**3GPP TSG RAN meeting #99 RP-230115**

**Rotterdam, The Netherlands, March 20 – 23rd, 2023** *rev from**RP-222739*

## 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 – Perf. Part: 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-222556 |
| **Target Completion Date****(indicate if changed)** | Study Item: - | Core part: 06/2022 | Performance part: 03/2023 | Testing part: - |
| **Overall Completion level** | Study Item: - | Core part: Overall: 100% RAN1: 100%RAN2: 100%RAN3: 100% RAN4: 100% | Performance Part: Overall: 100% RAN4: 100% | 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 |

## 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.*

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## 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

* **RAN1#112, February 27th – March 3rd 2023, Athens**

[General]

**Conclusion**

The TP in section 2.3 of R1-2301907 is endorsed as editorial correction and provided to the editor of TS38.212 for the alignment CR.

The TP in section 3.3 of R1-2301907 is endorsed as editorial correction and provided to the editor of TS38.213 for the alignment CR.

Agreed LS out

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Other documents agreed

* R1-2302229: CR on the Type-1 HARQ-ACK codebook

Email discussions

* R1-2301907: Maintenance on Solutions for NR to support NTN Moderator (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#121, February 27th – March 3rd 2023, Athens**

Endorsed CR & TP

* R2-2301967 Correction on Stage-2 descriptions for NR NTN vivo, Nokia, Nokia Shanghai Bell
* R2-2301983 Corrections to NR NTN for 38.321 LG Electronics Inc., vivo
* R2-2301988 IOT bit for inter satellite measurement (38.306) MediaTek Inc.
* R2-2301969 IOT bit for inter satellite measurement (38.331) MediaTek Inc.
* R2-2300470 38.306 CR On Enhanced Cell Reselection Requirements Nokia, Nokia Shanghai Bell
* R2-2301981 CR to 38.304 on relaxed measurements Huawei, HiSilicon
* R2-2301984 Clarification on measurement relaxation in NTN Apple
* R2-2301971 RRC correction on epochTime and distanceThreshold OPPO
* R2-2301972 [offline 103] Neighbour cell measurements Ericsson
* R2-2301042 Clarification on essential SIB19 for NR NTN Xiaomi, CAICT, Lenovo, Samsung, MediaTek, Apple, OPPO, CATT, CMCC, Qualcomm
* R2-2301980 Correction to PDD reporting vivo, Samsung, Huawei, HiSilicon

Agreed LS out:

* R2-2301966 Response LS on Enhanced Cell Reselection Requirements for NTN Nokia, Nokia Shanghai

Email discussions

* [AT121][114][NR NTN] reply LS to RAN4 (Nokia)
* [AT121][113][NR NTN] (LG)
* [AT121][115][NR NTN] 38.304 CR on relaxed measurements (Huawei)
* [AT121][103][NR NTN] Neighbour cell measurements (Ericsson)
* [POST121][101][NR NTN] Corrections on neighbour cell measurements (Ericsson)
* [AT121][116][NR NTN] CP corrections (Samsung)
* [POST121][102][NR NTN] TN NTN mobility during RRC\_INACTIVE (Qualcomm)

[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#119, February 27th – March 3rd 2023, Athens**

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#### 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#106, February 27th – March 3rd 2023, Athens**

**GTW Agreements on BSRF Test Demod aspects**

General: Documents approved/agreed/endorsed:

* R4-2302865 CR for TS 38.108, Correct unwanted emission requirements applicability for SAN type 1-H , CATT
* R4-2302864 CR to TS 38.108: OBUE and open issues clarifications, Ericsson, Thales, Huawei, CATT
* R4-2302866 CR to TS 38.108: corrections, Huawei, HiSilicon
* R4-2302086 CR for TR 38.863 to maintain SAN parts, Huawei, HiSilicon
* R4-2302937 TP for TS 38.181, On general and annex part for RF, CATT
* R4-2302867 TP for TS 38.181 - Clause 4.1 Measurement uncertainties and test requirements, Thales
* R4-2300571 TP for TS 38.181, On conducted transmitter and receiver characteristics in Clause 6 and 7, CATT
* R4-2302938 TP to TS 38.181: Multiple corrections (test requirements, declarations, annexes), Huawei Technologies Sweden AB
* R4-2300572 TP for TS 38.181, On radiated transmitter and receiver characteristics in Clause 9 and 10, CATT

