**3GPP TSG RAN meeting #97-e RP-222018**

**e-meeting, September 12 - 16th, 2022** *rev from**RP-221745*

## Status Report to TSG

**Title:** Status report for WI Perf. part: Solutions for NR to support non-terrestrial networks (NTN); rapporteur: Thales

**Agenda item:** 9.5.2.2 - Solutions for NR to support NTN [RAN2 WI: NR\_NTN\_solutions]

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **WI / SI Name** | Rel- 17 Solutions for NR to support non-terrestrial networks (NTN) | | | | |
| included in this status report | Study Item:  No | Core part:  Yes | Performance part:  Yes | | Testing part:  - |
| **Acronym** | NR\_NTN\_solutions | | | | |
| **Unique ID** | 860046 | | | | |
| **TSG Tdoc of latest approved WI/SI description (if any)** | RP-213691 | | | | |
| **Target Completion Date**  **(indicate if changed)** | Study Item:  - | Core part: 06/2022 | Performance part: 12/2022 | Testing part: - | |
| **Overall Completion level** | Study Item:  - | Core part:  Overall: 100%  RAN1: 100%  RAN2: 100%  RAN3: 100%  RAN4: 100% | Performance Part: Overall: 35%  RAN4: 35% | Testing part: - | |

Note: Overall completion level percentage numbers should use one of the colors below:

* xx%: Normal progress, no RAN plenary action needed
* xx%: Progress behind schedule, may need RAN plenary intervention. If so, SR should clearly define requested action
* xx%: Progress critically behind, RAN plenary shall intervene. SR should define requested action

**Source:**

|  |  |  |
| --- | --- | --- |
| **Leading WG** | | RAN4 |
| **Rapporteur** | **Name** | Nicolas Chuberre |
| **Company** | Thales |
| **Email** | [nicolas.chuberre@thalesaleniaspace.com](mailto:nicolas.chuberre@thalesaleniaspace.com) |

## 1 Work plan related evaluation

|  |  |
| --- | --- |
| **Do you want to modify the time budget for this WI/SI compared to what was endorsed at the last RAN meeting?** | No |

*If you answered No: Then please remove the Excel file from the zip file of this status report.*

*If you answered Yes: Then please fill out the attached Excel template to request a modification of the time budgets for your WI /SI. The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI. The basis are the endorsed time budgets of the last RAN meeting. Please highlight all changes of the values.  
 One time unit (TU) corresponds to ~ 2 hours in the meeting.  
 If this status report covers a WI with Core and Performance part, then please have one line for each in the attached Excel table.  
 Note: If no Excel table is attached, then this means no time budget change.*

**Additional explanations/motivations for the time budget changes in the attached Excel table:**

-

## 2. Detailed progress in RAN WGs since last TSG meeting (for all involved WGs)

NOTE: Agreements and Open issues impacted cross-TSG aspects shall be explicitly highlighted

## 2.1 RAN1

#### 2.1.1 Agreements

* **RAN2#110, August 22 – 26th 2022, Toulouse/France**

[General]

1. Agreements on “ Maintenance on timing relationship enhancements and UL time and frequency synchronization for NR NTN”:

**Agreement**

The TP in [R1-2206855](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_110/Docs/R1-2206855.zip) is endorsed and provided to the TS 38.213 editor for aligning the name of UE-specific Koffset in TS 38.213 with Differential Koffset in TS 38.321.

**Agreement**

For serving cell if EpochTime is indicated explicitly by a SFN and subframe number, the UE considers this frame to be the current SFN or the next upcoming SFN after the frame where the message indicating the Epoch time is received.For neighbor cell if EpochTime is indicated explicitly by a SFN and subframe number, the UE considers this frame to be the frame nearest to the frame where the message indicating the Epoch time is received.

**Conclusion**

Negative values of CommonDelayDriftVariation for GEO are not indicated.

1. Agreements on “Maintenance on Enhancements on HARQ”

**Agreement**

Adopt the TP for 38.213 Section 9.2.3 in [Updated Proposal 1.1-1]-TP1 in R1-2207687.

Final CR is agreed in R1-2208124.

**Agreement**

Adopt the TP for 38.213 Section 9 in [Initial Proposal 2.2.1-1]-TP2 in R1-2207687.

Final CR is agreed in R1-2208125.

**Agreement**

Adopt the TP for 38.214 Section 5.1 in [Initial Proposal 2.2.1-1]-TP3 in R1-2207687.

Final CR is agreed in R1-2208126

**Agreement**

Adopt the TP in Proposal 2.1 Alt-2:#TP4 for 38.212, Section 7.3.1.1.3 in R1-2207687.

Final CR is agreed in R1-2208127

Agreed LS out

* -

Other documents agreed

* -

Email discussions

* **R1-2207633** FL Summary #2: Maintenance on UL time/frequency synchronization and timing relationship for NR NTN THALES

[Essential corrections]

None

#### 2.1.2 Remaining Open issues

Further corrections may be discussed/implemented at next meeting. However none of these would require category B CR (addition of feature)

## 2.2 RAN2

#### 2.2.1 Agreements

[General]

* **RAN2#119-e, August 17 – 26th 2022, e-meeting**

A.0 General

A.1 User plane

Agreements:

1. Clarify in MAC that if timingAdvanceSR is configured with value enabled, the UE selects between any available SR configuration

2. Use of ‘Serving Cell’ is clarified in TS 38.321: Section 5.2a. FFS detailed text.

3. Reference to RRC specification in TS 38.321: Section 5.2a to be revisited/reviewed during MAC CR review.

4. In Section 3.1 of TS 38.321, remove “provided in NTN-Config” from UE-gNB RTT definition

5. Remove “, https://gis-lab.info/docs/nima-tr8350.2-wgs84fin.pdf” from reference 51 in 38.300.

6. Blind Msg3 retransmission is not supported for initial Msg3 transmission in Rel-17 NTN.

7. Dedicated SR configuration for TAR MAC CE is not supported.

8. Further enhancements to address outdated TA will not be addressed in Rel-17.

Agreements:

1. The text proposal from R2-2208763: Question 1 (i.e. clarifying SR configuration selection for TA reporting) is agreed and included in NTN MAC rapporteur CR.

2. The Option 1 text proposal from R2-2208763: Question 2 (i.e. clarifying use of Serving Cell in UL synchronization procedure) is agreed and included in NTN MAC rapporteur CR.

3. The text proposal from R2-2208382 is agreed and included in NTN MAC rapporteur CR.

4. The following text proposal is agreed as baseline and is included in NTN MAC rapporteur CR:

“A MAC PDU shall contain at most one Timing Advance Report MAC CE, even when multiple events have triggered a Timing Advance report. The Timing Advance Report MAC CE shall be generated based on the current estimate of TA value at the time of MAC PDU assembly

A.2 Control plane - Idle/inactive mode aspects

Agreements via email – from offline 110:

1. Revise R2-2208329 to include the changes as in suggested in the conclusions of R2-220876 .

2. Agree all the changes in R2-2207323.

3. The proposed change in R2-2207440 is not pursued.

4. The proposed change in R2-2208137 is not pursued.

5. The proposals in R2-2207863 are not pursued.

Agreements online:

1. RAN2 confirms that time-based measurement initiation is an optional feature (w/o signalling) and that 38.304 and 38.306 need to be updated accordingly.

