**3GPP TSG-RAN4 Meeting #116bis** **R4-2514426**

**Prague, Czechia, 13th Oct 2025 - 17th Oct 2025**

**Agenda item:** 4.1.3

**Source:** Moderator (Eutelsat Group)

**Title:** Topic summary for [116bis][303] Ku\_band\_Maintenance

**Document for:** Information

# Introduction

The core work for the introduction of Ku bands in WI RP-252911 was completed at RAN #109. The maintenance work can now start.

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| --- |
| * + 1. Introduction of Ku Band for NR NTN [NR\_NTN\_Ku\_bands-Core]        1. System parameters [NR\_NTN\_Ku\_bands-Core]        2. UE RF requirements [NR\_NTN\_Ku\_bands-Core]        3. SAN RF core requirements        4. RRM core requirements |

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

# Topic #1: System parameters (agenda 4.2.7.1)

## Companies’ contributions summary

All Tdocs related to the following topics (agenda 4.2.7.1) are listed here:

|  |  |  |
| --- | --- | --- |
| **Tdoc** | **Company** | **Proposals / Observations** |
| [**R4-2513151**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513151.zip) | CATT | Proposal 1: Add a note “NOTE 2: SS Block SCS is same with SCS for data channels.” for band n248 and n247 for applicable SS raster in Table 5.4.3.3-1 of TS 38.101-5 and TS 38.018 as below: |
| [**R4-2513150**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513150.zip)(was 4.2.7.2) | CATT | Draft CR to add Note 2 for band n248 and n247 in Table 5.4.3.3-1. |
| [**R4-2513153**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513153.zip)(allocated in 4.7.2.3) | | CATT | Draft CR for 38.108, On SAN requirement of the NR NTN Ku band  Introduce note for the synchronization raster entries for band n248 and n247, and OTA ACS interferer frequency offset for 20MHz CP-OFDM interfering signal is incorrect. This draft CR is on the top of agreed big CR R4-2511234 in RAN4#116.  1) Add Note 2 for band n248 and n247 in Table 5.4.3.3-1.  2) Change OTA ACS interferer frequency offset for 20MHz CP-OFDM interfering signal.  A screen shot of a computer  AI-generated content may be incorrect. |
| [**R4-2513449**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513449.zip) | Xiaomi | Draft CR to correct frequency range definitions in 38.108 |
| [**R4-2513450**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513450.zip) | Xiaomi | Draft CR to correct frequency range definitions in 38.101-5 |
| [**R4-2513831**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513831.zip) | Ericsson | Draft CR to capture ITU-R, FCC and ECA frequency allocation + ECC Decisions and ETSI Harmonized Standards |

## Open issues summary

### Sub-topic 1-1: Alignment of SSB and Sync raster SCS

* Proposals: Proposal 1 in [**R4-2513151**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513151.zip)from CAICT
* Proposal 1: Add a note “NOTE 2: SS Block SCS is same with SCS for data channels.” for band n248 and n247 for applicable SS raster in Table 5.4.3.3-1 of TS 38.101-5 and TS 38.018 as below:

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* Change 1 from ZTE, Sanechips in [**R4-2513153**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513153.zip)

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AI-generated content may be incorrect.

* Moderator Recommendation:
* The WF agreed that this was missed in the big CR.
* Adopt the draft CR in [**R4-2513150**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513150.zip) with clarified wording:
  + “Note 2: The SSB SCS shall be the same as used for the data channel”
* Adopt change 1 in the draft CR in [**R4-2513153**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513153.zip) with the same modified wording:
  + “Note 2: The SSB SCS shall be the same as used for the data channel”

### Sub-topic 1-2: Clarification of NTN frequency ranges

* Proposals:
  + Proposal in [**R4-2513449**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513449.zip) for 38.101-5 from Xiaomi

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* + Proposal in [**R4-2513450**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513450.zip) for 38.101-5 from Xiaomi#

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* Moderator Recommendation:
* Endorse the draft CRs in [**R4-2513449**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513449.zip) and [**R4-2513450**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513450.zip)