Satellite Access Node demodulation requirements: Documents approved/agreed/endorsed:

* R4-2302845 pCR on NTN SAN performance requirements (TS 38.181, Rel-17), Huawei, HiSilicon, CATT, Ericsson
* R4-2302195 Draft CR on NTN SAN performance requirements (TS 38.108, Rel-17), Huawei, HiSilicon

UE demodulation requirements: Documents approved/agreed/endorsed

* R4-2303532 Correction of the out-of-band blocking requirements, Apple

[Other documents]

Email discussion summaries:

* [106][303] NTN\_Solutions\_RF (Ericsson)

Agreement on New naming for OBUE requirement

* Option 2: Rename “OBUE” name with “Out-of-Band emission” or “OOBE” (Huawei)

Agreement on Unwanted emissions applicability

* Option 1: Unwanted emissions (ACLR, OBUE and spurious emissions) limits are specified considering all TABs, i.e. the sum of all TABs’ emission shall be less or equal to the specified limits. (CATT, Thales, Ericsson).

Agreement on Manufacture declaration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| D.48 | *TAB connectors* used for performance requirement testing | To reduce test complexity, declaration of a representative (sub)set of *TAB connectors* to be used for performance requirement test purposes. At least one *TAB connector* mapped to each *demodulation branch* is declared. | x |  |
| D.100 | PUSCH mapping type | Declaration of the supported PUSCH mapping type as specified in TS 38.211 [8], i.e., type A, type B or both. | x | x |
| D.101 | PUCCH format | Declaration of the supported PUCCH format(s) as specified in TS 38.211 [8], i.e., format 0, format 1, format 2, format 3, format 4. | x | x |
| D.102 | PRACH format and SCS | Declaration of the supported PRACH format(s) as specified in TS 38.211 [8], i.e., format: 0, 2, B4, C2.Declaration of the supported SCS(s) per supported PRACH format with short sequence, as specified in TS 38.211 [8], i.e., 15 kHz, 30 kHz or both. | x | x |
| D.103 | Additional DM-RS for PUCCH format 3 | Declaration of the supported additional DM-RS for PUCCH format 3: without additional DM-RS, with additional DM-RS or both. | x | x |
| D.104 | Additional DM-RS for PUCCH format 4 | Declaration of the supported additional DM-RS for PUCCH format 4: without additional DM-RS, with additional DM-RS or both. | x | x |
| D.105 | PUCCH multi-slot  | Declaration of multi-slot PUCCH support. | x | x |

Agreement on Applicability rule for SAN conducted demodulation requirements

* Unless otherwise stated, for a SAN supporting different numbers of TAB connectors (for SAN type 1-H) (see D.xxx in table yyy), the tests with low MIMO correlation level shall apply only for the highest number of supported connectors, and the specific connectors used for testing are based on manufacturer declaration.
* FFS whether need to consider test applicable rules for for a SAN supporting more than 2 TAB connectors (for SAN type 1-H)

Agreement on Applicability rule for SAN radiated demodulation requirements

* Unless otherwise stated, for a SAN declared to support more than 2 demodulation branches (for SAN type 1-O), the performance requirement tests for 2 demodulation branches shall apply, and the mapping between connectors and demodulation branches is up to SAN implementation.
* The tests requiring more than [20] dB SNR level are set to N/A in the test requirements.