A.3 Control plane - RRC aspects

Agreements:

1. RAN2 to capture in TS 38.331 RAN4 agreement that one frequency layer and two concurrent measurement gaps with the same gap type can be associated, i.e., associatedMeasGapSSB2 and associatedMeasGapCSIRS2 within IE MeasObjectNR.

2. the spec change on smtc4list related description in clause 5.5.2.10 of 38.331 in CR R2-2207243 is merged to NR NTN RRC Rapporteur CR.

3. For UEs in RRC\_CONNECTED, the SMTC configured by the NW can be directly used by the UE, i.e., no need to add the PDD (service link propagation delay difference) to the configured offset.

4. RAN2 to confirm if a UE supports 25-3 in RAN4 feature list (i.e., parallelMeasurementGap-r17), it also supports the association between one frequency layer and two measurement gaps with the same gap type.

5. RAN2 agreement is updated to align with RAN4 agreement, i.e., “2 SMTC-s on a single frequency carrier” is mandatory for both GSO capable UE and NGSO capable UE. No additional spec change is needed as it has been captured in the latest mega UE capability CR R2-2207276.

6. the draft CR R2-2207268 and R2-2207269 can be adopted as baseline for specifying the UE capability for service link propagation delay difference report.

Agreements via email – from offline 102:

Related to RRC spec:

1. Regarding “how to assist the NW adjust SMTC for UEs in RRC\_CONNECTED”, PDD reporting is sufficient, and no need to further optimize in Rel-17.

2. the broadcast SMTC in SIB2/4 assumes PDD = 0 ms.

3. “The UE reports the calculated SMTC offset upon entering RRC\_CONNCTED” is not pursued in Rel-17.

4. the change proposed by R2-2207344 is NOT agreed.

5. the changes proposed by R2-2207345 are NOT agreed.

Related to UE capability:

6. regarding “if a UE supports 25-3 in RAN4 feature list (i.e., parallelMeasurementGap-r17), it also supports the association between one frequency layer and two measurement gaps with the same gap type”, the following clarification in TS 38.306 is agreed and merged to NR NTN UE capability rapporteur CR: “parallelMeasurementGap-r17: Indicates whether the UE supports 2 parallel measurement gaps for NTN RRM measurements. If a UE does not include this field but includes nonTerrestrialNetwork-r17, the UE supports 1 measurement gap for NTN RRM measurements. If this parameter is indicated, a UE shall also support that two parallel measurement gaps with the same gap type can be associated to one frequency layer.”

7. the first change in R2-2208537 is agreed, and merged to NR NTN UE capability rapporteur CR, i.e., “In the description of nonTerrestrialNetwork-r17, “i.e.,” is replaced by “e.g.,””.

8. the second change in R2-2208537 is agreed, and merged to NR NTN UE capability rapporteur CR, i.e., “In the description of parallelMeasurementGap-r17, it is added that UE supporting this feature shall also indicate the support of nonTerrestrialNetwork-r17”

9. the change proposed by R2-2208679 is agreed, and merged to NR NTN UE capability rapporteur CR, i.e., “Introduce an optional capability without signalling for location-based measurement initiation”.

Agreements online:

1. The NW can broadcast up to 4 SMTCs per frequency in SIB2/4. Add a sentence saying that, in case the UE does not support 4 SMTCs, it’s up to UE implementation which combination of SMTCs to consider. FFS whether any clarification/note is needed regarding the consistency of the information in SIB2/4 and SIB19.

Agreements:

1. It is left to UE implementation on how UEs in RRC\_IDLE/RRC\_INACTIVE re-acquire SIB19 for serving cell’s satellite assistance information

2. RAN2 will wait for RAN1 to conclude regarding when ephemeris/common TA is considered as valid

3. RAN2 will wait for RAN1 to conclude the discussion on epochTime being a future time after the end of current ntn-UlSyncValidityDuration.

4. RAN2 confirms the understanding that “the reference point for epoch time of the serving satellite ephemeris and Common TA parameters is the uplink time synchronization reference point”.

Agreements via email – from offline 103:

1. Option 1 in R2-2207769 is used as baseline for TA reporting during RRC re-establishment.

2. CR in R2-2207777 is not pursued.

Agreements:

1. In SIB 19, if neighbour cell’s epoch time (i.e., SFN and subframe number) is present in ntn-Config provided via NTN-NeighCellConfig, the UE follows the timing of serving cell for neighbour cell measurement in Idle/Inactive mode, i.e., they refer to the SFN and subframe of the serving cell. Change 1 in R2-2207066 can be used as baseline.

2. During HO/CHO execution upon applying target cell configuration, UE should:

1. Stop the current T430 (if it is running);

2. Start T430 for the target cell as indicated by ntn-UlSyncValidityDuration and epochTime of the target cell

3. RAN2 does not need to capture T430 for neighbour cells in all RRC states, and it is up to UE implementation on how to re-acquire SIB19 for neighbour cells (e.g. maintain one or multiple timers for serving cell and neighbour cells). UE needs to know information about neighbour cell’s epoch time and ntn-UlSyncValidityDuration to be applied to aid UE’s implementation.

4. If ntn-UlSyncValidityDuration is absent in ntn-Config provided via NTN-NeighCellConfig, the UE uses validity duration configured for the serving cell. TP related to SIB19 and NTN-Config in R2-2207631 can be used as baseline

5. The issue raised by R2-2208577 is confirmed. CR in R2-2208970 can be used as baseline

Agreements;

1. Revert the following change in Rapp CR:

dedicatedSystemInformationDelivery

This field is used to transfer SIB6, SIB7, SIB8, SIB19 to the UE with an active BWP with no common search space configured or the L2 U2N Remote UE in RRC\_CONNECTED. For UEs in RRC\_CONNECTED (including L2 U2N Remote UE), this field is used to transfer the SIBs requested on-demand, except for SIB19.

Not to consider further change 1 from R2-2207324.