### Sub-topic 1-3: Regulatory updates

* Proposals:
  + Proposal in draft CR [**R4-2513831**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513831.zip) from Ericsson to capture ITU-R, FCC and ECA frequency allocation + ECC Decisions and ETSI Harmonized Standards
* Moderator Recommendation:
* Endorse the draft CRs in [**R4-2513831**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513831.zip)

# Topic #2: UE RF requirements (agenda 4.2.7.2)

## Companies’ contributions summary

All Tdocs related to the following topics (agenda 4.2.7.2) are listed here:

|  |  |  |
| --- | --- | --- |
| **T-doc** | **Company** | **Proposals / Observations** |
| [**R4-2513828**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513828.zip) | Ericsson | Observation 1: RAN4 already specified NTN limits that could be exceeded for a short amount of time.  Observation 2: RAN4 already specified NTN limits depending on the number of terminals simultaneously transmitting. This could also be done for PFD limits if needed.  Observation 3: Even if the NCF is out of scope of EN 301 186, this Harmonized Standard specifies PFD limits and associated test procedures.  Proposal 1: Capture the regulatory PFD limits as normative requirements. If not, TS 38.101-5 will not be complete.  Proposal 2: Capture the regulatory PFD limits for NTN VSAT via NS signalling, as suggested in our companion draft CR([4]). |
| [**R4-2513829**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513829.zip) | Ericsson | Draft CR to TS 38.101-5 – VSAT PFD requirements |
| [**R4-2513951**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513951.zip) | MediaTek (Wuhan) Inc. | Draft CR to TS38.101-5: Corrections on NTN VSAT requirements for Ku-band  VSATs must comply with the relevant requirements when signaled by the NS. However, the requirements in NS\_206N and NS\_207N in Table 9.7.1-1. are incorrect. |
| [**R4-2514023**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514023.zip) | ZTE Corporation, Sanechips | Draft CR to TS38.101-5 Revise 9.2.3, 9.7 and 10.8 requirements for NTN Ku bands  1. EIRP and TRP tolerance in configured transmitted power are not applicable to Ku bands;  2. Clause numbers in Table 9.7.1-1 have some mistakes  3. Receiver antenna off-axis performance should apply to “NS\_206N”, but currently it is not applicable.  1. Revise EIRP and TRP tolerance in configured transmitted power;  2. Revise clause numbers in Table 9.7.1-1;  3. Apply receiver antenna off-axis performance to “NS\_206N”. |
| [**R4-2514025**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514025.zip)(assigned to AI 4.2.7.3) | | ZTE Corporation, CHTTL | Draft CR to TS38.108 Revise section 9.2, 9.3 and 9.7.5 for NTN Ku bands.  2. Revise EIRP and TRP tolerance for FR2-NTN Ku bands  A close-up of a document  AI-generated content may be incorrect. |
| [**R4-2514124**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514124.zip) | CHTTL | draft CR for 38.101-5 for correction of NTN Ku band VSAT requirements for section 10.3, 10.5 and 10.6  This draft CR provides the following corrections:  - Clarify the use of the EISREFSENS\_10M is for the n248 and n246 and based on 10MHz channel bandwidth, while the resultins EISREFSENS\_50M shall be within the specified requirement.  “For bands n248 and n247, vendor can also declare EISREFSENS\_10M based on 10MHz channel bandwidth, in which case the EISREFSENS\_50M = EISREFSENS\_10M +7dBm, and the resulting EISREFSENS\_50M shall still fall within the range specified in Table 10.3.2-2 for corresponding NTN VSAT type.”  - Correct the EISREFSENS\_50M to EISREFSENS\_10M in table 10.5.1-3 and table 10.6.2-2. |

## Open issues summary

*Before f2f meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 2-1: PFD limits

* Proposals:
* Observations and Proposals from Ericsson in [**R4-2513828**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513828.zip)
  + Observation 1: RAN4 already specified NTN limits that could be exceeded for a short amount of time.
  + Observation 2: RAN4 already specified NTN limits depending on the number of terminals simultaneously transmitting. This could also be done for PFD limits if needed.
  + Observation 3: Even if the NCF is out of scope of EN 301 186, this Harmonized Standard specifies PFD limits and associated test procedures.
  + Proposal 1: Capture the regulatory PFD limits as normative requirements. If not, TS 38.101-5 will not be complete.
  + Proposal 2: Capture the regulatory PFD limits for NTN VSAT via NS signalling, as suggested in our companion draft CR([4]).
  + Proposal 1: Study the OTA test methods on Ka-band as a starting point.
* Draft CR from Ericsson in [**R4-2513829**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513829.zip)
* Moderator Recommendation:
* Discussion required

