A new column is added to Table 5.4.2.3-5 to clarify further which bands will have enhanced channel raster as the mandatory feature. |
| [R4-2400647](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400647.zip) (Discussion) | Orange UK | Title: Frequency bands with mandatory support of the new channel raster  **This is a discussion paper for enhanced channel raster to support new 10kHz raster in some NR operating bands in Rel-18 as mandatory or optional features.**  **Proposal:**Frequency bands n1 and n3 should have mandatory support of the new channel raster. |
| [R4-2400723](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400723.zip) (Discussion) | AT&T | Title: Mandatory enhanced raster for NR bands n2, n5, and n66  **This is a discussion paper for enhanced channel raster to support new 10kHz raster in some NR operating bands in Rel-18 as mandatory or optional features.**  **Proposal:**Include NR bands n2, n5, and n66 as bands where the 10 kHz enhanced raster is mandatory |
| [R4-2402472](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402472.zip) (Discussion) | T-Mobile USA | Title: Request for mandatory enhanced raster for n25, n66, n71 and n85  **This is a discussion paper for enhanced channel raster to support new 10kHz raster in some NR operating bands in Rel-18 as mandatory or optional features.**  Observation 1: T-Mobile USA has 25 MHz of spectrum in certain regions in n25, n66 and n71 and we have legacy UEs that only support up to 20 MHz in each of these bands.  **Proposal 1:** Include NR bands n25, n66 and n71 as bands where the 10 kHz enhanced raster is mandatory.  Observation 2: With the 10 Hz raster, the center of channel bandwidths can be offset by increments of 180 kHz, providing flexibility for overlapping channels  **Proposal 2:** Include NR bands n85 as a band where the 10 kHz enhanced raster is mandatory. |
| [R4-2400979](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400979.zip) (Discussion) | CMCC | Title: [NR\_channel\_raster\_enh-Core] Discussion on mandatory of enhanced channel raster  **This is a discussion paper for enhanced channel raster to support new 10kHz raster in some NR operating bands in Rel-18 as mandatory or optional features.**  **Proposal 1:** It is proposed that enhanced channel raster is mandatory for RedCap UEs.  **Proposal 2:** it is proposed that UE mandatory support new channel raster for band n28. |
| [R4-2401841](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401841.zip) (CR) | Ericsson | Title: (NR\_channel\_raster\_enh-Core) Correction to the definition of the enhanced channel raster  **This is a Cat. F CR for TS38.101-1 in Rel-18**  **Reason:** The enhanced channel raster with 10 kHz granularity for both the UE and BS was specified to meet the work item objective of “specify[ing] necessary changes to the UE channel raster such that configuring a narrower UE channel BW inside a wider gNB channel BW is always possible”. The new channel raster must be supported in some bands.  **Proposal:** Update clause 3.1 for enhanced channel raster as follow  **Enhanced channel raster**: channel raster with a 10 kHz granularity in bands with a 100 kHz channel raster.  NOTE: The Enhanced channel raster is devised such that supporting UEs are compliant with minimum requirements for all possible UE specific channel bandwidth and locations configurable by the IE *ServingCellConfig* for the DL and UL in accordance with [7] for applicable bands. |
| [R4-2402106](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402106.zip) (CR) | Huawei | Title: CR to TS 38.101-1: correction on enhanced channel raster  **This is a Cat. F CR for TS38.101-1 in Rel-18**  **Reason:** That the enhanced channel raster outside the outer 100 kHz channel raster entries shall not be used is not correctly captured in Table 5.4.2.3-5.  **Proposal:** correct of typos in clause 3.1 for enhanced channel raster and revise the Note 1 in Table 5.4.2.3-5: Applicable NR-ARFCN for enhanced channel raster in TS38.101-1. |
| [R4-2402107](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402107.zip) (CR) | Huawei | Title: CR to TS 38.104: correction on enhanced channel raster  **This is a Cat. F CR for TS38.104 in Rel-18**  **Reason:** That the enhanced channel raster outside the outer 100 kHz channel raster entries shall not be used is not correctly captured in Table 5.4.2.3-4.  **Proposal:** correct of typos in clause 3.1 for enhanced channel raster and revise the Note 1 in Table 5.4.2.3-4: Applicable NR-ARFCN for enhanced channel raster in TS38.104. |
| [R4-2402636](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402636.zip) (CR) | MediaTek | Title: (NR\_channel\_raster\_enh-Core) CR to TS 38.101-1 for enhanced channel raster  **This is a Cat. F CR for TS38.101-1 in Rel-18**  **Reason:** According to WF R4-2321752, the enhanced channel raster is not applicable to intra-band contiguous CA, and it is not reflected in specs.  **Proposal:** Add a Note 2 in Table 5.4.2.3-5 to indicate that enhanced channel raster is not applicable to intra-band contiguous CA in TS38.101-1.  NOTE 2: The enhanced channel raster is not applicable to intra-band contiguous CA. |