**[GTW Agreements on RRM aspects]**

Documents endorsed

* R4-2300386 CR on SMTC collision, MediaTek inc.
* R4-2303275 CR on clarification for UE acquiring system information during handover, CATT
* R4-2303292 Maintenance CR on cell reselection requirements for satellite access, Xiaomi
* R4-2303299 CR to38.133: Complement the assistance information for NTN neighbour cell measurement, ZTE Corporation
* R4-2303296 CR on HO requirements for NTN, Huawei, HiSilicon
* R4-2303297 CR on MG requirements for NTN, Huawei, HiSilicon
* R4-2302541 CR on TS 38.133 (Rel-17) Corrections on cell reselection for NTN (CAT. F), Nokia, Nokia Shanghai Bell
* R4-2303294 CR on timing advance adjustment accuracy test for NTN, CMCC
* R4-2303260 CR on UE transmit timing tests for NTN R17, Huawei, HiSilicon
* R4-2303295 draftCR on setup for NTN RRM test cases, Huawei, HiSilicon
* R4-2301956 draftCR on CHO TCs for NTN, Huawei, HiSilicon
* R4-2302645 CR on TS 38.133 (Rel-17) Corrections on cell reselection test case for intra-frequency in NTN for NTN (CAT. F), Nokia, Nokia Shanghai Bell
* R4-2303147 WF on NR NTN RRM requirements, Xiaomi

[Other documents]

Email discussion summaries:

* Topic: [106][204] NR\_NTN\_solutions
* Agreements
	+ For LEO: Interval between adjacent epoch time is 2.56s. Validity timer is set to 5s
	+ For GEO: Interval between adjacent epoch time is 10.24s. Validity timer is set to 900s
* Agreement
	+ Use GNSS simulator(s) for acquisition of UE location in UE timing test cases
		- UE is not expected to report its location to the TE during the test
		- FFS if this applies to all or a subset of UE timing test cases

Agreed LS

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#### 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:

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

## 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 |
| 5G Satellite Aspects | CT1 led SI 5GSAT\_ARCH-CT | amerc@qti.qualcomm.com | RAN2 led WI NR\_NTN\_solutions | 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#112, February 27th – March 3rd 2023, Athens**

Submitted TDOCs:

* R1-2300260 draftCR Draft CR on the Type-1 HARQ-ACK codebook OPPO
* R1-2300261 draftCR Draft CR on the Type-2 HARQ-ACK codebook OPPO
* R1-2301738 discussion Maintenance issues for R17 NR NTN Ericsson
* R1-2301741 draftCR Draft CR 38.211: Correction of timing advance and alignment to 38.331 Ericsson
* R1-2301742 draftCR Draft CR 38.212: Alignment with 38.331 Ericsson
* R1-2301743 draftCR Draft CR 38.213: Addition of missing parameter dl-DataToUL-ACK-v1700 Ericsson
* R1-2301907 discussion FL Summary #1: Maintenance on Solutions for NR to support NTN Moderator (Thales)
* R1-2301908 discussion FL Summary #2: Maintenance on Solutions for NR to support NTN Moderator (Thales)
* R1-2301909 discussion FL Summary #3: Maintenance on Solutions for NR to support NTN Moderator (Thales)
* R1-2302054 other Session notes for 8.4 (Maintenance on Solutions for NR to support non-terrestrial networks (NTN)) Ad-Hoc Chair (Huawei)
* R1-2302229 CR CR on the Type-1 HARQ-ACK codebook Moderator (Thales), OPPO, NTT DOCOMO, Xiaomi, Samsung, Ericsson
* R1-2302182 draftCR Draft CR on the Type-1 HARQ-ACK codebook Moderator (Thales)

## 4.2 RAN2

* **RAN2#121, February 27th – March 3rd 2023, Athens**

Submitted TDOCs:

* R2-2300018 LS in Reply LS on validity of assistance information (R1-2212984; contact: OPPO) RAN1
* R2-2300043 LS in LS to RAN2 on inter-operability testing (IOT) bit for inter-satellite measurement (R4-2220425; contact: MediaTek) RAN4
* R2-2300044 LS in LS on capability description for enhanced cell reselection requirements in NTN (R4-2220427; contact: Nokia) RAN4
* R2-2300057 LS in Reply LS on enhanced cell reselection requirements (R4-2220741; contact: Huawei) RAN4
* R2-2300123 CR Correction on Stage-2 descriptions for NR NTN vivo, Nokia, Nokia Shanghai Bell
* R2-2301967 CR Correction on Stage-2 descriptions for NR NTN vivo, Nokia, Nokia Shanghai Bell
* R2-2300166 CR NTN Stage-2 correction OPPO
* R2-2300271 LS out [Draft] Reply LS on inter-operability testing (IOT) bit for inter-satellite measurement MediaTek Inc.
* R2-2300471 LS out [DRAFT] Response LS on enhanced cell reselection requirements in NTN Nokia, Nokia Shanghai Bell
* R2-2301966 LS out Response LS on enhanced cell reselection requirements in NTN RAN2
* R2-2300881 CR Clarification on support of TN NTN mobility during RRC\_INACTIVE Qualcomm Incorporated
* R2-2301139 CR Corrections on neighboring cell measurement ZTE Corporation, Sanechips
* R2-2301445 CR Corrections to 38.300 related to Section Scheduling and Timing THALES
* R2-2301685 CR Corrections on the description related to the timing advance pre-compensation CATT
* R2-2300124 CR Corrections to NR Non-Terrestrial Networks (NTN) for TS 38.321 vivo
* R2-2300729 CR Clarification on CG-SDT Timer in NTN Apple
* R2-2301157 discussion Clarification on UE behaviour when the validity timer expires Huawei, HiSilicon
* R2-2301636 CR Clarification on HARQ feedback transmission after SPS activation LG Electronics Inc.
* R2-2301974 CR Clarification on HARQ feedback transmission after SPS activation LG Electronics Inc.
* R2-2301983 CR Clarification on HARQ feedback transmission after SPS activation LG Electronics Inc.
* R2-2301658 CR Corrections on MAC procedure upon validity timer expiry Nokia, Nokia Shanghai Bell
* R2-2301704 CR Preamble Group Selection for TA Reporting Google Inc.
* R2-2300125 discussion Remaining issue on PDD reporting vivo, Samsung, Huawei, HiSilicon
* R2-2300168 CR RRC correction on epochTime and distanceThreshold OPPO
* R2-2301971 CR RRC correction on epochTime and distanceThreshold OPPO
* R2-2300169 CR RRC correction on inactiveStateNTN OPPO
* R2-2300201 CR Correction for RLC-Config-v1700 RadiSys
* R2-2300202 CR Correction for RLC-Config-v1700 RadiSys
* R2-2300213 CR Additional IE inclusion within SI-SchedulingInfo-v1700 RadiSys
* R2-2300218 CR Additional IE inclusion within SI-SchedulingInfo-v1700 RadiSys
* R2-2300219 CR Correction in Need Code for cellSpecificKoffset-r17 and kmac-r17 in NTN-Config-r17 RadiSys
* R2-2300234 discussion Remaining issues on SMTC Huawei, HiSilicon, vivo, Samsung
* R2-2300235 CR CR to 38.304 on relaxed measurements Huawei, HiSilicon
* R2-2301970 CR CR to 38.304 on relaxed measurements Huawei, HiSilicon
* R2-2301981 CR CR to 38.304 on relaxed measurements Huawei, HiSilicon
* R2-2300236 CR CR to 38.331 on event D1 Huawei, HiSilicon
* R2-2300267 CR Correction on missing referencing of the NTN spec in 38.331 MediaTek Inc.
