**3GPP TSG-RAN WG4 Meeting #110bis R4-2405825**

Changsha, China, 15th – 19th April, 2024

**Agenda item: 6.16.9**

**Source:** Moderator (THALES)

**Title:** Topic summary for [110bis][305] NR\_NTN\_enh\_Part1

**Document for:** Information

# Introduction

This document is a summary of the proposals made in the contributions submitted under AI 6.16.1 for the RAN4#110bis meeting.

Please also note the draft TSG-RAN WG4#110bis meeting agenda with respect to NTN topic. The Agenda Items (AIs) considered in this Topic summary for [110bis][305] NR\_NTN\_enh\_Part1 are:

-------------------------------------- Items led by other WGs --------------------------------------------------------------

**6.16 NR NTN enhancement [NR\_NTN\_enh]**

6.16.1 System parameters and regulatory requirements [NR\_NTN\_enh-Core]

6.16.2 Co-existence study for above 10GHz bands [NR\_NTN\_enh-Core]

6.16.3 SAN RF requirements [NR\_NTN\_enh-Core]

6.16.4 SAN RF conformance testing requirements [NR\_NTN\_enh-Perf]

6.16.5 UE RF requirements [NR\_NTN\_enh-Core]

6.16.6 RRM core requirements [NR\_NTN\_enh-Core]

6.16.7 RRM performance requirements [NR\_NTN\_enh-Perf]

6.16.8 Demodulation performance requirements [NR\_NTN\_enh-Perf]

6.16.9 Moderator summary and conclusions [NR\_NTN\_enh]

With the following pre-meeting deadlines:

* + Before April 8 (Monday): Session chairs will provide the list of topics with moderator assignments.
	+ April 11 (Thursday), 17:00 UTC: Moderators provide the initial summary for a topic
	+ April 12 (Friday), 12:00 UTC: Deadline for companies review of initial summary
	+ April 13 (Saturday), 17:00 UTC: Moderators submit the formal tdoc of summary for a topic
	+ April 14 (Sunday): Session chairs share the initial meeting notes taking moderators summary in consideration

And the following pre-meeting and meeting schedule:



The following documents are considered for discussion in [110bis][305] NR\_NTN\_enh\_Part1:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***TDoc Number*** | ***TDoc Type*** | ***Title*** | ***Company/Source*** | ***General Purpose*** | ***Agenda Item*** |
| [R4-2405320](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405320.zip) | draftCR | draft CR for TS 38.101-5 Chapter 3 | Samsung | Endorsement | 6.16.1 |
| [R4-2405315](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405315.zip) | discussion | Discussions on Fixed and Mobile VSAT def and abbr | Samsung | Discussion | 6.16.1 |
| [R4-2405340](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405340.zip) | other | Doppler shift issues for guard band and transmission bandwidth configuration | Huawei, HiSilicon | Approval | 6.16.1 |
| [R4-2405976](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405976.zip) | CR | CR for TR 38.863 regulatory update after WRC-23 | THALES | Endorsement | 6.16.1 |
| [R4-2405923](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405923.zip) | draftCR | Draft CR to TS 38.108: Correction of the NTN frequency ranges, Rel-18 | Huawei, HiSilicon | Endorsement | 6.16.1 |
| [R4-2405705](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405705.zip) | draftCR | draft CR to 38.108: Correction of applicability table for SAN | NEC | Endorsement | 6.16.1 |
|  |  |  |  |  |  |

The current list of topics/sub-topics/issues prior to the meeting is:

* **Topic #1:** System parameters & regulatory information

\* Include band definition

* + Sub-topic 1-1: Discussions on Fixed and Mobile VSAT def and abbr (Samsung)
		- Issue 1-1-1: Amend the abbreviation of VSAT, ESIM, FSS
		- Issue 1-1-2: Amend the definition of “mobile VSAT”
		- Issue 1-1-3: Amend the definition of “Fixed VSAT”
		- Issue 1-1-4: Amend the definition of “Fixed Satellite Service”
	+ Sub-topic 1-2: Doppler shift issues for guard band and transmission bandwidth configuration
		- Issue 1-2-1: Guard band and transmission bandwidth configuration
* **Topic #2:** Draft CRs & CRs.
	+ Sub-topic 2-1: Draft CR(s) to TS 38.101-5
		- Issue 2-1-1: Update TS 38.101-5 - draft CR for TS 38.101-5 Chapter 3 ([R4-2405320](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405320.zip), Samsung)
	+ Sub-topic 2-2: Draft CRs to TS 38.108
		- Issue 2-2-1: Update TS 38.108 - Draft CR to TS 38.108: Correction of the NTN frequency ranges, Rel-18 ([R4-2405923](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405923.zip), Huawei, HiSilicon)
		- Issue 2-2-2: Update TS 38.108 - draft CR to 38.108: Correction of applicability table for SAN ([R4-2405705](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405705.zip), NEC)
	+ Sub-topic 2-3: CR to TS 38.863
		- Issue 2-3-1: Update TR 38.863 - CR for TR 38.863 regulatory update after WRC-23 ([R4-2405976](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405976.zip), THALES)

# Topic #1: System parameters & regulatory information

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2405315](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405315.zip) | Samsung | Proposal 1: To amend the abbreviation of VSAT: Very Small Aperture Terminal in spec; and ESIM: Earth Station in Motion; and FSS: Fixed Satellite Service.Proposal 2: We propose to amend the definition of “mobile VSAT” as “the VSAT on moving platform, and can be referred to as “ESIM”, in three types: airborne, maritime and land based”.Proposal 3: We propose to amend the definition of “Fixed VSAT” as “the VSAT used in FSS system at given positions; the given position may be a specified fixed point or any fixed point within specified areas; and excluding ESIMs in FSS.”Proposal 4: We propose to amend the definition of “Fixed Satellite Service” as “A radiocommunication service between earth stations at given positions, when one or more satellites are used; the given position may be a specified fixed point or any fixed point within specified areas; in some cases this service includes satellite-to-satellite links, which may also be operated in the inter-satellite service; the fixed-satellite service may also include feeder links for other space radiocommunication services.” |
| [R4-2405340](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405340.zip) | Huawei, HiSilicon | Proposal 1: The issue is identified that one RB could be shifted into the guard for 60kHz SCS when VSAT is handling the doppler pre-compensation. RAN4 can further discuss how to specify or reuse current RF requirements when Edge RB falling into Guard band due to doppler shift. |

### Sub-topic 1-1

*Sub-topic description:* Discussions on Fixed and Mobile VSAT def and abbr (Samsung)

**Issue 1-1-1: Amend the abbreviation of VSAT, ESIM, FSS**

* Proposals: (P1/[R4-2405315](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405315.zip))
	+ To amend the abbreviation of
		- VSAT: Very Small Aperture Terminal in spec; and
		- ESIM: Earth Station in Motion; and
		- FSS: Fixed Satellite Service.
* Recommended WF
	+ TBD, Agree if no controversial comments.

**Issue 1-1-2: Amend the definition of “mobile VSAT”**

* Proposals: (P2/[R4-2405315](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405315.zip))
	+ Amend the definition of “mobile VSAT” as “the VSAT on moving platform, and can be referred to as “ESIM”, in three types: airborne, maritime and land based”.
* Recommended WF
	+ TBD, Agree if no controversial comments.

**Issue 1-1-3: Amend the definition of “Fixed VSAT”**

* Proposals: (P3/[R4-2405315](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405315.zip))
	+ Amend the definition of “Fixed VSAT” as “the VSAT used in FSS system at given positions; the given position may be a specified fixed point or any fixed point within specified areas; and excluding ESIMs in FSS.”
* Recommended WF
	+ TBD, Agree if no controversial comments.

**Issue 1-1-4: Amend the definition of “Fixed Satellite Service”**

* Proposals: (P4/[R4-2405315](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405315.zip))
	+ Amend the definition of “Fixed Satellite Service” as “A radiocommunication service between earth stations at given positions, when one or more satellites are used;
		- the given position may be a specified fixed point or any fixed point within specified areas;
		- in some cases this service includes satellite-to-satellite links, which may also be operated in the inter-satellite service;
		- the fixed-satellite service may also include feeder links for other space radiocommunication services.”
* Recommended WF
	+ TBD, Agree if no controversial comments.

