**3GPP TSG-RAN WG4 Meeting #116 R4-2511448**

**Bengaluru, India, August 25th – 29th, 2025**

**Agenda item:** 4.1.3

**Source:** Moderator (Ericsson)

**Title:** Topic summary for [116][301] BSRF\_Maintenance\_TEI

**Document for:** Information

# Introduction

The scope of this topic summary is BS RF maintenance agenda items. Topics are divided according to the agenda:

**Up to Rel-17 maintenance for LTE and NR and TEI:**

1. BS RF requirements and BS conformance testing (4.3)

Rel-16/17 TEI and others (EMC, OTA, and TRP/TRS) (4.6) ***(No Tdocs)***

**Rel-18 and Rel-19 maintenance for LTE and NR, TEI18 and TEI19:**

Rel-19 spectrum related WI maintenance:
New bands for LTE based 5G terrestrial broadcast for early deployments (5.3.6) ***(No Tdocs)***

1. NR NTN enhancements:
System parameters and UE RF requirements (5.17.1)
2. Rel-18 and Rel-19 non-spectrum related WIs:
BS/SAN/non-UE RF requirements (5.28.2)
3. Rel-18 TEI:
BS RF, demodulation performance and other topics (5.29.3)

Rel-19 TEI:
BS RF, demodulation performance and other topics (5.30.3) ***(No Tdocs)***

**RAN task and other topics:**

1. Framework simplification for co-location/co-existence requirements (10.1)

# Topic #1: BS RF requirements and BS conformance testing (up to Rel-17) (4.3)

## Companies’ contributions summary

**Submitted CRs (Cat A CRs not listed)**

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Title / Summary of change** |
| R4-2509353 | CATT | (NR\_NTN\_solutions-Core)CR for TS38.108, Add SAN type 1-H for OTA sensitivity requirement**Summary of change:** Add SAN type 1-H for OTA sensitivity in sub-clause 10.2.2. |
| R4-2509367 | CATT | (NR\_NTN\_solutions-Perf) CR for TS 38.181, Correction on term of SAN performance requirements**Summary of change:** To correct the term of SAN in Clause 7.5, 8.4, 9.4, |
| R4-2510230 | Ericsson | (NR\_6GHz) CR to TS 38.104: Correction of requirement parameter for band n104 in Clause 10.3.2**Summary of change:**1. In Table 10.3.2-1a, changed to “OTA reference sensitivity level, EISREFSENS”
2. In Table 10.3.2-2a, changed to “OTA reference sensitivity level, EISREFSENS”
3. In Table 10.3.2-3a, changed to “OTA reference sensitivity level, EISREFSENS”
 |
| R4-2511294(revised to R4-2511657) | Huawei, HiSilicon | (NR\_6GHz\_unlic\_EU-Perf) CR to 38.141-2 correction on spurious emission test limits for n102**Summary of change:** Correct the band range for n102 in the co-existence and co-location table. |
| R4-2511297 | Huawei, HiSilicon, Ericsson, ZTE, Samsung, CATT, Nokia | (NR\_6GHz-Core) CR to 38.104 correction on the band definition for n104**Summary of change:** Note 8 in Table 5.2-1 is removed. |
| R4-2511303 | Huawei, HiSilicon | (AASenh\_BS\_LTE\_UTRA-Core) CR to 37.105: Additional co-location requiremen for BC1 and BC2**Summary of change:** Reffering to 37.141, the frequency offsets are added. |