### Sub-topic 2-2: Corrections to NS206 and NS207

* Proposals:
* Draft CR from MediaTek (Wuhan) Inc in [**R4-2513951**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513951.zip)

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* Change 2 in draft CR from ZTE, Sanechips in [**R4-2514023**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514023.zip)

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* Change 3 in draft CR from ZTE, Sanechips in [**R4-2514023**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514023.zip)

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* Moderator Recommendation:
* The proposals in [**R4-2513951**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513951.zip) and [**R4-2514023**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514023.zip) are the same
* Endorse the draft CR in [**R4-2513951**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513951.zip) which addresses this issue alone
* Endorse change 3 in draft CR in [**R4-2514023**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514023.zip)

### Sub-topic 2-3: EIRP and TRP tolerances

* Proposals:
* Proposal 1 from ZTE, Sanechips in [**R4-2514023**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514023.zip)

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* Change 1 from ZTE, Sanechips in [**R4-2514025**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514025.zip)

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* Moderator Recommendation:
* Endorse changes to 9.2.3 in draft CR [**R4-2514023**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514023.zip)

### Sub-topic 2-4: Correction of NTN Ku band VSAT requirements for section 10.3, 10.5 and 10.6

* Proposals:
* Draft CR from CHTTL in [**R4-2514124**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514124.zip)
  + Clarify the use of the EISREFSENS\_10M is for the n248 and n246 and based on 10MHz channel bandwdith, while the resultins EISREFSENS\_50M shall be within the specified requirement.
  + For bands n248 and n247, vendor can also declare EISREFSENS\_10M based on 10MHz channel bandwidth, in which case the EISREFSENS\_50M = EISREFSENS\_10M +7dBm, and the resulting EISREFSENS\_50M shall still fall within the range specified in Table 10.3.2-2 for corresponding NTN VSAT type.”
  + Correct the EISREFSENS\_50M to EISREFSENS\_10M in table 10.5.1-3 and table 10.6.2-2.
* Moderator Recommendation:
* Endorse the daft CR in [**R4-2514124**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514124.zip)

# Topic #3: SAN RF requirements (agenda 4.2.7.3)

## Companies’ contributions summary

All Tdocs related to the following topics (agenda 4.2.7.3) are listed here:

|  |  |  |
| --- | --- | --- |
| **T-doc** | **Company** | **Proposals / Observations** |
| [**R4-2513152**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513152.zip) | CATT | Proposal 1: For CP-OFDM type of interfering signal for ACS requirement for FR1-NTN Ku-band, the RBs for 20MHz CBW and 15kHz SCS should adopt 106 instead of 100.  Observation 1: For 20MHz 15kHz SCS 106 RBs CP-OFDM NR signal as interfering signal for ACS requirement for FR1-NTN Ku-band, the OTA ACS interferer frequency offset for *SAN type 1-O* operating above 10 GHz in Table 10.5.1.2a-2 in big CR is not applicable.  Proposal 2: To adopt the following ACS interferer frequency offsets for CP-OFDM type of interfering signal for FR1-NTN Ku-band. |
| [**R4-2513153**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513153.zip)(treated in 4.7.2.1) | CATT | Draft CR for 38.108, On SAN requirement of the NR NTN Ku band  Introduce note for the synchronization raster entries for band n248 and n247, and OTA ACS interferer frequency offset for 20MHz CP-OFDM interfering signal is incorrect. This draft CR is on the top of agreed big CR R4-2511234 in RAN4#116.  1) Add Note 2 for band n248 and n247 in Table 5.4.3.3-1.  2) Change OTA ACS interferer frequency offset for 20MHz CP-OFDM interfering signal. |
| [**R4-2513830**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513830.zip) | Ericsson | Draft CR to TS 38.108 – ICS fixes  All NTN Ku-bands receiver requirements are specified based on EISREFSENS\_50M, except the ICS requirement which is based on EISREFSENS\_10M. To keep the specification consistent, the ICS requirement shall also be specified based on EISREFSENS\_50M.  RAN4 agreed to either declare EISREFSENS\_50M or EISREFSENS\_10M but that could be handled in the conformance specification.  Change the In-channel Selectivity requirement definition by replacing EISREFSENS\_10M with EISREFSENS\_50M. |
| [**R4-2514024**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514024.zip) | ZTE Corporation, CHTTL | Draft CR to TS38.108 Add EVM window length for FR1-NTN Ku bands  EVM window length requirement is missing for FR1-NTN Ku bands.  Add EVM window length requirement for FR1-NTN Ku bands |
| [**R4-2514025**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514025.zip) | ZTE Corporation, CHTTL | Draft CR to TS38.108 Revise section 9.2, 9.3 and 9.7.5 for NTN Ku bands  2. Revise OTA transmitter spurious emissions for FR1-NTN and FR2-NTN Ku bands. |
| [**R4-2514125**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514125.zip) | CHTTL | draft CR for 38.108 for correction of NTN Ku band SAN requirements for section 9.4, 9.6, 10.3, 10.4 and 10  The big CR for 38.108 for Re.19 NTN Ku band was agreed during last RAN4 meeting. The group agree to introduce the FR1-NTN Ku band SAN requirement by separating the subclause of SAN type 1-O to operating below 10GHz and above 10GHz. However, as some section are expected to be no impact in the beginning, this cause misalignment between different sections. This draft CR is proposed to correct this issue. In addition, few corrections are made after further review.  This draft CR provides the following corrections:  - Aligning the clause title as “SAN type 1-O operating below 10GHz”, and “SAN type 1-O above operating 10GHz” for section 9.4.2.2, 9.4.4, 9.6.1.2, 9.6.1.2a (new), 9.6.2.2, 9.6.2.2a (new), 10.4.2.  - Add note 2 to Table 10.3.2a-1 to align with Table 10.3.3-1.  - Revise the EISREFSENS\_10M to EISREFSENS\_50M in Table 10.9.2a-1 to align the specification. |

## Open issues summary

*Before f2f meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 3-1: ACS interfering signal definition

* Proposals:
* Proposal 1 from CATT in [**R4-2513152**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513152.zip)
  + Proposal 1: For CP-OFDM type of interfering signal for ACS requirement for FR1-NTN Ku-band, the RBs for 20MHz CBW and 15kHz SCS should adopt 106 instead of 100.
* Proposal 2 from CATT in [**R4-2513152**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513152.zip)
  + Proposal 2: To adopt the following ACS interferer frequency offsets for CP-OFDM type of interfering signal for FR1-NTN Ku-band.
* Moderator Recommendation:
* Agree proposals 1 and 2 in [**R4-2513152**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513152.zip)

### Sub-topic 3-2: ICS defintiion

* Proposals:
* Draft CR from Ericsson in [**R4-2513828**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513828.zip)
  + Change the In-channel Selectivity requirement definition by replacing EISREFSENS\_10M with EISREFSENS\_50M.

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* Moderator Recommendation:
* Endorse the draft CR in [**R4-2513828**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513828.zip)

### Sub-topic 3-3: EVM window length

* Proposals:
* Draft CR from ZTE Corporation, CHTTL in [**R4-2514024**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514024.zip)
  + Draft CR to TS38.108 Add EVM window length for FR1-NTN Ku bands
  + EVM window length requirement is missing for FR1-NTN Ku bands.
  + Add EVM window length requirement for FR1-NTN Ku bands

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* Moderator Recommendation:
* Endorse draft CR in [**R4-2514024**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514024.zip)

### Sub-topic 3-4: OTA transmitter spurious emissions

* Proposals:
* Change 2 in draft CR from ZTE Corporation, CHTTL in [**R4-2514025**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514025.zip)

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* Moderator Recommendation:
* Endorse change 2 in [**R4-2514025**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514025.zip)

### Sub-topic 3-5: Aligning clause titles

* Proposals:
* Change 1 in draft CR from CHTTL in [**R4-2514125**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514125.zip)
  + Aligning the clause title as “SAN type 1-O operating below 10GHz”, and “SAN type 1-O above operating 10GHz” for section 9.4.2.2, 9.4.4, 9.6.1.2, 9.6.1.2a (new), 9.6.2.2, 9.6.2.2a (new), 10.4.2
* Moderator Recommendation:
* Endorse change 1 in [**R4-2514125**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514125.zip)