| [R4-2402637](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402637.zip) (CR) | MediaTek | Title: (NR\_channel\_raster\_enh-Core) CR to TS 38.104 for enhanced channel raster  **This is a Cat. F CR for TS38.104 in Rel-18**  **Reason:** According to WF R4-2321752, the enhanced channel raster is not applicable to intra-band contiguous CA, and it is not reflected in specs.  **Proposal:** Add a Note 2 in Table 5.4.2.3-4 to indicate that enhanced channel raster is not applicable to intra-band contiguous CA in TS38.104.  NOTE 2: The enhanced channel raster is not applicable to intra-band contiguous CA. |
| [R4-2400152](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400152.zip) (Discussion) | Apple, Ligado Networks, Inmarsat, Viasat, Globalstar, Thales, Hughes/Echostar | Title: Enhanced channel raster for NTN FR1 bands  **This is discussion paper is how to apply the new 10kHz channel raster in NTN FR1 bands.**  Table 2-2: Summary of available RBs for overlapping channels in the irregular spectrum blocks.   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Irregular channel (MHz) | Next smaller channel (MHz) | Minimum guard band (kHz) | 100kHz raster | | | non-100kHz raster | | | | N\_RB | Guard band (kHz) | Utilisation (%) | N\_RB | Guard band (kHz) | Utilisation (%) | | 7 | 5 | 242.5 | 35 | 342.5 | 90 | 36 | 252.5 | 92.6 | | 16.5 | 15 | 382.5 | 84 | 682.5 | 91.6 | 87 | 412.5 | 94.9 | | 34 | 30 | 592.5 | 180 | 792.5 | 95.3 | 182 | 612.5 | 96.4 | | 41 | 40 | 552.5 | 221 | 602.5 | 97 | 221 | 602.5 | 97 |   **Proposal:** Enable the 10kHz raster as a mandatory feature for the NTN bands n254, n255 and n256 |
| [R4-2400153](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400153.zip) (CR) | Apple, Ligado Networks, Inmarsat, Viasat, Globalstar, Thales, Hughes/Echostar | Title: Mandating enhanced channel raster for the NTN FR1 bands  **This is a Cat. F CR for TS38.101-5 in Rel-18**  **Reason:** RAN WG4 introduced Enhanced channel raster feature, which enables 10kHz channel raster for both terrestrial and satellite bands. It was also agreed that it can be made as a mandatory feature based on the operators’ request. This CR mandates enahnced channel raster for the NTN FR1 bands.  **Proposal:** It is clarified that existing NTN FR1 bands will have mandatory enhanced channel raster with 10kHz.  The n254 introducing CR is proposed in the separated CR([R4-2400154](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400154.zip)). |
| [R4-2401842](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401842.zip) (CR) | Ericsson | Title: (NR\_channel\_raster\_enh-Core) Correction to the definition of the enhanced channel raster  **This is a Cat. F CR for TS38.101-5 in Rel-18**  **Reason:** The enhanced channel raster with 10 kHz granularity for both the UE and BS was specified to meet the work item objective of “specify[ing] necessary changes to the UE channel raster such that configuring a narrower UE channel BW inside a wider gNB channel BW is always possible”. The new channel raster must be supported in some bands.  **Proposal:** Update clause 3.1 for enhanced channel raster as follow  **Enhanced channel raster**: channel raster with a 10 kHz granularity in bands with a 100 kHz channel raster.  NOTE: The Enhanced channel raster is devised such that supporting UEs are compliant with minimum requirements for all possible UE specific channel bandwidth and locations configurable by the IE *ServingCellConfig* for the DL and UL in accordance with [8] for applicable bands. |
| [R4-2402108](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402108.zip) (CR) | Huawei | Title: CR to TS 38.101-5: correction on enhanced channel raster  **This is a Cat. F CR for TS38.101-5 in Rel-18**  **Reason:** That the enhanced channel raster outside the outer 100 kHz channel raster entries shall not be used is not correctly captured in Table 5.4.2.3-2.  **Proposal:** Revise the Note in Table 5.4.2.3-2: Applicable NR-ARFCN per operating band in TS38.101-5. |
| [R4-2402109](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402109.zip) (CR) | Huawei | Title: CR to TS 38.108: correction on enhanced channel raster  **This is a Cat. F CR for TS38.108 in Rel-18**  **Reason:** That the enhanced channel raster outside the outer 100 kHz channel raster entries shall not be used is not correctly captured in Table 5.4.2.3-2.  **Proposal:** Revise the Note 1 in Table 5.4.2.3-2: Applicable NR-ARFCN for enhanced channel raster in TS38.108. |
| [R4-2401840](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401840.zip) (Discussion) | Ericsson | Title: (NR\_channel\_raster\_enh-Core) Definition of the enhanced raster and support for RedCap from Rel-17  **This is a discussion paper for enhanced channel raster to apply the RedCap device from Rel-17 as mandatory.**  **Proposal 1:** Introduce in the definition of the enhanced channel raster in 38.101-1 and 38.101-5 information that support implies compliance with UE minimum requirements for all UE specific channel bandwidths and locations configurable within the gNB bandwidth by RRC.  **Proposal 2:** support of the enhanced channel raster is mandated for all (e)RedCap UEs from Rel-17.  **Proposal 3:** For RedCap UEs, specify the enhanced channel raster in the Rel-17 and Rel-18 versions of 38.101-1 for applicable bands as an essential correction; this enhanced raster with 10 kHz step size to be implemented by (e)RedCap UEs from Rel-17 for all applicable bands supported. |