# Topic #2: NR NTN enhancements; System parameters and UE RF requirements (5.17.1)

## Companies’ contributions summary

**Submitted CRs (Cat A CRs not listed)**

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Title / Summary of change** |
| R4-2509815 | Xiaomi | (NR\_NTN\_enh-Core) CR for TS 38.101-5: Correction for VSAT type, CAT-F R18**Summary of change:** Replace “UE Type” termimology to “NTN VSAT type”. |
| R4-2510669 | LG Electronics | (NR\_NTN\_enh-Core) CR on phase continuity requirements for DMRS bundling**Summary of change:** Add “UE specific TA and common TA do not update.” in NTN-specific condition on 6.4.2.2NOTE: *Clauses affected* missing on CR cover page. |
| R4-2511370 | THALES | (NR\_NTN\_enh-Core) Maintenance CR to TS 38.101-5 – Min Peak EIRP value for NTN UE in Ka-band – Cat F CR**Summary of change:** Introduction of a Note to explain the applicability of min peak EIRP value.NOTE: Cat A CR is submitted and uploaded before the meeting. |
| R4-2511496 | THALES | (NR\_NTN\_enh-Core) Maintenance – Max Peak EIRP value for NTN UE in Ka-band – Cat F CR**Summary of change:** Introduction of scaling factor to explain max peak EIRP value for different transmission bandwidths.NOTE: Cat A CR is submitted and uploaded before the meeting. |

# Topic #3: Rel-18 and Rel-19 non-spectrum related WIs; BS/SAN/non-UE RF requirements (5.28.2)

## Companies’ contributions summary

**Submitted CRs (Cat A CRs not listed)**

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| **T-doc number** | **Company** | **Title / Summary of change** |
| R4-2509185 | Nokia, Union Inter. Chemins de Fer | (NR\_FR1\_lessthan\_5MHz\_BW-Perf) CR to TS 38.141-1: Transmit power for 3MHz CBW in band n100**Summary of change:** Addition of the output power restrictions for 3MHz CBW in band n100. |
| R4-2509370 | CATT | (NR\_NTN\_enh-Core) CR to 38.108, Correction on term of SAN channel bandwidth for FR2 ACLR requirements**Summary of change:** To correct the term of SAN BWChannel and BWConfig in Clause 9.7 |
| R4-2511274 | Nokia | CR to 36.104 on missing Band 47 note**Summary of change:** Note is added to align with 36.101. |
| R4-2509372 | CATT | (LTE\_NBIOT\_eMTC\_NTN\_req) CR for TS 36.181, Correction on SAN diagram**Summary of change:** To correct the SAN diagrams in Clause 4.2 |
| R4-2509373 | CATT | (LTE\_NBIOT\_eMTC\_NTN\_req) CR for TS 36.108, Correction on SAN diagram**Summary of change:** To correct the SAN diagrams in Clause 4.3 |

# Topic #4: Rel-18 TEI: BS RF, demodulation performance and other topics (5.29.3)

## Companies’ contributions summary

**Discussion papers**

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Title/Proposals** |
| R4-2509347 | CATT | Discussion on reference sensitivity levels requirement apply to SAN that supports NB-IoT operation in NTN NR in-band**Proposal 1:** Update PREFSENS for 20MHz CBW and 15kHz SCS with G-FR1-NTN-A1-11 (Note 4) in TS 38.108 from -92.3 to -92.9. |

**Submitted CRs (Cat A CRs not listed)**

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| **T-doc number** | **Company** | **Title / Summary of change** |
| R4-2509348 | CATT | (TEI18)CR for TS38.108, Correction on reference sensitivity levels requirement apply to SAN that supports NB-IoT operation in NTN NR in-band[NTNNBIoT\_inbandNTNNR]**Summary of change:** Change PREFSENS for 20MHz CBW and 15kHz SCS with G-FR1-NTN-A1-11 (Note 4) from -92.3 to -92.9. |
| R4-2509365 | CATT | (TEI18) CR for 38.108, Correction on SAN channel bandwidth [NTNNBIoT\_inbandNTNNR]**Summary of change:** To correct the SAN channel bandwidth for NB-IoT operation in NTN NR in-band in Clause 3, 6.3, 7.3, 7.5, 7.8, 9.4, 10.4, 10.9 |
| R4-2509733(revised to R4-2511666) | Nokia, Echostar, Viasat, Ericsson, MediaTek, Huawei |  (TEI18) CR to 36.102 related to Demodulation for NB-IoT NTN inband operation with NR NTN (LTE\_NBIOT\_eMTC\_NTN)**Summary of change:** Change of some titles in clause 8.3.1.1.1 and A.1.1.1 and addition of a note. |
| R4-2511545 | Huawei, HiSilicon | (TEI18) CR to TS 38.104: correction of OTA Tx IMD wanted signal characteristics [OTA Tx IMD signal]**Summary of change:** OTA Tx Intermodulation requirement correction and inconsistency removal. |