2. Not to pursue with R2-2208575

3. Agree R2-2208288

4. Postpone discussion on the second change in R2-2207439

5. Postpone discussion on Change 2 and 8 in CR R2-2207324

6. Agree proposal 1 in CR R2-2208381

7. Agree Change 2 b) and c) from CR R2-2208538 in Rapp CR

8. Not to pursue with Change 3 from CR R2-2208538 in Rapp CR

9. Not to pursue with enhancements to the propagation delay report in Rel17

10. Not to pursue with CR R2-2207342

Agreements:

1. Not to pursue changes to default bearer values

2. Postpone discussion on “field description restriction for the validity timer is converted to ASN1 condition”

3. Not to pursue CR R2-2208578. RAN2 understands that SIB19 is essential for NTN cell, and it could be up to UE implementation if UE cannot acquire SIB19. FFS if a note is needed in the spec for this

4. Agree to adopt first change from CR R2-2207630 and “NOTE X: A UE capable of NTN access should acquire SIB1 to determine whether the cell is an NTN cell.” In RRC CR

5. Not to pursue CR R2-2208534

6. RAN2 understands that the UE can use assistance information of neighbour cells in SIB19 for mobility purposes in RRC Connected. FFS if this needs to be captured in Stage2 and whether something needs to be captured for RRC idle

7. Extend the number of neighbour cells from 4 to 8 (add additional 4 neighbour cells via an extension)

8. Capture the following:

SIB2: smtc

Measurement timing configuration for intra-frequency measurement. If this field is absent, the UE assumes that SSB periodicity is 5 ms for the intra-frequnecy cells. If the field is broadcast by an NTN cell, the Offset (derived from parameter periodicityAndOffset) is based on the assumption that service link propagation delay difference between the serving cell and neighbour cells equals to 0 ms, and UE can adjust the actual Offset based on the actual propagation delay difference.

SIB4 (adding the same sentence with SIB2): smtc

Measurement timing configuration for inter-frequency measurement. If this field is absent, the UE assumes that SSB periodicity is 5 ms in this frequency. If the field is broadcast by an NTN cell, the Offset (derived from parameter periodicityAndOffset) is based on the assumption that service link propagation delay difference between the serving cell and neighbour cells equals to 0 ms, and UE can adjust the actual Offset based on the actual propagation delay difference.

A.4 UE capabilities

Endorsed draft CR & TP

* R2-2209046 Rel-17 NTN related Rapporteur’s corrections Thales, Nokia, Nokia Shanghai Bell
* R2-2209044 Corrections to Release-17 NR Non-Terrestrial Networks (NTN): RAN2#119e InterDigital
* R2-2208783 Miscellaneous corrections on 38.304 ZTE Corporation, Sanechips, CMCC, vivo, Apple, Nokia, Nokia Shanghai Bell, CATT
* R2-2208787 Draft 331 CR for NR NTN UE capabilities Intel Corporation
* R2-2208788 Draft 306 CR for NR NTN UE capabilities Intel Corporation

Agreed LS out:

* -

Email discussions

* [AT119-e][109][NR-NTN] Stage-2 CR (Thales) => Summary of discussion in R2-2208760 Thales
* [AT119-e][101][NR-NTN] UP corrections (Interdigital) => Summary in [R2-2208763](file:///C:\Data\3GPP\RAN2\Inbox\R2-2208763.zip) Inter digital
* [AT119-e][110][NR-NTN] Idle mode corrections (ZTE)
* [AT119-e][102][NR-NTN] SMTC and gaps (Intel)
* [AT119-e][103][NR-NTN] Other RRC corrections (Oppo)
* [AT119-e][111][NR-NTN] RRC corrections (Ericsson)
* [Post119-e][101][NR-NTN] RRC CR (Ericsson)

[Essential corrections]

* None

#### 2.2.2 Remaining Open issues

Further corrections may be discussed/implemented at next meeting. However none of these would require category B CR (addition of feature)

## 2.3 RAN3

#### 2.3.1 Agreements

* **RAN3#117-e, August 15 – 24th 2022, e-meeting**

[General]

Agreements

* -

CRs endorsed:

* -

CRs agreed:

* -

TP agreed

* -

Summary of email discussions

* -

LS out agreed

* -

[Essential corrections]

None

#### 2.3.2 Remaining Open issues

None

## 2.4 RAN4

#### 2.4.1 Agreements

[General]

The RAN4 work plan described in R4-2210852 should be considered as a basis for work.

* **RAN4#104-e, August 15 – 26th 2022, e-meeting**

**GTW Agreements on BSRF Test Demod aspects**

Hereunder some selected agreements:

* Agreement: Remove SAN output power accuracy requirements for the extreme test conditions from TS 38.108 by assuming Rel-17 SAN conformance test only cover “normal test condition”
  + Agreement:
    - Only consider “normal test condition” for Rel-17 SAN RF conformance testing
      * Current parameters from BS conformance specification 38.141 shall be considered as starting point
      * Further discuss the parameters including temperature/power supply and barometric pressure and refinement on the values not precluded
      * The definition of “normal test condition” shall not impact the agreed SAN RF core requirements.
    - It’s not precluded to consider “extreme test condition” in future release or Rel-17 conformance maintenance phase.
  + Agreement: Use existing measurement set-up from 38.141 for SAN 1-O conformance testing as starting point with necessary refinement if identified

Documents approved:

* R4-2214370 WF on NTN Solutions SAN RF Maintenance Thales
* R4-2214371 WF for NTN SAN RF conformance Ericsson
* R4-2214372 WF for NTN UE RF maintenance
* R4-2214386 WF for NTN demodulation requirements - general and PDSCH Qualcomm
* R4-2214387 WF for NTN SAN demodulation requirements Huawei

Documents agreed:

* R4-2214541 Correction of OTA ACLR absolute basic limit THALES
* R4-2214536 CR to TS 38.108 - OTA Tx requirements issues fixes Ericsson
* R4-2214537 CR to TS 38.108 - OTA Rx requirements issues fixes Ericsson
* R4-2214543 Correction of OTA receiver spurious emission requirement THALES
* R4-2214534 CR to TS 38.108 - conducted Tx requirements issues fixes Ericsson
* R4-2214535 CR to TS 38.108 - conducted Rx requirements issues fixes Ericsson
* R4-2214544 Correction of conducted receiver spurious emission requirement THALES
* R4-2214540 CR for TR 38.861: Regulatory aspects for HAPS Nokia, SoftBank
* R4-2214833 TP for TS 38.181 - Clause 6.6.3 ACLR THALES
* R4-2214834 TP for TS 38.181 - Clause 6.5.3 EVM THALES
* R4-2214531 CR to 38.101-5: Corrections on Rx requirements for NTN UE Xiaomi
* R4-2214533 CR to TS 38.101-5 - Rx requirements issues fixes Ericsson, Skyworks Solutions Inc

[Other documents]

Email discussion summaries:

* R4-2214296 Email Discussion Summary for [104-e][307] NTN\_Solutions\_SANRF\_Maintenance (Thales)
* R4-2214297 Email Discussion Summary for [104-e][308] NTN\_Solutions\_RFConformance (Ericsson)
* R4-2214298 Email Discussion Summary for [104-e][309] NTN\_Solutions\_UERF\_Maintenance (ZTE)
* R4-2214311 Email Discussion Summary for [104-e][322] NR\_NTN\_Demod\_Part1 (Qualcomm)
* R4-2214312 Email Discussion Summary for [104-e][323] NR\_NTN\_Demod\_Part2 (Huawei)

**[GTW Agreements on RRM aspects]**

**Agreement:**

* Introduce UE capability for the number of target satellites the UE can monitor per carrier for LEO
* Fill in the following with exact wording (please also clarify the relationship with FG 25-5):
  + Feature group
  + Component
  + Need for the gNB to know if the feature is supported
  + Consequence if the feature is not supported by the UE
  + Type

**Agreement:**

* For the case where one SMTC is inside MG and the other SMTC is outside the MG, if the proximity distance between the MG and SMTC outside the MG is smaller than or equal to the proximity distance threshold, i.e. 4ms, the two SMTCs are considered as colliding SMTCs.