| [R4-2401843](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401843.zip) (Draft LS) | Ericsson | Title: Draft LS on mandated support of the enhanced channel raster by RedCap UEs from Rel-17  **This is a Draft LS to request to RAN2 for the enhanced channel raster capability for RedCap device from Rel-17 as mandatory.**  In this LS, RAN4 would like to provide RAN2 with further details on the capability for support of the enhanced channel raster agreed as feature group FG 28-1, the support by RedCap UEs for Rel-17 in particular.  RedCap UEs must always be configured with BWPs and associated UE-specific channel bandwidths smaller than the carrier bandwidth when operated in BS channel bandwidths greater than 20 MHz. RAN4 therefore consider support of the enhanced raster by RedCap UEs essential and should therefore be mandated for all (e)RedCap UEs from Rel-17. To this end, RAN4 has introduced the enhanced raster for RedCap in the Rel-17 and Rel-18 versions of 38.101-1 in a new sub-clause 5.4I for RedCap (see R4-2401838), consistent with the enhanced raster introduced for all UEs in the Rel-18 version of 38.101-1 (2023-12). |
| [R4-2400554](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400554.zip) (CR) | MediaTek | Title: (LTE\_NBIOT\_eMTC\_NTN\_req-Core) CR to 36.102 for IoT NTN UE RF requirements  **This is a Cat. F CR for TS36.102 in Rel-18**  **Reason:** To correct TS 36.102 GEO definition is necessary between TR38.821 and TS38.102. Also, the Measurement bandwidth value in Table 6.5A.4.4.3-1 and Table 6.5B.4.4.3-1 is incorrect.  **Proposal:**   1. Change GEO definition to Geostationary Earth Orbit in clause 3.3. 2. Measurement bandwidth value in Table 6.5A.4.4.3-1 and Table 6.5B.4.4.3-1 is 1 MHz. 3. To clearly specify frequency band 256 in Note 1 of Table 6.5A.4.4.3-1 and Table 6.5B.4.4.3-1. 4. To add UL reference measurement channels in clause A.4. 5. Reference TS 36.212 is added in clause 2. |
| [R4-2402792](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402792.zip) (CR) | Qualcomm | Title: [LTE\_NBIOT\_eMTC\_NTN\_req-Core] CR to TS 36.102 ACS, blocking and maximum input power  **This is a Cat. F CR for TS36.102 in Rel-18**  **Reason:** Currently NTN IoT UE RF requirements for ACS, maximum input power and blocking include cases that UE will not be exposed to in field operation, setting excessive constraints to UE implementation.  **Proposal:**   1. Correct the UE maximum input power to -70 dBm or lower for both NB-NTN and cat M1. Adjust the RMC to QPSK R=1/3 for cat M1. 2. Remove the ACS case 2 requirement for both NB-NTN and cat M1 3. Modify range 3 out of band blocking interferer signal level to -30 dBm for both cat M1 and NB-NTN below 4 GHz, and to -40 dBm above 4 GHz 4. Modify spurious response requirement to -59 dBm for both cat M1 and NB-NTN below 4 GHz and to -69 dBm above 4 GHz   The detail analysis paper for Maximum input level and ACS are described in the discussion paper ([R4-2402744](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402744.zip)). |
| [R4-2402931](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402931.zip) (Discussion) | Inmarsat, Viasat, Omnispace, Terrestar Solutions, Thuraya, Ligado Networks, Hughes/Echostar, Thales | Title: Motivation for In-band and guard-band NB-IoT NTN with NR  **This is a Discussion paper to support the ability to deploy NB-IoT NTN in-band and in guard-band to NR NTN carriers in upcoming NTN systems, and in parity with terrestrial systems.**  Observation 1: In-band and guard-band deployments of NB-IoT are already supported for terrestrial systems as of Release 16  Observation 2: It is expected that for most upcoming NR NTN deployments, NB-IoT NTN will likely also be deployed from the same Satellite Access Node (SAN)  Observation 3: The current system parameters in TS 36.102 should already be forward compatible with NR-NTN in-band deployment.  Observation 4: In TR 37.824, similar as the mixed numerology in NR scenarios, no requirement is defined for mixed numerology between NR and NB-IoT  **Proposal 1: Enable support for NB-IoT in-band and guard-band deployment within NR NTN carriers.** |
| [R4-2402822](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402822.zip) (CR) | Inmarsat, Viasat, Omnispace, Terrestar Solutions, Thuraya, Ligado Networks, Hughes/Echostar, Thales | Title: Clarification on in-band and guard-band NB-IoT and eMTC NTN with NR NTN  **This is a Cat. F CR for TS36.102 in Rel-18**  **Reason:** NB-IoT supports In-band and guard-band deployments with LTE carriers since Rel-13 and with NR carriers since Rel-15. So the in-band, guad band with NR carrier also can be supported.  **Proposal:**   1. In 3.1 Terms, add NR carrier for guard-band operation. 2. In 5.4B.1 channel spacing, add the new sentence as follow:   “For in-band and guard-band cases the nominal channel spacing between two adjacent category NB1 or NB2 carriers is 180 kHz”   1. Remove Note 1 in clause 5.4B.2 to support Guard-band operation and in-band operation for NB-IoT with NR carrier. 2. Add sentence in 5.4B.3 Tx-Rx frequency separation as follow:   “For in-band and guard-band operation mode, the category NB1 and NB2 TX-RX frequency separation is flexible within the assigned channel bandwidth of E-UTRA or NR carrier” |