* R2-2300269 CR IOT bit for inter satellite measurement (38.306) MediaTek Inc.
* R2-2301988 CR IOT bit for inter satellite measurement (38.306) MediaTek Inc.
* R2-2300270 CR IOT bit for inter satellite measurement (38.331) MediaTek Inc.
* R2-2301969 CR IOT bit for inter satellite measurement (38.331) MediaTek Inc.
* R2-2300301 CR Correction in Need Code for UplinkHARQ-mode-r17 and DownlinkHARQ-FeedbackDisabled-r17 RadiSys
* R2-2300302 CR Correction in Need Code for UplinkHARQ-mode-r17 and DownlinkHARQ-FeedbackDisabled-r17 RadiSys
* R2-2300365 CR Correction on NR NTN UE capability for enhanced measurement requirements for cell reselection Intel Corporation
* R2-2300370 CR Clarification on NR NTN UE capability eventA4BasedCondHandover-r17 Intel Corporation
* R2-2300470 CR 38.306 CR On Enhanced Cell Reselection Requirements Nokia, Nokia Shanghai Bell
* R2-2300472 discussion On T430 and epochTime related aspects Nokia, Nokia Shanghai Bell
* R2-2300614 discussion Handling of features with different UE support in TN and NTN Intel Corporation
* R2-2300730 CR Clarification on measurement relaxation in NTN Apple
* R2-2301984 CR Clarification on measurement relaxation in NTN Apple
* R2-2300879 CR Clarification on TN EUTRA capability reporting Qualcomm Incorporated
* R2-2300880 CR Clarification on use of feature upon TN NTN mobility during RRC\_INACTIVE Qualcomm Incorporated
* R2-2301975 CR Clarification on use of feature upon TN NTN mobility during RRC\_INACTIVE Qualcomm Incorporated, Intel Corporation, OPPO
* R2-2301995 CR Clarification on use of feature upon TN NTN mobility during RRC\_INACTIVE Qualcomm Incorporated, Intel Corporation, OPPO
* R2-2300910 discussion NR NTN Rel-17 neighbor cell measurements Ericsson
* R2-2301042 CR Clarification on essential SIB19 for NR NTN Xiaomi, CAICT, Lenovo, Samsung, MediaTek, Apple, OPPO, CATT, CMCC, Qualcomm
* R2-2301137 discussion Clarification on neighboring cell measurements for NTN ZTE Corporation, Sanechips
* R2-2301138 CR Corrections on neighboring cell measurement ZTE Corporation, Sanechips
* R2-2301392 CR Correction on missing referencing of the NTN spec in 38.306 Mediatek Inc.
* R2-2301436 CR Correction related to a missing description of a parameter of the number of HARQ processes Thales
* R2-2301476 discussion Discussion on IoT bit for inter-satellite measurement Samsung Research America
* R2-2301477 CR Correction for NR NTN on reconfiguration with sync Samsung
* R2-2301478 CR Correction for NR NTN on relaxed measurement Samsung
* R2-2301529 CR Clarification on T430 handling for target cell ASUSTeK
* R2-2301686 CR Corrections on the relaxed cell reselection requirements CATT
* R2-2301687 discussion Discussion on the RAT type of TN and NTN CATT
* R2-2301703 CR Skip Measurements of a Neighbour Frequency or Cell Google Inc.
* R2-2301847 CR Clarification on measurement relaxation target for NTN LG Electronics Inc.
* R2-2301848 CR Clarification on measurement relaxation source for NTN LG Electronics France
* R2-2301972 discussion [AT121][103][NR NTN] Neighbour cell measurements (Ericsson) Ericsson
* R2-2301973 discussion [AT121][116][NR NTN] CP corrections (Samsung) Samsung
* R2-2301980 CR Correction to PDD reporting vivo, Samsung, Huawei, HiSilicon