**Agreement:**

* For the requirement of maximum interruption in paging reception, if the target cell is unknown, a longer interruption can be expected.
  + Unknown condition means that UE starts measurement but does not complete the measurement before Tservice.

**Agreement:**

* RAN4 considers propagator model error and timing/frequency error when defining the measurement accuracy.
  + FFS on the values of propagator model error and timing/frequency error
  + FFS on the defition of propagator model error

**Agreement:**

* Define the following TCs for NTN
  + Random access
  + PL-RS switching
  + Intra-frequency measurement with gap
  + Inter-frequency measurement without gap
* And define the applicability rule to avoid the duplication of test for a UE.

**Agreement:**

* Test cases shall take multi-SMTC and multi-satellite tests into account.
  + Minimize the test case number.
* FFS on the following bullet
  + “Add new contents for definition of 2 SMTCs per MO, 2 satellites (i.e. 2 SSBs) per SMTC, 2 MGs in clause A.3 RRM test configuration.”
* FFS on Option 2.

Documents endorsed

* R4-2214471 WF on NR NTN RRM requirements Qualcomm Incorporated
* R4-2214472 LS to RAN2 on Network indication for applying enhanced cell reselection requirements Huawei
* R4-2211958 CR on active TCI state switching delay Xiaomi
* R4-2212212 CR on Abbreviations for NTN LG Electronics Inc.
* R4-2212398 CR on TS38.133 NR NTN RRM requirements MediaTek inc.
* R4-2214600 CR to TS 38.133: Corrections to cell re-selection for NR UE for satellite access Nokia, Nokia Shanghai Bell
* R4-2214602 CR to TS 38.133: Corrections to UE transmit timing and timing advance for satellite access Nokia, Nokia Shanghai Bell
* R4-2214628 CR on UE transmit timing requirements for NTN Huawei, HiSilicon
* R4-2214633 CR on on other RRM requirements for NTN Huawei, HiSilicon
* R4-2214634 CR on intra-frequency measurement requirements for NTN Huawei, HiSilicon
* R4-2214635 CR on cell reselection requirements for NTN Huawei, HiSilicon
* R4-2213930 Draft CR on L1-RSRP measurements for Reporting in NTN Apple
* R4-2214059 Satellite access band grouping for RRM requirements in TS 38.133 Ericsson
* R4-2214473 WF on performance requirements for NTN Xiaomi
* R4-2214885 Test cases for Intra- and inter-frequency HO with known cell for NTN CATT
* R4-2214886 Test cases for Intra- and inter-frequency CHO for NTN CATT
* R4-2214570 CR on test case for cell reselection to FR1 intra-frequency NR cell for satellite access Xiaomi
* R4-2212184 draft CR of BWP switch and CBW change test cases Qualcomm
* R4-2214954 Introduction of test cases for Inter-frequency measurement delay for satellite access with gap MediaTek
* R4-2212401 Introduction of test cases for Accuracy for SS-RSRQ for satellite access MediaTek
* R4-2213352 draft CR on test cases for Beam Failure Detection and Link Recover for NTN Ericsson
* R4-2213353 draft CR on test cases for L1-RSRP measurement delay for NTN Ericsson
* R4-2213476 DraftCR on UE transmit timing tests for NTN Huawei
* R4-2213524 CR on measurement accuracy requirements for NTN Huawei
* R4-2213525 CR on TCs for SSB based RLM for NTN Huawei
* R4-2213526 CR on TCs for intra-frequency measurement delay for NTN Huawei
* R4-2213527 CR on TCs for RRC Re-establishment for NTN Huawei
* R4-2213528 CR on TCs for RSRP accuracy for NTN Huawei
* R4-2214061 Conditions for RRM requirements for satellite access band in TS 38.133 Ericsson

[Other documents]

Email discussion summaries:

* R4-2214266 Email Discussion Summary for [104-e][214] NR\_NTN\_solutions\_RRM\_1 (Qualcomm)
* R4-2214267 Email Discussion Summary for [104-e][215] NR\_NTN\_solutions\_RRM\_2 (Xiaomi)

#### 2.4.2 Remaining Open issues

1. Core part:

Further corrections may be discussed/implemented at next meeting. However none of these would require category B CR (addition of feature)

1. Performance part:

Specify necessary UE and network performance requirements for the specified enhancements [RAN4].

Specify RRM test and network conformance tests [RAN4].

## 3. Detailed progress in SA/CT WGs since last TSG meeting (for all involved WGs)

NOTE: This section only needs to be filled in for WI/SIs where there is a corresponding relevant WI/SI in SA/CT.

## 3.1 SAx/CTs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Work Area | WIDs/SIDs | Rapporteurs | RAN WIDs | Rapporteurs |
| 5G Satellite Aspects | SA2 led WI 5GSAT\_ARCH | jean-yves.fine@thalesgroup.com | RAN2 led WI NR\_NTN\_solutions | [nicolas.chuberre@thalesaleniaspace.com](mailto:nicolas.chuberre@thalesaleniaspace.com) |
| 5G Satellite Aspects | CT1 led SI 5GSAT\_ARCH-CT | amerc@qti.qualcomm.com | RAN2 led WI NR\_NTN\_solutions | [nicolas.chuberre@thalesaleniaspace.com](mailto:nicolas.chuberre@thalesaleniaspace.com) |

#### 3.1.1 Agreements with cross-TSG impacts

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#### 3.1.2 Remaining Open issues with cross-TSG impacts

NOTE: This section should also flag any critical dependencies that need TSG attention.

## 4. References

NOTE: This can be e.g. a list of all related Tdocs in the affected WGs since last TSG, references to LSs, produced TRs/TSs, the work/study item description or status reports of previous TSGs.