| [R4-2402816](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402816.zip) (CR) | Inmarsat, Viasat, Omnispace, Terrestar Solutions, Thuraya, Ligado Networks, Hughes/Echostar, Thales | CR move to AI 5.3 and will treat in [110][102]Topic summary |
| [R4-2400824](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400824.zip) (CR) | CMCC | Title: (NR\_UAV) CR for TS 38.101-1 to correct requirements NR UAV NS  **This is a Cat. F CR for TS38.101-1 in Rel-18**  **Reason:** This CR is to correct the requirements of NS\_UAV\_46.  **Proposal:** Correct the Frequency range and Spectrum emission limit of NS\_UAV\_46. |
| [R4-2401205](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401205.zip) (CR) | Xiaomi | Title: CR for Rel-18 38.101-1 is to modify the definition for Aerial UE in clause 3.1  **This is a Cat. F CR for TS38.101-1 in Rel-18**  **Reason:** This CR is to modify the definition for Aerial UE in clause 3.1.  **Proposal:** Correct the aerial UE IE capability to align with TS 38.306. |
| [R4-2402079](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402079.zip) (Discussion) | Nokia | Title: On corrections for aerial NR UEs  **This is a Discussion paper to align with the aerial UE specific NS will be supported in RAN2. Also A-MPR equation can be updated to remove the max function for NS\_UAV\_44 and NS\_UAV\_70.**  [Observation 1: RAN2 have agreed to provide the aerial UE specific NS information by providing the IE additionalSpectrumEmission in a container dedicated specifically for Aerial UEs.](#_Toc159265538)  [Observation 2: The current TS 38.101-1 utilizes MAX function in the A-MPR definition for NS\_UAV\_44 and NS\_UAV\_70.](#_Toc159265540)  [Observation 3: LCRB is by definition always a positive integer of resource blocks.](#_Toc159265541)  [Observation 4: There is no need to use the MAX function for NS\_UAV\_44 and NS\_UAV\_70.](#_Toc159265542)  [**Proposal 1:** Agree to the draftCR in R4-2402081 to TS 38.101-1 in order to capture the right indication of the network signaling used by RAN2.](#_Toc159265539)  [**Proposal 2:** Remove the MAX function in NS\_UAV\_44 and NS\_UAV\_70](#_Toc159265543)  [**Proposal 3:** Agree to the draftCR in R4-2402081 to TS 38.101-1 in order to remove the MAX function in NS\_UAV\_44 and NS\_UAV\_70.](#_Toc159265544) |
| [R4-2402081](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402081.zip) (Draft CR) | Nokia | Title: (NR\_UAV) draftCR to 38.101-1 Corrections for aerial NR UEs  **This is a Cat. F Draft CR for TS38.101-1 in Rel-18**  **Reason:** This CR is to modify the contents based on [R4-2402079](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402079.zip).  **Proposal:** update Aerial UE definition with *aerialUE-Capability-r18*. Also update the A-MPR equation to remove max fuction in Table 6.2K.3.2-1 and Table 6.2K.3.3-1. Furthermore, other editorial errors are fixed. |
| R4-2400714 | Qualcomm | Discussion paper was **Withdrawn** |
| [R4-2402326](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402326.zip) (Draft LS) | Ericsson | Title: LS Reply to RAN2 on UAV  **This is a Draft LS to reply RAN2 LS for the UAV *additionalPmax-R18* capability.**  In the reply LS, RAN4 would like to RAN4 would like to clarify that the *additionalPmax-r18* should be included in *NR-NS-PmaxValueAerial-r18,* this to provide the same functionality for UAV NR UE comparing to legacy NR UE*.*  The UAV UE shall first check if there is any UAV NS in the NR-NS-PmaxValueAerial-r18 for the considered band and, if (and only if) there is no NS, it shall then check if there is any NS in NR-NS-PmaxValue IE for that same band. RAN4 will indeed specify a new UAV NS only if there is additional requirement specific to UAV UE for a considered band.  Note that if there is an UAV NS in the NR-NS-PmaxValueAerial-r18, the UAV UE shall not check anymore if there is a NS in NR-NS-PmaxValue IE, even if it doesn’t support the UAV NS. In that later case (UAV NS not supported), the UAV UE shall not connect to the cell. |
| [R4-2402518](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402518.zip) (Draft LS) | ZTE | Title: Reply LS on UAV UE capabilities and NS values  **This is a Draft LS to reply RAN2 LS for the UAV *additionalPmax-R18* capability.**  RAN4 believe that this is still useful and necessary since this could be used by the network to control maximum output power of UAV device within carrier in case of any specific deployment restrictions or serve as other purpose if necessary.  NR-NS-PmaxValueAerial-r18 ::= SEQUENCE {  additionalPmax-r18 P-Max OPTIONAL, -- Need N  additionalSpectrumEmission-r18 AdditionalSpectrumEmission-r18  } |
| [R4-2402702](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402702.zip) (Draft LS) | Nokia | Title: Draft LS Reply on Aerial Pmax values  **This is a Draft LS to reply RAN2 LS for the UAV *additionalPmax-R18* capability.**  The objectives of this WI were concluded in RAN4 and no applicability for a new *additionalPmax-r18* was discussed*.* Although such IE was not necessary to address the issues of this WI, RAN4 cannot preclude, at this point in time, whether this IE might be needed in future scenarios, as it was not part of the discussions. |