### Sub-topic 3-6: SAN LEO adn GEO classes

* Proposals:
* Change in draft CR from CHTTL in [**R4-2514125**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514125.zip)
  + Add note 2 to Table 10.3.2a-1 to align with Table 10.3.3-1

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* Moderator Recommendation:
* Is this change necessary?
* Discussion required

### Sub-topic 3-7: OTA in-channel selectivity requirement

* Proposals:
* Change 3 in draft CR from CHTTL in [**R4-2514125**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514125.zip)

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* Moderator Recommendation:
* Endorse change 3 in [**R4-2514125**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514125.zip)

# Topic #4: RRM requirements (agenda 4.2.7.4)

## Companies’ contributions summary

All Tdocs related to the following topics (agenda 4.2.7.4) are listed here:

|  |  |  |
| --- | --- | --- |
| **T-doc** | **Company** | **Proposals / Observations** |
| [**R4-2513634**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513634.zip) | LG Electronics Inc. | Proposal 1: Refine the exception time limit less than 1 second (e.g., 0.5 seconds). |
| [**R4-2513688**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513688.zip) | LG Electronics Inc. | Clarify terminology and complete missing definitions for FR2 satellite switching requirements, and align exception handling consistently between hard and soft switch.  The requirements for FR2 satellite switching were updated for consistency and completion.  - replace “cell” with “satellite” in 6.1C.3.3  - refine the exception time limit related to t-ServiceStart-18 in 6.1C.3.3.3 |
| [**R4-2513912**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513912.zip) | vivo | Draft CR on RRM core requirements of Ku band for NR NTN  The mobile VSAT UE type is indicated via ntn-VSAT-MobilityType-r19. However, in the current timing requirement, it is incorrectly specified as ‘UEs that indicate ‘mobile’ via UE capability ntn-VSAT-AntennaType-r19.’. The ntn-VSAT-AntennaType-r19 is for beam steering capability  Correct the UE capability in Note 3 of Table 7.1C.2-3 from ntn-VSAT-AntennaType-r19 to ntn-VSAT-MobilityType-r19. |
| [**R4-2514096**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514096.zip) | ZTE Corporation, Sanechips | Observation 1: The time mainly refer to beamforming weight preparing time including storage media access and margin.  Observation 2: t-ServiceStart-r18 informs the UE when to start switching to the target satellite, whereas ssb-TimeOffset-r18 tells the UE where to find the target satellite's synchronization signal block.  Proposal 1: ssb-TimeOffset is necessary and 1s could be the baseline.  Proposal 2: For Ku-band in FR2-NTN numerology, not to change the existing terminologies: ‘VSAT UE in FR2-NTN’ and ‘FR2-NTN’ |
| [**R4-2514159**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514159.zip) | Huawei, HiSilicon | Proposal: For soft satellite switch, when SSB of the target satellite does not fall in any SMTC, the scheduling restriction is defined based on a window:  - The offset of the window is the latest subframe that is no later than the SSB of the target satellite,  - The duration of the window is the smallest number in subframe that is no smaller than the burst length of the SSB of the target satellite,  - The periodicity of the window is the periodicity of the SSB of the source satellite. |
| [**R4-2514160**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514160.zip) | Huawei, HiSilicon | The applicability of RRM requirements for VSAT UE in FR1-NTN is captured in clause 3.6. However, in clause 9 there are similar applicability specified for measurement requirements. Defining applicability for individual requirements is redundant and it cause the confusion for interpreting applicability of other individual requirements.  Remove the requirement applicability specified in clause 9 for measurement. |
| [**R4-2514347**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514347.zip) | Nokia | Proposal 1: Rephrase the requirements: “The requirements in this clause are not applicable if the network has transmitted the value of t-serviceStart-r18 and not modified since the last SI modification period that is at least [x] before t-serviceStart-r18”.  Proposal 2: The warning period shall be 0.5 seconds for the applicability of soft satellite switching requirements. |

## Open issues summary

*Before f2f meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 4-1: Soft satellite switching with re-sync exception limit