## 4.1 RAN1

* **RAN1#110, August 22 – 26th 2022, Toulouse/France**

Submitted TDOCs:

* R1-2208124 CR CR on the clarification of PUCCH resource determination in 38.213 Moderator (ZTE)
* R1-2208125 CR CR on the description about HARQ-feedbackEnablingforSPSactive in 38.213 Moderator (ZTE)
* R1-2208126 CR CR on the description about HARQ-feedbackEnablingforSPSactive in 38.214 Moderator (ZTE)
* R1-2208127 CR CR on DCI size for Rel-17 NTN HARQ in 38.212 Moderator (ZTE)
* R1-2206854 draftCR Draft CR on interpretation SFN indicating epoch time OPPO
* R1-2206855 draftCR Draft CR on editorial correction on Koffset MAC CE command OPPO
* R1-2206013 discussion Remaining issues on NR-NTN ZTE
* R1-2206014 draftCR Corrections on NR-NTN synchronization ZTE
* R1-2205973 discussion Maintenance on Solutions for NR to support non-terrestrial networks (NTN) Spreadtrum Communications
* R1-2205809 draftCR Correction on HARQ-ACK transmission in NTN Huawei, HiSilicon
* R1-2205828 discussion Maintenance on Release-17 NR NTN THALES
* R1-2205833 discussion Discussion on Common TA Drift Variation Lockheed Martin
* R1-2206233 draftCR Correction on HARQ process number for NTN ASUSTeK
* R1-2206295 discussion Discussion on remaining issue for NTN-NR OPPO
* R1-2206296 draftCR Draft CR on time relationship for MAC-CE activation OPPO
* R1-2206157 discussion Maintenance on Solutions for NR to support NTN MediaTek Inc.
* R1-2206178 discussion Maintenance on Solutions for NR to support non-terrestrial networks (NTN) PANASONIC
* R1-2207554 discussion On NR NTN maintenance issues Ericsson
* R1-2207632 discussion FL Summary #1: Maintenance on UL time/frequency synchronization and timing relationship for NR NTN THALES
* R1-2207633 discussion FL Summary #2: Maintenance on UL time/frequency synchronization and timing relationship for NR NTN THALES
* R1-2207634 discussion FL Summary #3: Maintenance on UL time/frequency synchronization and timing relationship for NR NTN THALES
* R1-2207635 discussion FL Summary #4: Maintenance on UL time/frequency synchronization and timing relationship for NR NTN THALES
* R1-2207512 draftCR Correction on UE-specific TA for NTN Huawei, HiSilicon
* R1-2207311 discussion Maintenance on NR NTN Apple
* R1-2207357 discussion Remaining issues on UL time and frequency synchronization enhancements in NTN LG Electronics
* R1-2207137 discussion Further aspects of Rel-17 maintenance of NR over NTN Nokia, Nokia Shanghai Bell
* R1-2207138 draftCR Draft CR for 38.211 to ensure correct interworking between open and closed loop TA Nokia, Nokia Shanghai Bell
* R1-2207139 draftCR Draft CR for 38.213 to capture correct validity timer expiry behavior for UL synchronization Nokia, Nokia Shanghai Bell
* R1-2207193 discussion Maintenance for R17 NR NTN Qualcomm Incorporated
* R1-2207687 discussion Summary#1 of maintenance on scheduling and HARQ for NR NTN Moderator (ZTE)
* R1-2207666 discussion Discussion on interpretation of SFN indicating Epoch time Huawei, HiSilicon
* R1-2207496 draftCR Correction on HARQ feedback enabling for NTN ASUSTeK
* R1-2207497 draftCR Correction on HARQ feedback enabling for the first SPS PDSCH ASUSTeK
* R1-2208042 CR CR on the clarification of PUCCH resource determination in 38.213 Moderator (ZTE)
* R1-2208043 CR CR on the description about HARQ-feedbackEnablingforSPSactive in 38.213 Moderator (ZTE)
* R1-2208044 CR CR on the description about HARQ-feedbackEnablingforSPSactive in 38.214 Moderator (ZTE)
* R1-2208045 CR CR on DCI size for Rel-17 NTN HARQ in 38.212 Moderator (ZTE)
* R1-2208135 other Session notes for 8.4 (Maintenance on Solutions for NR to support non-terrestrial networks (NTN)) Ad-Hoc Chair (Huawei)

## 4.2 RAN2

* **RAN2#119-e, August 17 – 26th 2022, e-meeting**

Submitted TDOCs:

* R2-2208329 CR Miscellaneous corrections on 38.304 ZTE Corporation, Sanechips, CMCC, vivo, Apple
* R2-2207271 discussion Discussion on RAN4 reply LS on measurement gaps Intel Corporation
* R2-2206948 LS in Reply LS on measurement gap enhancements for NTN (R4-2210611; contact: Intel) RAN4
* R2-2206968 LS in LS reply on Reply LS on NTN specific User Consent and UE location in connected mode in NTN (S3-221268; contact: Ericsson) SA3
* R2-2207067 discussion Discussion on CT1 LS on not allowed PLMN at the current location OPPO
* R2-2207097 WI summary Draft Summary for NR support for Non-Terrestrial Networks (NTN) THALES
* R2-2207065 CR NTN Stage-2 correction OPPO, Thales
* R2-2207322 CR Rel-17 NTN Stage-2 (Rapporteur) corrections Nokia, Nokia Shanghai Bell
* R2-2208272 CR Corrections to Release-17 NR Non-Terrestrial Networks (NTN): RAN2#119e InterDigital
* R2-2208273 discussion Blind Msg3 retransmission in Rel-17 NTN InterDigital
* R2-2208274 discussion SR configuration for Timing Advance MAC CE InterDigital
* R2-2208275 discussion Clarifications to the Timing Advance reporting procedure InterDigital
* R2-2208382 CR Correction on TA Reporting Triggering Condition for NTN in TS 38.321 CATT
* R2-2208576 CR Clarification on the condition of contention resolution not successful Xiaomi
* R2-2208569 discussion Remaining UP issues in NTN ZTE Corporation, Sanechips
* R2-2208570 CR Correction to 38321 on TA report ZTE Corporation, Sanechips
* R2-2208571 CR Correction to 38321 on ra-ContentionResolutionTimer ZTE Corporation, Sanechips
* R2-2208560 discussion On issues for Timing Advance Report MAC CE Nokia, Nokia Shanghai Bell
* R2-2208675 discussion R17 NR NTN User Plane issues Ericsson
* R2-2207240 discussion Discussion on TA report Samsung Research America
* R2-2207241 discussion Discussion on remaining MAC issues Samsung Research America
* R2-2207596 discussion Discussion on the issue of outdated UE TA at NW side Huawei, HiSilicon
* R2-2207598 CR Correction on maintenance of UL synchronization in MAC Huawei, HiSilicon
* R2-2207443 CR NTN UL synchronization correction in MAC Apple
* R2-2207628 discussion Remaining issue on UL synchronization in NR NTN vivo
* R2-2207629 discussion On corrections to random access procedure in NR NTN vivo
* R2-2207671 discussion Discussion on the RA counter in case of ephemeris update Spreadtrum Communications
* R2-2207341 discussion Outdated UE specific Koffset Qualcomm Incorporated
* R2-2207052 discussion left issues on UP in NTN OPPO
* R2-2208678 discussion R17 NR NTN stage 2 corrections Ericsson
* R2-2208561 discussion On Msg3 blind retransmission and UE behaviour upon validity timer expiry Nokia, Nokia Shanghai Bell
* R2-2208379 CR Miscellaneous corrections on 38.304 CATT
* R2-2207323 CR Rel-17 NTN IDLE mode corrections Nokia, Nokia Shanghai Bell
* R2-2207632 CR Clarification on time-based cell reselection in TS 38.304 vivo
* R2-2207440 CR Clarification on the suitable cell in NTN Apple
* R2-2208094 discussion R17 NR NTN Idle mode corrections Ericsson
* R2-2208137 CR Correction on Measurement rules for cell re-selection for NR NTN Samsung R&D Institute UK
* R2-2207863 discussion Discussion on the acquisition and prediction of ephemeris for SIB19 BUPT
* R2-2208288 CR Correction to coarseLocationInfo field description for NR NTN Eutelsat S.A.
* R2-2208214 CR Correction to associate two concurrent measurement gaps to one frequency layer for NR NTN Nokia, Nokia Shanghai Bell
* R2-2208466 draftCR Correction for measurement gap Xiaomi
* R2-2207344 CR Correction to the frame boundary alignment indication from the source Qualcomm Incorporated
* R2-2207345 CR Reporting SMTC issue in measurement results Qualcomm Incorporated
* R2-2207242 discussion Discussion on SMTC related issues Samsung Research America
* R2-2207243 draftCR Draft 331 CR for NR NTN SMTC Samsung Research America
* R2-2207149 discussion Remaining issues on SMTCs and gaps Huawei, HiSilicon
* R2-2207672 discussion Discussion on the ephemeris information in CHO procedure Spreadtrum Communications
* R2-2208534 CR Correction of entering and leaving condition of CondEventT1 LG Electronics France
* R2-2208537 CR Corrections to NTN capabilities LG Electronics
* R2-2208538 CR Miscellaneous corrections for NTN LG Electronics
* R2-2208577 CR correction on triggering TA report during HO Xiaomi
* R2-2208578 CR Correction on missing the action upon not being able to acquire SIB19 Xiaomi
* R2-2208575 CR correction on coarselocationrequest Xiaomi, Thales
* R2-2208679 discussion R17 NR NTN UE Capability issues Ericsson
* R2-2208657 discussion Issues related to NR NTN epoch time Sequans Communications
* R2-2208659 discussion NTN Configuration at Handover and CHO Sequans Communications
* R2-2208380 CR Miscellaneous corrections on 38.300 CATT
* R2-2208381 discussion Miscellaneous corrections on 38.331 CATT
* R2-2208362 discussion Discussion on validity timer for serving cell and neighbour cell ASUSTeK
* R2-2208363 discussion Discussion on T430 for handover ASUSTeK
* R2-2208364 discussion Discussion on configuration of harq-ProcessNumberSizeDCI-0-2 ASUSTeK
* R2-2208378 discussion Discussion on Neighbor Satellite Assistance Information CATT
* R2-2207630 CR Correction on access restriction for NR NTN in TS 38.331 vivo
* R2-2207631 discussion Remaining issues on validity timer in NR NTN vivo
* R2-2207441 discussion The impact on HO by the validity of the UL sync assistance info Apple
* R2-2207442 discussion Clarification on the features supported in NTN network Apple
* R2-2207439 CR Clarification on the necessity of SIB19 in NTN cell Apple
* R2-2207769 CR Corrections to TA Report in RRC Connection Reestablishment Google Inc.
* R2-2207777 CR Corrections to TA Report in RRC Connection Resume Google Inc.
* R2-2207889 discussion Discussion on whether the inactive state of RRC enables in specific scenarios for NTN BUPT
* R2-2207141 discussion Correction of UE location aspects in NTN Thales, Xiaomi
* R2-2207144 draftCR Correction of UE location aspects in NTN Thales, Xiaomi
* R2-2207148 discussion Remaining issues on ephemeris provision Huawei, HiSilicon, Thales
* R2-2207053 CR Correction to RRC-MAC interaction on UL synchronisation in NTN OPPO
* R2-2207066 CR NTN RRC correction OPPO
* R2-2207063 discussion Discussion on how to handle the validity timer for neighbor cells OPPO
* R2-2207068 CR Correction on NTN UE capabiltiy OPPO
* R2-2207268 draftCR Draft 331 CR for NR NTN measurement related UE capabilities Intel Corporation
* R2-2207269 draftCR Draft 306 CR for NR NTN measurement related UE capabilities Intel Corporation
* R2-2207270 discussion Discussion on UE capability for 2 SMTC in parallel Intel Corporation
* R2-2207342 CR Same ULTSRP indication of the target cell during handover Qualcomm Incorporated
* R2-2207343 CR List of frequencies and satellite index for a neighbor satellite in SIB19 Qualcomm Incorporated
* R2-2207324 CR Rel-17 NTN corrections to NR RRC Nokia, Nokia Shanghai Bell
* R2-2207597 discussion Discussion on the UE location reporting Huawei, HiSilicon

## 4.3 RAN3

* **RAN3#117-e, August 15 – 24th 2022, e-meeting**

Submitted TDOCs:

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## 4.1 RAN4

* **RAN4#104-e, August 15 – 26th 2022, e-meeting**

Submitted TDOCs:

* R4-2213361 discussion Discussion on Ka adjacent band NTN-TN NR coexistence scenarios THALES
* R4-2213207 CR Correction to TR 38.863 on Regulatory aspects for HAPS Nokia, SoftBank
* R4-2214540 CR Correction to TR 38.863 on Regulatory aspects for HAPS Nokia, SoftBank
* R4-2214541 CR Correction of OTA ACLR absolute basic limit THALES
* R4-2214536 CR CR to TS 38.108 - OTA Tx requirements issues fixes Ericsson
* R4-2213386 CR Correction of OTA ACLR absolute basic limit THALES
* R4-2213400 CR Correction of OTA extreme conditions THALES
* R4-2212649 CR CR to TS 38.108 - OTA Tx requirements issues fixes Ericsson
* R4-2212651 other NTN: SAN OTA Tx spurious requirement issue Ericsson
* R4-2212650 CR CR to TS 38.108 - OTA Rx requirements issues fixes Ericsson
* R4-2213431 CR Correction of OTA receiver spurious emission requirement THALES
* R4-2214537 CR CR to TS 38.108 - OTA Rx requirements issues fixes Ericsson
* R4-2214543 CR Correction of OTA receiver spurious emission requirement THALES
* R4-2214534 CR CR to TS 38.108 - conducted Tx requirements issues fixes Ericsson
* R4-2214035 discussion Further discussion on requirements for the Extreme conditions testing Huawei, HiSilicon
* R4-2214036 CR CR to TS 38.108: removal of NTN SAN output power accuracy requirements for the extreme test conditions, Rel-17 Huawei, HiSilicon
* R4-2213434 CR Correction of conducted extreme conditions THALES
* R4-2213157 CR CR for 38.108 to maitain unwanted emissions clause Huawei, HiSilicon
* R4-2212647 CR CR to TS 38.108 - conducted Tx requirements issues fixes Ericsson
* R4-2212648 CR CR to TS 38.108 - conducted Rx requirements issues fixes Ericsson
* R4-2213567 CR Correction of conducted receiver spurious emission requirement THALES
* R4-2214535 CR CR to TS 38.108 - conducted Rx requirements issues fixes Ericsson
* R4-2214544 CR Correction of conducted receiver spurious emission requirement THALES
* R4-2211687 other Work split for Satellite Access Node conformance testing CATT
* R4-2211659 discussion Discussion on test model for NTN SAN testing CATT
* R4-2211660 discussion Discussion on test configuration for NTN SAN testing CATT
* R4-2213639 pCR TP for TS 38.181 - Annex D THALES
* R4-2213708 other Further discussion on SAN conformance testing: general part ZTE Corporation
* R4-2213575 discussion Discussion on SAN Testing Environment THALES
* R4-2211661 discussion Discussion on manufacturer declarations for NTN SAN testing CATT
* R4-2213709 other Further discussion on SAN conformance testing: conducted part ZTE Corporation
* R4-2213635 pCR TP for TS 38.181 - Clause 6.6.3 ACLR THALES
* R4-2213636 pCR TP for TS 38.181 - Clause 6.6.4 OBUE THALES
* R4-2213637 pCR TP for TS 38.181 - Clause 6.6.5 Spurious Emissions THALES
* R4-2213638 pCR TP for TS 38.181 - Clause 6.5.3 EVM THALES
* R4-2213625 pCR TP for TS 38.181 - Occupied BW Clauses 6.6.1 and 6.6.2 THALES
* R4-2211662 discussion Discussion on Satellite Access Node output power testing CATT
* R4-2214833 pCR TP for TS 38.181 - Clause 6.6.3 ACLR THALES
* R4-2214834 pCR TP for TS 38.181 - Clause 6.5.3 EVM THALES
* R4-2211663 discussion Discussion on Reference sensitivity level testing CATT
* R4-2211664 discussion Discussion on Measurement uncertainties for conducted SAN tesing CATT
* R4-2213710 other Further discussion on SAN conformance testing: radiated part ZTE Corporation
* R4-2211665 discussion Discussion on Radiated transmit power testing CATT
* R4-2211666 discussion Discussion on OTA sensitivity testing CATT
* R4-2211667 discussion Discussion on Measurement uncertainties for radiated SAN tesing CATT
* R4-2212645 CR CR to TS 38.101-5 - Tx requirements issues fixes Ericsson
* R4-2212158 discussion NR NTN UE frequency error requirement testing MediaTek (Chengdu) Inc.
* R4-2213156 CR CR for 38.101-5 to further improve the wording for frequency error requirements Huawei, HiSilicon
* R4-2214046 other Doppler pre-compensation in RF requirements Qualcomm Incorporated
* R4-2214531 CR CR to 38.101-5: Corrections on Rx requirements for NTN UE Xiaomi
* R4-2214533 CR CR to TS 38.101-5 - Rx requirements issues fixes Ericsson
* R4-2213155 CR CR for 38.863 to maintain UE RF parts Huawei, HiSilicon
* R4-2213711 other Further discussion on NTN UE Rx RF requirements ZTE Corporation
* R4-2212165 discussion Band n256 requirement gap for out of-band blocking Skyworks Solutions Inc.
* R4-2212646 CR CR to TS 38.101-5 - Rx requirements issues fixes Ericsson
* R4-2212652 other NTN satellite UE out of band blocking requirement Ericsson
* R4-2212601 CR CR to 38.101-5: Corrections on Rx requirements for NTN UE Xiaomi
* R4-2212152 CR Serving cell evaluation and intra-frequency measurements of NTN UE cell reselections Intel Corporation
* R4-2212398 CR CR on TS38.133 NR NTN RRM requirements MediaTek inc.
* R4-2211849 discussion On measurement procedure for NTN UE Apple
* R4-2211957 discussion Discussion on the remaining issues for NTN RRM Xiaomi
* R4-2213520 LS out Discussion on remaining issues for NTN measurement requirements Huawei, HiSilicon
* R4-2213521 CR CR on intra-frequency measurement requirements for NTN Huawei, HiSilicon
* R4-2213522 CR CR on cell reselection requirements for NTN Huawei, HiSilicon
* R4-2213930 draftCR Draft CR on L1-RSRP measurements for Reporting in NTN Apple
* R4-2213355 discussion Measurement requirements for NTN Ericsson
* R4-2212864 other On RRM UE-satellite distance estimation for Rel-17 NR NTN Nokia, Nokia Shanghai Bell
* R4-2212851 CR CR to TS 38.133: Corrections to cell re-selection for NR UE for satellite access Nokia, Nokia Shanghai Bell
* R4-2214600 CR CR to TS 38.133: Corrections to cell re-selection for NR UE for satellite access Nokia, Nokia Shanghai Bell
* R4-2214634 CR CR on intra-frequency measurement requirements for NTN Huawei, HiSilicon
* R4-2214635 CR CR on cell reselection requirements for NTN Huawei, HiSilicon
* R4-2214576 CR Serving cell evaluation and intra-frequency measurements of NTN UE cell reselections Intel Corporation
* R4-2214058 other On band grouping for RRM requirements with satellite access Ericsson
* R4-2214059 CR Satellite access band grouping for RRM requirements in TS 38.133 Ericsson
* R4-2214633 CR CR on on other RRM requirements for NTN Huawei, HiSilicon
* R4-2214628 CR CR on UE transmit timing requirements for NTN Huawei, HiSilicon
* R4-2214601 CR CR to TS 38.133: Adding requirements for timing advance for satellite access Nokia, Nokia Shanghai Bell
* R4-2214602 CR CR to TS 38.133: Corrections to UE transmit timing and timing advance for satellite access Nokia, Nokia Shanghai Bell
* R4-2212863 CR CR to TS 38.133: Corrections to UE transmit timing and timing advance for satellite access Nokia, Nokia Shanghai Bell
* R4-2212853 CR CR to TS 38.133: Adding requirements for timing advance for satellite access Nokia, Nokia Shanghai Bell
* R4-2212865 other On RRM transmit timing and timing advance issues for Rel-17 NR NTN Nokia, Nokia Shanghai Bell
* R4-2213518 discussion Discussion on other issues for NTN RRM Huawei, HiSilicon
* R4-2213519 CR CR on on other RRM requirements for NTN Huawei, HiSilicon