| [R4-2400825](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400825.zip) (CR) | CMCC | Title: (LTE\_UAV\_enh) CR for TS 36.101 to correct requirements LTE UAV NS  **This is a Cat. F CR for TS36.101 in Rel-18**  **Reason:** This CR is to correct the requirements of NS\_UAV.  **Proposal:** Correct the Frequency range and Spectrum emission limit of NS\_UAV\_44 and correct the NS\_UAV\_46 and NS\_UAV\_70. |
| [R4-2402082](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402082.zip) (Discussion) | Nokia | Title: On corrections for aerial LTE UEs  **This is a Discussion paper to align with the aerial UE specific NS will be supported in RAN2. Also A-MPR equation can be updated to remove the max function for NS\_UAV\_44 and NS\_UAV\_70.**  [*Observation 1: RAN2 have agreed to provide the aerial UE specific NS information by providing the IE additionalSpectrumEmission* in a container dedicated specifically for Aerial UEs.](#_Toc159265538)  [**Proposal 1:** Agree to the draftCR in R4-2402084 to TS 36.101 in order to capture the right indication of the network signaling used by RAN2.](#_Toc159265539) |
| [R4-2402084](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402084.zip) (Draft CR) | Nokia | Title: (LTE\_UAV\_enh) draftCR to 36.101 Corrections for aerial LTE UEs  **This is a Cat. F Draft CR for TS36.101 in Rel-18**  **Reason:** This CR is to modify the contents based on [R4-2402082](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402082.zip).  Proposal: update Note 10 in Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR) with specific NS\_UAV to comply the *additionalSpectrumEmission* value when associated to a IE field *NS-PmaxListAerial* as described in 36.331[7] |
| [R4-2400426](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400426.zip) (Draft CR) | Apple | Title: Draft CR on correcting UE RF requirement conclusion inconsistency for SBFD  **This is a Cat. F Draft CR for TR38.858 in Rel-18**  **Reason:** There is some inconsistency between Clause 10.2 and Clause 13.1.2 regarding impact on UE RF requirements. The wording in Clause 13.1.2 should be used, as discussed in RAN4#109.  **Proposal:** **update clause 10.2 as follow:**  Based on the study, reusing existing UE RF requirements is the conclusion of the study phase, since no issues related to existing UE RF requirements has been identified in the co-existence study. |
| [R4-2401536](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401536.zip) (Draft CR) | vivo | Title: (FS\_NR\_duplex\_evo) Editorial CR to TR 38.858 on UE aspects for Full Duplex operation  **This is a Cat. F Draft CR for TR38.858 in Rel-18**  **Reason:** The term for ‘In-channel adjacent subband selectivity’ should be aligned. Some editoral channges is needed to address some typos in the UE part.  **Proposal:** **update clause 9.7.1.1 and 10.2 as follow:**  Change ‘sub-band selectivity’ ‘Subband in-channel selectivity’ ‘Subband co-channel selectivity ’ ‘inter-sub-band selectivity’ to ‘In-channel adjacent subband selectivity’;  Change ‘Inband emissions (co-channel)’ was changed to ‘In-Band emissions (co-channel)’ in Clause 9.7.1.1.2.  Change ‘Existing UE IBE requirement in TS38.101-1’ to ‘Existing UE IBE requirement in TS38.101-2’ in Table 10.2-1.  Change ‘the performance of typical user’ to ‘the performance of typical UE’ in Clause 10.2. |
| [R4-2402460](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402460.zip) (CR) | T-Mobile USA | Title: ([NR\_CADC\_R18\_2BDL\_xBUL] CR for 38.101-3: Missing changes from R4-2312482  **This is a Cat. F CR for TS38.101-3 in Rel-18**  **Reason:** Changes were included in the big CR in R4-2312482 were not included in 38.101-3 v18.3.0  **Proposal:** Added BCS4 and 5 for the following combinations:  CA\_n66A-n258A  CA\_n66A-n258(2G)  CA\_n66A-n258(A-G)  CA\_n66A-n258(A-H)  CA\_n66A-n258(G-H) |
| [R4-2402545](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402545.zip) (CR) | LGE | Title: [NR\_unlic\_enh-Core] Correction CR for NS\_63, NS\_64 in TS38.101-1  **This is a Cat. F CR for TS38.101-1 in Rel-18**  **Reason:** There is incorrection sentence in table of A-MPR for NS\_63. Hence, add additional sentence for clarifying A-MPR test condition for NS\_64.  **Proposal:**  - Remove the following sentence in Note 3 in Table 6.2F.3.12-1: A-MPR for NS\_63 power class 5  “60 MHz channels centered at the nearest NR-ARFCN corresponding to [5975 and 5995 MHz],”  - Add the following sentence in Table 6.2F.3.13-1: A-MPR for NS\_64 power class 5  “and 100 MHz channels centered at the nearest NR-ARFCN corresponding to 5995 MHz.” |
| [R4-2402577](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402577.zip) (CR) | Huawei | Title: (LTE\_CA-Core, LTE\_UAV\_enh-Core) CR to TS 36.101: feature-agnostic approach implementation, Rel-18  **This is a Cat. F CR for TS36.101 in Rel-18**  **Reason:** In order to reduce unnecessary modifications in future, in this CR we introduce feature-agnostic approach in TS 36.101 section 4.3A.  **Proposal:**  - Update clause 4.3A in TS36.101 and remove the specific features to reduce the unnecessary additional works in future as follow: |