* Proposals:
* Proposal 1 from LG Electronics Inc. in [**R4-2513634**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513634.zip)
  + Proposal 1: Refine the exception time limit less than 1 second (e.g., 0.5 seconds).
* Change 2 from LG Electronics Inc. draft CR in [**R4-2513634**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513634.zip)
  + Refine the exception time limit related to t-ServiceStart-18 in 6.1C.3.3.3 to 0.5 seconds
* Proposals 1 from ZTE Corporation, Sanechips in [**R4-2514096**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514096.zip)
  + Proposal 1: ssb-TimeOffset is necessary and 1s could be the baseline.
* Proposal 2 from Nokia in [**R4-2514347**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514347.zip)
  + Proposal 2: The warning period shall be 0.5 seconds for the applicability of soft satellite switching requirements.
* Moderator Recommendation:
* The majority prefer 0.5 s
* Discussion required

### Sub-topic 4-2: Correction to cell definition

* Proposals:
* Change 2 from LG Electronics Inc. draft CR in [**R4-2513634**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513634.zip)
  + Change target cell to target satellite.
* Moderator Recommendation:
* Endorse change 2 in draft CR in [**R4-2513634**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513634.zip)

### Sub-topic 4-3: Correction to use of ntn-VSAT-MobilityType-r19

* Proposals:
* Draft CR from Vivo in [**R4-2513912**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513912.zip)
  + Change *ntn-VSAT-AntennaType-r19 to ntn-VSAT-MobilityType-r19*
* Moderator Recommendation:
* Endorse draft CR in [**R4-2513912**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513912.zip)

### Sub-topic 4-4: Correction to use of ntn-VSAT-MobilityType-r19

* Proposals:
* Draft CR from Vivo in [**R4-2513912**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513912.zip)
  + Change *ntn-VSAT-AntennaType-r19 to ntn-VSAT-MobilityType-r19*
* Moderator Recommendation:
* Endorse draft CR in [**R4-2513912**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2513912.zip)

### Sub-topic 4-5: Correction to use of ntn-VSAT-MobilityType-r19

* Proposals:
* Proposal 1 from Huawei, HiSilicon in [**R4-2514096**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514096.zip)
  + Proposal 2: For Ku-band in FR2-NTN numerology, not to change the existing terminologies: ‘VSAT UE in FR2-NTN’ and ‘FR2-NTN’
* Moderator Recommendation:
* This is the status quo. Does anything need to be agreed?

### Sub-topic 4-6: Correction to use of ntn-VSAT-MobilityType-r19

* Proposals:
* Proposal from Huawei, HiSilicon in [**R4-2514159**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514159.zip)
* Proposal: For soft satellite switch, when SSB of the target satellite does not fall in any SMTC, the scheduling restriction is defined based on a window:
  + The offset of the window is the latest subframe that is no later than the SSB of the target satellite,
  + The duration of the window is the smallest number in subframe that is no smaller than the burst length of the SSB of the target satellite,
  + The periodicity of the window is the periodicity of the SSB of the source satellite
* Moderator Recommendation:
* Discussions required

### Sub-topic 4-7: Clarificaiton of applicability of requirements

* Proposals:
* Proposal from Huawei, HiSilicon in [**R4-2514160**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514160.zip)
  + The applicability of RRM requirements for VSAT UE in FR1-NTN is captured in clause 3.6. However, in clause 9 there are similar applicability specified for measurement requirements. Defining applicability for individual requirements is redundant and it cause the confusion for interpreting applicability of other individual requirements.
  + Remove the requirement applicability specified in clause 9 for measurement.

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* Moderator Recommendation:
* Endorse the draft CR in [**R4-2514160**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514160.zip)

### Sub-topic 4-8: Requirements for NTN UEs on Satellite switching in Ku band operation

* Proposals:
* Proposal 1 from Nokia in [**R4-2514347**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_116bis/Docs/R4-2514347.zip)
  + Proposal 1: Rephrase the requirements: “The requirements in this clause are not applicable if the network has transmitted the value of t-serviceStart-r18 and not modified since the last SI modification period that is at least [x] before t-serviceStart-r18”.
* Moderator Recommendation:
* Discussion required