# Topic #5: Framework simplification for co-location/co-existence requirements (10.1)

## Companies’ contributions summary

**Discussion papers**

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Title/Proposals** |
| R4-2509341 | CATT | Further discussion on framework simplification for co-location/co-existence requirements**Observation 1:** The following table can be used to simplify the co-existence requirement in TS 38.104.< Table 6.6.5.2.3-1: BS spurious emissions basic limits for BS for co-existence with systems operating in other frequency bands>**Observation 2:** Don’t remove the existing co-existence/co-location requirement, and adding co-existence/co-location requirement for Other co-existence system type not listed above in end of co-existence requirement table can reduce significant number of CRs when new frequency band is introduced. For this approach to simplify co-existence/co-location requirement, we do not need to delete existing notes in the co-existence and co-location requirement clauses. A example is shown as below:< Table 6.6.5.2.3-1: BS spurious emissions basic limits for BS for co-existence with systems operating in other frequency bands |
| R4-2510827 | Ericsson | Discussion on simplification of tables with requirements for co-existence and co-location**Observation1:** A new Annex X in TS 37.104 is an acceptable way fwd for us to solve the issue of describing the frequency range for different operating bands. A proposal is attached at the end of this document.**Proposal 1:** In some cases (e.g. TS 37.105, TS 36.104) we need to delete 3 tables (e.g for WA, MR and LA) while introducing a new one with all the information. In this case the present table description will be set to “void” and a new table will be introduced.**Proposal 2:** In some specification the Out-of-band blocking requirements for co-location need to be compressed as well in one table. This aspect was not mentioned in the WF. See proposals in R4-2510829 and -30.**Proposal 3:** Use the proposal in R4-2508759 as the reference for implementation.**Proposal 4:** Simplify the Blocking requirements for co-location following the template used in TS 38.104 clause 7.5.3 (Conducted) and 10.6.2 (OTA) |
| R4-2511563 | Huawei, HiSilicon | Further discussion on open issues related to the implementation of framework simplification for co-location/co-existence requirements**Proposal 1**: Before proceeding with the implementation of CRs, the following open issues are to be resolved:- How to reassure that all notes deleted from the legacy tables are properly reflected in new table format. - How to reassure that unnecessary co-location requirements are NOT unintentionally added with this new framework, e.g., IMT BS and FRMCS BS, IMT BS and broadcasting BS, V2X, Unlicensed bands, etc. - How to reassure that unnecessary co-existence requirements are NOT unintentionally added with this new framework.- Proposed solution needs to be 6G-ready, so that introduction of new RAT generation would not introduce new burden. **Proposal 2:** Before proceeding with formal CRs the following steps need to be taken: 1: Agree on full and complete solution to proceed with,2: Based on the agreed solution, provide a full set of Draft CRs to all considered specifications (~15 specs), at least one meeting cycle before the final CRs are targeted.NOTE: please note, that each of the considered specifications captures slightly different table content, i.e., it is not copy-paste process to generate 15 CRs to affected specifications. 3: Only then proceed with the final CRs, as a package.**Proposal 3:** A new annex (as previously proposed for TS 37.104) containing frequency bands which are subject to co ex/co-location requirements shall not be referred from another specification, as it would conflict with previous agreement (i.e., not to refer to another specification).**Proposal 4:** RAN4 to re-consider the idea of a new spec capturing all co-ex and co-location requirements, as it has the following advantages: - Ease of implementation, i.e., 1-to-1 copy-paste of the requirements from legacy specifications to dedicated clause within the new spec,- error prone approach, with no risk of modifying the existing requirements during this work (as it is copy-paste), - overall benefit of 1 CR required to address all co-ex and co-location requirements for any new band in future (as opposed to the currently investigated approach, which does NOT guarantee that),- allows future optimisation and alignment of all tables captured (which is exactly what we are trying to do under unnecessary time pressure), - no time pressure due to simplicity of such new spec implementation. |