## 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 2-1

*Sub-topic description:* **NR Channel raster enhancement for TN**

*Open issues and candidate options before meeting:*

**Issue 2-1-1:** New channel raster table format to distinguish mandatory or optional feature in TS38.101-1

* Proposals
  + Option 1: Based on CR ([R4-2400218](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400218.zip), Apple), RAN4 can add the new column in the NR ARFCN for enhanced channel raster Table to clarify which bands will support as the mandatory feature.
  + Option 2: Other option is not precluded.
* Recommended WF
  + Option 1 is agreeable.

**Issue 2-1-2:** NR operating bands for Mandatory supporting of enhanced channel raster from Operator requests

* Proposals
  + Option 1: Based on discussion papers from interested operators, RAN4 can support the enhanced channel raster as mandatory feature in NR Band n1, n2, n3, n5, n25, n28, n66, n71 and n85.
  + Option 2: Other option is not precluded.
* Recommended WF
  + Option 1 is agreeable.

**Issue 2-1-3:** Which specification release will be applied the enhanced channel raster as release independent manner in TN bands?

* Proposals
  + Option 1:From Rel-17, the enhanced channel raster will be applied to TN bands.
  + Option 2: Other option is not precluded.
* Recommended WF
  + TBD.

**Issue 2-1-4:** CR on update the clause 3.1 in TS38.101-1

* Proposals
  + Option 1:Based on CR ([R4-2401841](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401841.zip), Ericsson), RAN4 can update the clause 3.1 for enhanced channel raster.
  + Option 2: Keep the definition of enhanced channel raster as it is.
  + Option 3: Other option is not precluded.
* Recommended WF
  + TBD.

**Issue 2-1-5:** CR on update the Note 1 for the enhanced channel raster Table in TS38.101-1 and TS38.104?

* Proposals
  + Option 1: Based on Based on CR ([R4-2402106](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402106.zip), [R4-2402107](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402107.zip), Huawei), RAN4 can update Note 1 for enhanced channel raster that the enhanced channel raster outside the outer 100 kHz channel raster entries shall not be used.
  + Option 2: Other option is not precluded.
* Recommended WF
  + TBD.

**Issue 2-1-6:** CR on add the Note 2 for the enhanced channel raster Table in TS38.101-1 and TS38.104?

* Proposals
  + Option 1: Based on Based on CR ([R4-2402636](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402636.zip), [R4-2402637](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402637.zip), MTK), RAN4 can add Note 2 for enhanced channel raster which is not applicable to intra-band contiguous CA.
  + Option 2: Other option is not precluded.
* Recommended WF
  + TBD.

### Sub-topic 2-2

*Sub-topic description:* **NR Channel raster enhancement for NTN**

*Open issues and candidate options before meeting:*

**Issue 2-2-1:** Mandatory or option feature for NTN bands in TS38.101-5

* Proposals
  + Option 1: Based on CR ([R4-2400153](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400153.zip), Apple and Ligado) and discussion paper ([R4-2400152](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400153.zip), Apple and Ligado), RAN4 can support the enhanced channel raster in the all NTN bands as mandatory feature.
  + Option 2: TBA
* Recommended WF
  + TBD

**Issue 2-2-2:** Correction on the definition of enhanced channel raster in clause 3.1in TS38.101-5

* Proposals
  + Option 1: Based on CR ([R4-2401842](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401842.zip), Ericsson), RAN4 can update the clause 3.1 for enhanced channel raster.
  + Option 2: TBA
* Recommended WF
  + TBD

**Issue 2-2-3:** CR on update the Note 1 for the enhanced channel raster Table in TS38.101-5 and TS38.108?

* Proposals
  + Option 1: Based on Based on CR ([R4-2402108](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402108.zip), [R4-2402109](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402109.zip), Huawei), RAN4 can update Note 1 for enhanced channel raster that the enhanced channel raster outside the outer 100 kHz channel raster entries shall not be used.
  + Option 2: Other option is not precluded.
* Recommended WF
  + TBD.