* R4-2213474 CR CR on UE transmit timing requirements for NTN Huawei, HiSilicon
* R4-2211958 CR CR on active TCI state switching delay Xiaomi
* R4-2212212 CR CR on Abbreviations for NTN LG Electronics Inc.
* R4-2211959 discussion Discussion on the performance requirements for NTN RRM Xiaomi
* R4-2211960 CR CR on measurement accuracy requirement for NTN Xiaomi
* R4-2211961 discussion Test case list for NTN RRM requirements Xiaomi
* R4-2211962 CR CR on UE conditions for measurement performance requirements for NTN Xiaomi
* R4-2211638 discussion Discussion on RRM performance requirements for NTN CATT
* R4-2212194 discussion Discussion on general NTN RRM performance LG Electronics Inc.
* R4-2212184 draftCR draft CR of BWP switch and CBW change test cases Qualcomm Incorporated
* R4-2212182 discussion Test framework for NTN RRM Qualcomm Incorporated
* R4-2212399 discussion Discussion on RRM test list for NR NTN MediaTek inc.
* R4-2213523 discussion Discussion on measurement accuracy and TCs for NTN Huawei, HiSilicon
* R4-2213524 draftCR CR on measurement accuracy requirements for NTN Huawei, HiSilicon
* R4-2212882 other About the inclusion of UE precompensation in test cases for Rel-17 NR NTN Nokia, nokia Shanghai Bell
* R4-2213354 discussion General performance requirements for NTN Ericsson
* R4-2214060 other On SSB\_RP/CSI-RS\_RP conditions for RRM requirements with satellite access Ericsson
* R4-2214061 draftCR Conditions for RRM requirements for satellite access band in TS 38.133 Ericsson
* R4-2214943 draftCR draft CR of BWP switch and CBW change test cases Qualcomm Incorporated
* R4-2214570 CR CR on test case for cell reselection to FR1 intra-frequency NR cell for satellite access Xiaomi
* R4-2215068 draftCR CR on TCs for RRC Re-establishment for NTN Huawei, HiSilicon
* R4-2213356 discussion Test case for cell reselection for NTN Ericsson
* R4-2212883 other Discussions on RRM tests for cell reselection in Rel-17 NR NTN Nokia, nokia Shanghai Bell
* R4-2213527 draftCR CR on TCs for RRC Re-establishment for NTN Huawei, HiSilicon
* R4-2212381 discussion Discussion on test cases for cell reselection to intra- and inter-frequency neighbor cell LG Electronics UK
* R4-2211963 CR CR on test case for cell reselection to FR1 intra-frequency NR cell for satellite access Xiaomi
* R4-2211639 draftCR Test cases for Intra- and inter-frequency HO with known cell for NTN CATT
* R4-2213358 discussion Test cases for Intra- and inter-frequency HO with known cell for NTN Ericsson
* R4-2214885 draftCR Test cases for Intra- and inter-frequency HO with known cell for NTN CATT
* R4-2214886 draftCR Test cases for Intra- and inter-frequency CHO for NTN CATT
* R4-2213357 discussion Test cases for CHO for NTN Ericsson
* R4-2211640 draftCR Test cases for Intra- and inter-frequency CHO for NTN CATT
* R4-2211641 draftCR Test cases for UE transmit timing for NTN CATT
* R4-2212298 discussion Discussion on NTN timing test cases CMCC
* R4-2212884 other On RRM tests for UE transmit timing in Rel-17 NR NTN Nokia, Nokia Shanghai Bell
* R4-2213475 discussion Discussion on test cases for NTN UE timing requirements Huawei, HiSilicon
* R4-2213476 draftCR DraftCR on UE transmit timing tests for NTN Huawei, HiSilicon
* R4-2215062 draftCR DraftCR on UE transmit timing tests for NTN Huawei, HiSilicon
* R4-2215048 draftCR draft CR on test cases for Beam Failure Detection and Link Recover for NTN Ericsson
* R4-2215066 draftCR CR on TCs for SSB based RLM for NTN Huawei, HiSilicon
* R4-2213525 draftCR CR on TCs for SSB based RLM for NTN Huawei, HiSilicon
* R4-2212885 other On RRM tests for RLM for Rel-17 NR NTN Nokia, Nokia Shanghai Bell
* R4-2213352 draftCR draft CR on test cases for Beam Failure Detection and Link Recover for NTN Ericsson
* R4-2213359 discussion Test cases for L3 measurement delay for NTN Ericsson
* R4-2213526 draftCR CR on TCs for intra-frequency measurement delay for NTN Huawei, HiSilicon
* R4-2215067 draftCR CR on TCs for intra-frequency measurement delay for NTN Huawei, HiSilicon
* R4-2214954 draftCR Introduction of test cases for Inter-frequency measurement delay for satellite access with gap MediaTek inc.
* R4-2212400 draftCR Introduction of test cases for Inter-frequency measurement delay for satellite access with gap MediaTek inc.
* R4-2213353 draftCR draft CR on test cases for L1-RSRP measurement delay for NTN Ericsson
* R4-2215049 draftCR draft CR on test cases for L1-RSRP measurement delay for NTN Ericsson
* R4-2215069 draftCR CR on TCs for RSRP accuracy for NTN Huawei, HiSilicon
* R4-2214955 draftCR Introduction of test cases for Accuracy for SS-RSRQ for satellite access MediaTek inc.
* R4-2212898 other On RRM Measurement accuracy for Rel-17 NR NTN Nokia, Nokia Shanghai Bell
* R4-2213528 draftCR CR on TCs for RSRP accuracy for NTN Huawei, HiSilicon
* R4-2212401 draftCR Introduction of test cases for Accuracy for SS-RSRQ for satellite access MediaTek inc.
* R4-2212234 discussion Discussion on general issue on NTN demodulation Ericsson
* R4-2213859 discussion Discussion on UE NTN demod general Huawei,HiSilicon
* R4-2213279 other Discussion on general issues for NTN demodulation requirements Nokia, Nokia Shanghai Bell
* R4-2213360 other Simulation results for NTN SAN demodulation Nokia, Nokia Shanghai Bell
* R4-2213337 other Discussion on NTN SAN demodulation requirements Nokia, Nokia Shanghai Bell
* R4-2213858 discussion Discussion on satellite NTN demod PUSCH Huawei,HiSilicon
* R4-2213862 other Simulation results on satellite NTN demod PUSCH Huawei,HiSilicon
* R4-2212235 discussion Discussion on SAN PUSCH demodulation requirements Ericsson
* R4-2212238 other Simulation results for SAN PUSCH demodulation requirements Ericsson
* R4-2211531 draftCR Clarification of TPMI indication for UL full power transmission CMDI
* R4-2212239 other Simulation results for SAN PUCCH demodulation requirements Ericsson
* R4-2212236 discussion Discussion on SAN PUCCH demodulation requirements Ericsson
* R4-2213857 discussion Discussion and simulation results on satellite NTN demod PUCCH Huawei,HiSilicon
* R4-2213856 discussion Discussion and simulation results on satellite NTN demod PRACH Huawei,HiSilicon
* R4-2212237 discussion Discussion on SAN PRACH demodulation requirements Ericsson
* R4-2212240 other Simulation results for SAN PRACH demodulation requirements Ericsson
* R4-2212608 discussion Views on NTN UE PDSCH Requirements Qualcomm Incorporated
* R4-2212569 discussion Simulation Results on NTN UE PDSCH Requirements Qualcomm Incorporated
* R4-2212553 discussion Discussion on the SA UE PDSCH demodulation requirement Ericsson
* R4-2212554 other Simulation results for SA UE PDSCH Ericsson
* R4-2211867 discussion Discussion on PDSCH demod requirements for NTN Apple
* R4-2213860 discussion Discussion on UE NTN demod PDSCH Huawei,HiSilicon
* R4-2213861 other Simulation results on satellite NTN demod PDSCH Huawei,HiSilicon
* R4-2213336 other Simulation results on PDSCH demodulation requirements for NTN Nokia, Nokia Shanghai Bell
* R4-2213280 other Discussion on PDSCH demodulation requirements for NTN Nokia, Nokia Shanghai Bell

***END***