**Submitted CRs (Cat A CRs not listed)**

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| **T-doc number** | **Company** | **Title / Summary of change** |
| R4-2509342(revised to R4-2511658 and R4-2511659) | CATT | CR for 38.106, on framework simplification for co-location/co-existence requirement**Summary of change:** 1) Add simplified co-existence spurious requirement in Table 6.5.4.2.2-1.2) Add simplified co-location spurious requirement in Table 6.5.4.2.3-1. |
| R4-2509343(revised to R4-2511698) | CATT | CR for 38.174, on framework simplification for co-location/co-existence requirement**Summary of change:**1) Add simplified co-existence spurious requirement in Table 6.6.5.2.2-1.2) Add simplified co-location spurious requirement in Table 6.6.5.2.3-1. |
| R4-2509344(revised to R4-2511660) | CATT | CR for 37.145-1, on framework simplification for co-location/co-existence requirement**Summary of change:**1) Add simplified co-existence spurious requirement in Table 6.6.6.5.2.5-1.2) Add simplified co-location spurious requirement in Table 6.6.6.5.2.6-1.3) Add simplified blocking co-location requirement for MSR in Table 7.5.5.1.2-1.4) Add simplified blocking co-location requirement for single RAT UTRA FDD operation in Table 7.5.5.2-4.5) Add simplified blocking co-location requirement for single RAT UTRA TDD 1,28 Mcps option operation in Table 7.5.5.3.2-1.6) Add simplified blocking co-location requirement for single RAT E-UTRA operation in Table 7.5.5.4.2-1. |
| R4-2509345(revised to R4-2511661) | CATT | CR for 36.106, on framework simplification for co-location/co-existence requirement**Summary of change:**1) Add simplified co-existence spurious requirement in Table 9.2.2.1-1.2) Add simplified co-location spurious requirement in Table 9.2.3.1-1. |
| R4-2509415(revised to R4-2511662) | Nokia | (TEI19) CR to 36.141 on framework simplification for co-location/co-existence requirements**Summary of change:** Relevant Clauses are updated. |
| R4-2509416(revised to R4-2511663) | Nokia | (TEI19) CR to 37.104 on framework simplification for co-location/co-existence requirements**Summary of change:** Relevant Clauses are updated. |
| R4-2509417(revised to R4-2511664) | Nokia | (TEI19) CR to 38.141-1 on framework simplification for co-location/co-existence requirements**Summary of change:** Relevant Clauses are updated. |
| R4-2510828(revised to R4-2511674) | Ericsson | CR to TS 38.104: Simplification of tables for additional spurious emission requirements for co-existence and co-location**Summary of change:** The tables are restructured to include the general requirement level and exceptions. |
| R4-2510829(revised to R4-2511675 and R5-2512817) | Ericsson | CR to TS 37.105: Simplification of tables for additional requirements for co-existence and co-location**Summary of change:** The tables are restructured to include the general requirement level and exceptions. |
| R4-2510830(revised to R4-2511676) | Ericsson | CR to TS 36.104: Simplification of tables for additional requirements for co-existence and co-location**Summary of change:** The tables are restructured to include the general requirement level and exceptions. |
| R4-2511144(revised to R4-2511677) | ZTE Corporation | (TEI19) CR to TS 38.115-1 spec structure simplification for co-location co-existence requirements**Summary of change:** The table is simplified to include the general requirement level and exceptions. |
| R4-2511145(revised to R4-2511678) | ZTE Corporation | (TEI19) CR to TS 38.176-1: spec structure simplification for co-location co-existence requirements**Summary of change:** The tables are restructured to include the general requirement level and exceptions. |
| R4-2511146(revised to R4-2511679) | ZTE Corporation | (TEI19) CR to TS 38.176-2 spec structure simplification for co-location/co-existence requirements**Summary of change:** The table is simplified to include the general requirement level. |
| R4-2511147(revised to R4-2511680) | ZTE Corporation | (TEI19) CR to TS 37.141: spec structure simplification for co-location/co-existence requirements**Summary of change:** The table is simplified to include the general requirement level and exceptions. |
| R4-2511564 | Huawei, HiSilicon | (TEI19) Draft CR to TS 38-141-2: simplification of co-location and co-existence requirement tables [co-ex/co-lo]**Summary of change:** Placeholder introduction for the (potential) new simplified co-ex and co-location requirement tables. |
| R4-2511565 | Huawei, HiSilicon | (TEI19) Draft CR to TS 37.145-2: simplification of co-location and co-existence requirement tables [co-ex/co-lo]**Summary of change:** Placeholder introduction for the (potential) new simplified co-ex and co-location requirement tables. |
| R4-2511566 | Huawei, HiSilicon | (TEI19) Draft CR to TS 36.143: simplification of co-location and co-existence requirement tables [co-ex/co-lo]**Summary of change:** Placeholder introduction for the (potential) new simplified co-ex and co-location requirement tables. |