### Sub-topic 2-3

*Sub-topic description:* **NR channel raster for RedCap**

*Open issues and candidate options before meeting:*

**Issue 2-3-1:** How to apply the enhanced channel raster for the RedCap operating bands?

* Proposals
  + Option 1: Based on discussion paper ([R4-2401840](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401840.zip), Ericsson and [R4-2400979](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400979.zip), CMCC), RAN4 agree to support the enhanced channel raster for the Redcap operating NR bands as mandatory feature.
  + Option 2: Other option is not precluded.
* Recommended WF
  + TBD.

**Issue 2-3-2:** Which specification release would be applied to support the enhanced channel raster for the RedCap UE as release independent manner?

* Proposals
  + Option 1: From Rel-17, the enhanced channel raster will be applied to RedCap bands.
  + Option 2: Other option is not precluded.
* Recommended WF
  + TBD.

**Issue 2-3-3:** Draft LS contents for Mandated support of the enhanced channel raster for RedCap UE in [R4-2401843](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401843.zip)

* Proposals
  + Option 1: RAN4 can send LS to RAN2 for enhanced channel raster capability as feature group 28-1, which will be applied to RedCap UE from Rel-17.
  + Option 2: Need more input for the Draft LS.
* Recommended WF
  + TBD.

### Sub-topic 2-4

*Sub-topic description:* **NB-IoT/eMTC Core requirements for NTN UE**

*Open issues and candidate options before meeting:*

**Issue 2-4-1:** Correction on the definition of GEO and other editorial correction in TS36.102

* Proposals
  + Option 1: Based on CR ([R4-2400554](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400554.zip), MTK), RAN4 can update the clause 3.1 for GEO and add UL reference channels in A.4 in TS36.102.
  + Option 2: Need more input for the detail FRC tables and values
* Recommended WF
  + TBD.

**Issue 2-4-2:** Correction on the ACS/Blocking and maximum input levels for NTN UE in TS36.102

* Proposals
  + Option 1: Based on CR ([R4-2402792](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402792.zip), Qualcomm), RAN4 can update ACS/Blocking and maximum input levels in TS36.102.
  + Option 2: TBA
* Recommended WF
  + TBD.

**Issue 2-4-3:** Correction on the In-band and Guard band operation for NB-IoT NTN UE with NR carriers in TS36.102

* Proposals
  + Option 1: Based on CR ([R4-2402822](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402822.zip), Inmarsat), RAN4 can support the In-band and Guard band operation for NB-IoT NTN UE with NR carriers.
  + Option 2: Keep the previous agreements not to support the in-band and guard-band operation.
* Recommended WF
  + TBD.

### Sub-topic 2-5

*Sub-topic description:* **NR Support for UAV**

*Open issues and candidate options before meeting:*

**Issue 2-5-1:** Correction on the additional SE frequency for NS\_UAV\_46 in TS38.101-1

* Proposals
  + Option 1: Based on CR ([R4-2400824](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400824.zip), CMCC), RAN4 can update the protected frequency range for NS\_UAV\_46 in TS38.101-1.
  + Option 2: TBA
* Recommended WF
  + CR ([R4-2400824](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400824.zip), CMCC) is agreeable.

**Issue 2-5-2:** Correction on the definition of Aerial UE in clause 3.1 in TS38.101-1

* Proposals
  + Option 1: Based on CR ([R4-2401205](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401205.zip), Xiaomi), RAN4 can update the definition of Aerial UE in clause 3.1.
  + Option 2: TBA
* Recommended WF
  + CR ([R4-2401205](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401205.zip), Xiaomi) is agreeable.

**Issue 2-5-3:** Correction on A-MPR requirements for NS\_UAV\_44 and NS\_UAV\_70 in TS38.101-1

* Proposals
  + Option 1: Based on draft CR ([R4-2402081](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402081.zip), Nokia), RAN4 can remove max function in A-MPR tables and correct the editorial errors.
  + Option 2: TBA.
* Recommended WF
  + Draft CR ([R4-2402081](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402081.zip), Nokia) can be revised to remove the duplicated part (clause 3.1) in CR ([R4-2401205](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401205.zip), Xiaomi). The other contents are fine.

**Issue 2-5-4:** Reply LS to RAN2 on UAV UE *additionalPmax-r18* capability necessity

* Proposals
  + Option 1: Based on three draft LSs from Ericsson, Nokia and ZTE, RAN4 can send reply LS to RAN2 the necessity of *additionalPmax-r18* capabilityfor NR UAV UE.
  + Option 2: Other option is not preclued.
* Recommended WF
  + Based on Draft LS ([R4-2402326](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402326.zip), Ericsson), RAN4 can further discuss and decide to send LS on this issue in the RAN4 Athens meeting.

### Sub-topic 2-6

*Sub-topic description:* **Enhanced LTE Support for UAV**

*Open issues and candidate options before meeting:*

**Issue 2-6-1:** Correction on the additional SE frequency and fix the error in NS\_UAV\_46 and NS\_UAV\_70 in TS36.101

* Proposals
  + Option 1: Based on CR ([R4-2400825](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400825.zip), CMCC), RAN4 can update the protected frequency range for NS\_UAV\_44 and fixed some errors in TS36.101.
  + Option 2: TBA
* Recommended WF
  + CR ([R4-2400825](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400825.zip), CMCC) is agreeable.