## 4.3 RAN3

* **RAN3#119, February 27th – March 3rd 2023, Athens**

Submitted TDOCs:

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## 4.4 RAN4

* **RAN4#106, February 27th – March 3rd 2023, Athens**

Submitted TDOCs:

* R4-2302490 discussion RAN4 ToR adding SAN THALES
* R4-2302470 CR CR to TS 38.108: corrections Huawei, HiSilicon
* R4-2302086 CR CR for TR 38.863 to maintain SAN parts Huawei, HiSilicon
* R4-2302087 other Discussion on definition of delta FOBUE Huawei, HiSilicon
* R4-2302088 CR CR for 38.108 to maintain unwanted emissions clause Huawei, HiSilicon
* R4-2301481 other NTN - Discussion on remaining open issues Ericsson, Thales
* R4-2301482 CR CR to TS 38.108: OBUE and open issues clarifications Ericsson, Thales
* R4-2300567 other Further discussion on RF Maintenance for NTN SAN CATT
* R4-2300568 CR CR for TS 38.108, On Operating band unwanted emission requirement CATT
* R4-2300569 CR CR for TS 38.108, Correct unwanted emission requirements applicability for SAN type 1-H CATT
* R4-2300570 pCR TP for TS 38.181, On general and annex part for RF CATT
* R4-2300604 draft TS TS 38.181 v1.0.2 NR Satellite Access Node (SAN) conformance testing CATT
* R4-2302493 pCR TP for TS 38.181 - Clause 4.1 Measurement uncertainties and test requirements THALES
* R4-2300571 pCR TP for TS 38.181, On conducted transmitter and receiver characteristics in Clause 6 and 7 CATT
* R4-2302582 pCR pCR to TS 38.181: introduction of extreme testing environment in the conducted part Ericsson
* R4-2302632 pCR TP to TS 38.181: Multiple corrections (test requirements, declarations, annexes) Huawei Technologies Sweden AB
* R4-2302583 pCR pCR to TS 38.181: introduction of extreme testing environment in the OTA part Ericsson
* R4-2300572 pCR TP for TS 38.181, On radiated transmitter and receiver characteristics in Clause 9 and 10 CATT
* R4-2300298 CR Correction of the out-of-band blocking requirements Apple
* R4-2300299 CR Correction of the out-of-band blocking requirements Apple
* R4-2300278 discussion On epoch time acquisition for blind handover Apple
* R4-2300384 discussion Discussion on measurement procedure requirements in NTN MediaTek inc.
* R4-2300385 CR CR on inter-frequency measurement with measurement gaps MediaTek inc.
* R4-2300386 CR CR on SMTC collision MediaTek inc.
* R4-2300397 CR CR on SMTC collision in R18 MediaTek inc.
* R4-2300896 CR Maintenance CR on cell reselection requirements for satellite access Xiaomi
* R4-2300597 discussion Discussion on remaining issues of core requirements for NTN RRM CATT
* R4-2300598 CR CR on clarification for UE acquiring system information during handover CATT
* R4-2300599 CR CR on clarification for UE acquiring system information during handover CATT
* R4-2300773 discussion Discussion on RRM maintenance issue for NTN core requirements CMCC
* R4-2302342 discussion Correction of cell reselection scaling factor Nokia, Nokia Shanghai Bell
* R4-2302345 CR CR on TS 38.133 (Rel-17) Corrections on cell reselection for NTN (CAT. F) Nokia, Nokia Shanghai Bell
* R4-2302025 discussion Core requirement maintenance Ericsson
* R4-2301948 LS out Discussion on remaining issues in NTN core requirements Huawei, HiSilicon
* R4-2301949 CR CR on HO requirements for NTN Huawei, HiSilicon
* R4-2301950 CR CR on HO requirements for NTN R18 Huawei, HiSilicon
* R4-2301951 CR CR on MG requirements for NTN Huawei, HiSilicon
* R4-2301952 CR CR on MG requirements for NTN R18 Huawei, HiSilicon
* R4-2301395 CR CR to38.133: Complement the assistance information for NTN neighbour cell measurement ZTE Corporation