## Open issues summary

### Sub-topic 5-1 - Framework simplification for co-location/co-existence requirements

**Issue 5-1-1: Principle for simplification**

* Options based on proposals
	+ Option 1: Maintain tables for co-existence and co-location in each specification but simplify them (as in the agreed WF in R4-2504741)
	+ Option 2: Re-consider the idea of a new spec capturing all co-ex and co-location requirements
* Recommended WF
	+ TBA

**Issue 5-1-2: How to handle table entries for existing non-GSM systems and bands.**

* Options based on proposals and CRs
	+ Option 1: Replace existing co-ex/co-location limits for non-GSM systems with a generic “other system type entry”.
	+ Option 2: Keep existing entries for co-ex/co-location limits for non-GSM systems and add a generic “other system type entry” applicable to new bands only.
* Recommended WF
	+ TBA

**Issue 5-1-3: New Annex in 37.104**

* Options based on proposals
	+ Option 1: New Annex in 37.104 as reference for operating band frequency ranges.
	+ Option 2: No new Annex in 37.104 to be referenced.
* Recommended WF
	+ TBA

**Issue 5-1-4: Other proposals given in discussion papers**

* The following proposals given in discussion papers are independent:
	+ Proposal in R4-25108271: In some cases (e.g. TS 37.105, TS 36.104) we need to delete 3 tables (e.g for WA, MR and LA) while introducing a new one with all the information. In this case the present table description will be set to “void” and a new table will be introduced.
	+ Proposal 2 in R4-2510827: In some specification the Out-of-band blocking requirements for co-location need to be compressed as well in one table. This aspect was not mentioned in the WF. See proposals in R4-2510829 and -30.
	+ Proposal 3 in R4-2510827: Use the proposal in R4-2508759 as the reference for implementation.
	+ Proposal 4 in R4-2510827: Simplify the Blocking requirements for co-location following the template used in TS 38.104 clause 7.5.3 (Conducted) and 10.6.2 (OTA).
	+ Proposal 1 in R4-2511563: Before proceeding with the implementation of CRs, the following open issues are to be resolved:
		- How to reassure that all notes deleted from the legacy tables are properly reflected in new table format.
		- How to reassure that unnecessary co-location requirements are NOT unintentionally added with this new framework, e.g., IMT BS and FRMCS BS, IMT BS and broadcasting BS, V2X, Unlicensed bands, etc.
		- How to reassure that unnecessary co-existence requirements are NOT unintentionally added with this new framework.
		- Proposed solution needs to be 6G-ready, so that introduction of new RAT generation would not introduce new burden.
	+ Proposal 2 in R4-2511563: Before proceeding with formal CRs the following steps need to be taken:

1: Agree on full and complete solution to proceed with,

2: Based on the agreed solution, provide a full set of Draft CRs to all considered specifications (~15 specs), at least one meeting cycle before the final CRs are targeted.

NOTE: please note, that each of the considered specifications captures slightly different table content, i.e., it is not copy-paste process to generate 15 CRs to affected specifications.

3: Only then proceed with the final CRs, as a package.