**Issue 2-6-2:** Correction on additional spectrum emission limit in A-MPR table for LTE UAV UEs in TS36.101

* Proposals
  + Option 1: Based on draft CR ([R4-2402084](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402084.zip), Nokia), RAN4 can update Note 10 as follow

“The index of the sequence NS\_UAV corresponds to the value of additionalSpectrumEmission when associated to a IE field *NS-PmaxListAerial* as described in [7]”

* + Option 2: Keep the previous agreements not to support the in-band and guard-band operation.
* Recommended WF
  + Draft CR ([R4-2402084](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402084.zip), Nokia) can be agreeable.

### Sub-topic 2-7

*Sub-topic description:* **Other dedicated Rel-18 WIs**

*Open issues and candidate options before meeting:*

**Issue 2-7-1:** Correction on the clause 10.2 impact on UE RF for SBFD feature in TR38.858

* Proposals
  + Option 1: Based on draft CR ([R4-2400426](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400426.zip), Apple), RAN4 can update the clause 10.2 as follow :

“Based on the study, reusing existing UE RF requirements is the conclusion of the study phase, since no issues related to existing UE RF requirements has been identified in the co-existence study.”

* + Option 2: TBA
* Recommended WF
  + Draft CR ([R4-2400426](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2400426.zip), Apple) is agreeable.

**Issue 2-7-2:** Correction on the terminologies in TR38.858

* Proposals
  + Option 1: Based on draft CR ([R4-2401536](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401536.zip), vivo), RAN4 can update terminologies and fixed some typos in TR38.858.
  + Option 2: TBA
* Recommended WF
  + Draft CR ([R4-2401536](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2401536.zip), vivo) is agreeable.

**Issue 2-7-3:** Correction on NR\_CADC\_R18\_2BDL\_xBUL band combinations in TS38.101-3

* Proposals
  + Option 1: Based on CR ([R4-2402460](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402460.zip), TM-US), RAN4 can add the missing CA band combinations in TS38.101-3.
  + Option 2: TBA
* Recommended WF
  + CR ([R4-2402460](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402460.zip), TM-US) is agreeable.

**Issue 2-7-4:** Correction on A-MPR test condition with NS\_63 and NS\_64 in TS38.101-1

* Proposals
  + Option 1: Based on CR ([R4-2402545](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402545.zip), LGE), RAN4 can update the A-MPR test condition for power class 5 UE with NS\_63 and NS\_64.
  + Option 2: TBA
* Recommended WF
  + TBD.

**Issue 2-7-5:** Update clause 4.3A Applicability of supporting features in TS36.101

* Proposals
  + Option 1: Based on CR ([R4-2402577](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402577.zip), Huawei), RAN4 can update the clause 4.3A to reduce the unnecessary works according to the including feature list in future in TS36.101.
  + Option 2: TBA
* Recommended WF
  + CR ([R4-2402577](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402577.zip), Huawei) is agreeable.

# Topic #3: Maintenance of Rel-18 TEI

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2402308](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402308.zip) (CR) | MediaTek | Title: CR for FE architecture correction for ULCA n5-n8  **This is a Cat. F CR for TR38.872 in Rel-18**  **Reason:** For CA\_n5-n8 UE,it only consider partial band filters on primary Rx paths but diversity Rx path still use full band filter that n5 diversity Rx LNA may still blocked by uplink in n8 due to no rejection on aggressor. So the diversity Rx shall be using same dedicate n5r filters to avoid n5 DRx LNA blocked by n8 uplink.  **Proposal:**  - Correction for diversity Rx architecture in Figure 5.1.1-5 and Figure 5.1.1-7 as follow:    Figure 5.1.1-5 CA\_n5-n8 architecture with dedicated quadplexer using partial ranges in both n5 and n8    Figure 5.1.1-7 CA\_n5-n8 architecture using dedicated duplexers with partial ranges in both n5 and n8 |
| R4-2402819 (CR) | Inmarsat, Viasat, Omnispace, Terrestar Solutions, Thuraya, Ligado Networks, Hughes/Echostar, Thales | Move to AI 5.2. It will treat in [110][102]Topic summmary |
| R4-2402821 (CR) | Inmarsat, Viasat, Omnispace, Terrestar Solutions, Thuraya, Ligado Networks, Hughes/Echostar, Thales | Move to AI 5.2. It will treat in [110][102] Topic summmary |

## 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 3-1

*Sub-topic description:* **TEI on UL CA architecture of n5-n8**

*Open issues and candidate options before meeting:*

**Issue 3-1-1:** CR to update UE RF architecture of CA\_n5-n8 UE in TR38.872.

* Proposals
  + Option 1: Based on CR ([R4-2402308](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402308.zip), MTK), RAN4 can update the CA\_n5-n8 UE RF architectures
  + Option 2: Others
* Recommended WF
  + CR ([R4-2402308](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_110/Docs/R4-2402308.zip), MTK) is agreeable.

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