### Sub-topic 1-2

*Sub-topic description:* Doppler shift issues for guard band and transmission bandwidth configuration

**Issue 1-2-1: Guard band and transmission bandwidth configuration**

* Proposals:
	+ **Identified potential issue:** One RB could be shifted into the guard for 60kHz SCS when VSAT is handling the doppler pre-compensation. (P1/[R4-2405340](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405340.zip%22%20%5Ct%20%22_blank))
		- **Proposal 1:** RAN4 can further discuss how to specify or reuse current RF requirements when Edge RB falling into Guard band due to doppler shift. (P1/[R4-2405340](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405340.zip%22%20%5Ct%20%22_blank))
		- **Proposal 2:** RAN4 to consider this potential problem as implementation issue (e.g. SAN scheduler can take this into account). (additional proposal from moderator)
* Recommended WF
	+ TBD;
	+ **Moderator Note 1:** further discuss if extra guard-band is required/should be specified when VSAT UE is pre-compensating Doppler.
	+ **Moderator Note 2:** The main assumption from all NTN releases so far was that UE performs UL pre-compensation. Do proponents ask to add the one RB Guard Band in the current VSAT UE specification (i.e. TS 38.101-5) only?

# Topic #2: Draft CRs & CRs

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2405320](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405320.zip) | Samsung | Update TS 38.101-5 - draft CR for TS 38.101-5 Chapter 3  |
| [R4-2405923](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405923.zip) | Huawei, HiSilicon | Update TS 38.108 - Draft CR to TS 38.108: Correction of the NTN frequency ranges, Rel-18 |
| [R4-2405705](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405705.zip) | NEC | Update TS 38.108 - draft CR to 38.108: Correction of applicability table for SAN |
| [R4-2405976](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405976.zip) | THALES | Update TR 38.863 - CR for TR 38.863 regulatory update after WRC-23 |

## Open issues summary

### Sub-topic 2-1

*Sub-topic description:* This sub-topic is related to the submitted draft CRs

**Issue 2-1-1: Draft CR(s) to TS 38.101-5**

* Proposals: Check if the following draft CRs could be endorsed:

|  |  |  |  |
| --- | --- | --- | --- |
| **T-doc number** | **Company** | **Title** | **To be Endorsed or Revised?** |
| [R4-2405320](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405320.zip) | Samsung | draft CR for TS 38.101-5 Chapter 3 |  |
|  |  |  |  |

### Sub-topic 2-2

*Sub-topic description:* This sub-topic is related to the submitted draft CRs

**Issue 2-2-1/Issue 2-2-2: Draft CRs to TS 38.108**

* Proposals: Check if the following draft CRs could be endorsed:

|  |  |  |  |
| --- | --- | --- | --- |
| **T-doc number** | **Company** | **Title** | **To be Endorsed or Revised?** |
| [R4-2405923](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405923.zip) | Huawei, HiSilicon | Draft CR to TS 38.108: Correction of the NTN frequency ranges, Rel-18 |  |
| [R4-2405705](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405705.zip) | NEC | draft CR to 38.108: Correction of applicability table for SAN |  |

### Sub-topic 2-3

*Sub-topic description:* This sub-topic is related to the submitted CRs

**Issue 2-3-1: CR to TS 38.863**

* Proposals: Check if the following draft CRs could be endorsed:

|  |  |  |  |
| --- | --- | --- | --- |
| **T-doc number** | **Company** | **Title** | **To be Endorsed or Revised?** |
| [R4-2405976](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405976.zip) | THALES | CR for TR 38.863 regulatory update after WRC-23 |  |
|  |  |  |  |

# Recommendations for Tdocs

**Existing tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Tdoc number** | **Source** | **Recommendation**  | **Comments** |
| [R4-2405320](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405320.zip) | Samsung | Revise/Endorse? | Status to be checked in 1st round |
| [R4-2405315](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405315.zip) | Samsung | Discuss |  |
| [R4-2405340](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405340.zip) | Huawei, HiSilicon | Discuss |  |
| [R4-2405976](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405976.zip) | THALES | Revise/Endorse? | Status to be checked in 1st round |
| [R4-2405923](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405923.zip) | Huawei, HiSilicon | Revise/Endorse? | Status to be checked in 1st round |
| [R4-2405705](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110bis/Docs/R4-2405705.zip) | NEC | Revise/Endorse? | Status to be checked in 1st round |