* R4-2302647 CR CR on TS 38.133 (Rel-18) Corrections on cell reselection for NTN (CAT. A) Nokia, Nokia Shanghai Bell
* R4-2302541 CR CR on TS 38.133 (Rel-17) Corrections on cell reselection for NTN (CAT. F) Nokia, Nokia Shanghai Bell
* R4-2300776 CR CR on timing advance adjustment accuracy test for NTN CMCC
* R4-2300777 CR CR on timing advance adjustment accuracy test for NTN CMCC
* R4-2300774 discussion Discussion on RRM transmit timing test cases for NTN CMCC
* R4-2300600 discussion Discussion on acquisition method of GNSS position for UE transmit timing test cases CATT
* R4-2300095 other An acquisition method of UE location for NR NTN UE requirements Qualcomm Incorporated
* R4-2300387 discussion Discussion on test cases for NR NTN MediaTek inc.
* R4-2301926 other GNSS position for UE transmit timing tests Ericsson
* R4-2301999 discussion Discussion on remaining issues on test cases for NTN UE timing Huawei, HiSilicon
* R4-2302000 draftCR CR on UE transmit timing tests for NTN R17 Huawei, HiSilicon
* R4-2302001 draftCR CR on UE transmit timing tests for NTN R18 Huawei, HiSilicon
* R4-2302340 discussion On the importance of GNSS acquisition in transmit timing tests Nokia, Nokia Shanghai Bell
* R4-2302497 discussion On the acquisition method of GNSS position for UE transmit timing test cases THALES
* R4-2302517 discussion RRM test cases methodology and configuration for SAN NTN assistance information parameters THALES
* R4-2302341 discussion Discussion on Satellite Assistance Information for NTN test cases Nokia, Nokia Shanghai Bell
* R4-2301927 other Reference Time Instances for UL Timing Accuracy Requirements Ericsson
* R4-2301953 discussion Discussion on remaining issues for RRM test cases for NTN Huawei, HiSilicon
* R4-2301954 draftCR draftCR on setup for NTN RRM test cases Huawei, HiSilicon
* R4-2301955 draftCR draftCR on setup for NTN RRM test cases R18 Huawei, HiSilicon
* R4-2300096 other Configuration of NTN specific parameters and open issues Qualcomm Incorporated
* R4-2300601 discussion Discussion on configuration of NTN assistance information parameters for RRM test cases CATT
* R4-2300775 discussion Discussion on RRM test parameter configuration for NTN CMCC
* R4-2301956 draftCR draftCR on CHO TCs for NTN Huawei, HiSilicon
* R4-2301957 draftCR draftCR on CHO TCs for NTN R18 Huawei, HiSilicon
* R4-2302644 discussion Discussion on other performance related aspects in NTN Nokia, Nokia Shanghai Bell
* R4-2302645 CR CR on TS 38.133 (Rel-17) Corrections on cell reselection test case for intra-frequency in NTN for NTN (CAT. F) Nokia, Nokia Shanghai Bell
* R4-2302646 CR CR on TS 38.133 (Rel-18) Corrections on cell reselection test case for intra-frequency in NTN for NTN (CAT. A) Nokia, Nokia Shanghai Bell
* R4-2302195 draftCR Draft CR on NTN SAN performance requirements (TS 38.108, Rel-17) Huawei, HiSilicon
* R4-2302196 pCR pCR on NTN SAN performance requirements (TS 38.181, Rel-17) Huawei, HiSilicon
* R4-2300573 pCR TP for TS 38.181, On conducted and radiated demod performance requirements CATT
* R4-2301026 discussion Discussion on SAN demodulation requirements Ericsson
* R4-2301028 pCR pCR for TS 38.181 on SAN PUSCH and PRACH conducted requirements Ericsson
* R4-2303748 other Topic summary for [106][303] NTN\_Solutions\_RF Moderator - Ericsson
* R4-2303765 other Topic summary for [106][320] NR\_NTN\_Demod Moderator - Huawei
* R4-2302762 other Topic summary for [106][204] NR\_NTN\_solutions Moderator (Xiaomi)

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