**3GPP TSG RAN meeting #98-e RP-222739**

**e-meeting, December 12 - 16th, 2022** *rev from**RP-222018*

## 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-222556 | | | | |
| **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: 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](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

* **RAN1#110-bis-e, October 10 – 19th 2022, e-meeting**

[General]

**Conclusion of [110bis-e-R17-NR-NTN-01]:**

For Rel-17 maintenance, the following the issues described in R1-2210436 are to be handled at RAN1#110bis-e:

* For timing relationship enhancements and UL time and frequency synchronization for NR NTN: 1-6, and 1-4 (as recommendation for editor’s alignment CR)
* For scheduling and HARQ for NR NTN: 2-2, 2-3, and 2-1 (as recommendation for editor’s alignment CR)

The following draft CRs are not pursued in Rel-17: R1-2208830, R1-2210046, R1-2210047.

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

**For alignment TS38.213 CR:**

Text proposal of Initial Proposal 1-4-1 provided in section 2.2 of R1-2210580 on aligning the name of kmac in TS 38.213 and TS 38.331 is endorsed for the editorial corrections.

1. Agreements on “Maintenance on Enhancements on HARQ”

**Agreement**

The two TPs in [Updated Proposal 1.1-1] for (38.213, Section 9.1.3.1) and [Updated Proposal 2.1-1] for (38.213, Section 9.1.3.2) are endorsed in principle.

**[Updated Proposal 1.1-1]**

**Reason for change:**

DAI value is defined based on PDSCH receptions, excluding PDSCH receptions that provide only transport blocks for HARQ processes associated with disabled HARQ-ACK information if donwlinkHARQ-FeedbackDisabled is provided. The total number of DCI formats (i.e.,  )  used for calculating the number of HARQ-ACK information bits   for PUCCH power control should also exclude the DCI formats scheduling PDSCH receptions without associated HARQ-ACK information.



**Summary of change:**

The DCI formats scheduling PDSCH receptions without associated HARQ-ACK information are excluded for the calculation of the total number of DCI formats (i.e.,  )  for PUCCH power.



**Consequences if not approved:**

The UE may use an underestimated power to transmit PUCCH.

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| --- |
| ----------------------------------------Start of TP 38.213 V17.3.0 section 9.1.3.1   ---------------------------------------------  **9.1.3.1      Type-2 HARQ-ACK codebook in physical uplink control channel**  <Unchanged parts are omitted>  -        or , for G-RNTI  or G-CS-RNTI , is   the total number of DCI formats scheduling   PDSCH receptions providing transport blocks with enabled HARQ-ACK information, or having associated HARQ-ACK information without   scheduling a PDSCH reception, that the UE detects within the  or  PDCCH monitoring occasions, respectively, for serving cell .  or  if the UE does not detect any DCI   format scheduling   PDSCH reception providing a transport block with enabled HARQ-ACK information, or having associated HARQ-ACK information without   scheduling PDSCH reception, for   serving cell  in any of the  or , respectively, PDCCH monitoring occasions.  <Unchanged parts are omitted>  ----------------------------------------End of TP 38.213 V17.3.0 section 9.1.3.1   --------------------------------------------- |

**[Updated Proposal 2.1-1]**

**Reason for change:**

UE has to always multiplex HARQ-ACK information for PDSCH receptions with disabled HARQ-ACK information in PUSCH even if UL DAI value  when the UE has received a PDCCH scheduling PDSCH receptions with disabled HARQ-ACK information.



**Summary of change:**

Change the condition for disabling multiplexing HARQ-ACK information in PUSCH transmission in case UL DAI value by excluding the PDCCH scheduling PDSCH receptions with disabled HARQ-ACK information.



**Consequences if not approved:**

UL DAI value  cannot disable the multiplexing of HARQ-ACK information for PDSCH receptions with disabled HARQ-ACK information in PUSCH.



|  |
| --- |
| ----------------------------------------Start of TP 38.213 V17.3.0 section 9.1.3.2 ---------------------------------------------  **9.1.3.2      Type-2 HARQ-ACK codebook in physical uplink shared channel**  <Unchanged parts are omitted>  If   a UE is not provided PDSCH-CodeBlockGroupTransmission   and the UE is scheduled for a PUSCH transmission by DCI format that   includes a DAI field with value  and the UE has not received any PDCCH within   the monitoring   occasions for a DCI format scheduling PDSCH receptions providing transport  blocks with enabled HARQ-ACK information or having associated HARQ-ACK   information without scheduling PDSCH receptions on any serving cell , and the UE does   not have HARQ-ACK information in response to a SPS PDSCH reception to   multiplex in the PUSCH   as described in clause 9.1.3.1, the UE does not multiplex HARQ-ACK information in the   PUSCH transmission.  If   a UE is provided PDSCH-CodeBlockGroupTransmission   and the UE is scheduled for a PUSCH transmission by DCI format that   includes a DAI field with first value  or with second value  and the UE has not received any PDCCH within   the monitoring   occasions for a DCI format scheduling PDSCH reception providing a transport   block with enabled HARQ-ACK information   or having associated HARQ-ACK information without scheduling PDSCH reception   on any serving cell , and the UE does   not have HARQ-ACK information in response to a SPS PDSCH reception to   multiplex in the PUSCH,   as described in clause 9.1.3.1, the UE does not multiplex HARQ-ACK information for the   first sub-codebook or for the second sub-codebook, respectively, in the PUSCH   transmission.  <Unchanged parts are omitted>  ----------------------------------------End of TP 38.213 V17.3.0 section 9.1.3.2   --------------------------------------------- |

**Agreement**

The draft CR in R1-2210588 to reflect above agreement is endorsed in principle with the following correction:

* Addition of “with” in clause 9.1.3.2: “providing transport blocks **with** enabled HARQ-ACK information”

Final CR is agreed in R1-2210589 (TS38.213, Rel-17, CR#0375, Cat F).

Agreed LS out

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Other documents agreed

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Email discussions

* R1-2210581 Summary#2 of [110bis-e-R17-NR-NTN-02] Email discussion for maintenance on timing relationship enhancements and UL time and frequency synchronization for NR NTN for issues 1-6, 1-1 and 1-4. Moderator (Thales)
* R1-2210587 Summary#1 of maintenance on HARQ for Rel-17 NR-NTN Moderator (ZTE)
* **RAN2#111, November 14 – 18th 2022, Toulouse**

[General]

**Conclusion**

The UE may consider assistance information valid as soon as it is received. No specification impact is expected. The current definition of validity duration is not changed based on this conclusion.

**Agreement**

The TP in Updated Proposal 4 in section 4.3 of R1-2212613 is endorsed and provided to the TS 38.213 editor for aligning the name of CellSpecific\_Koffset, Koffset, and HARQ-feedbackEnablingforSPSactive in TS 38.213 with the names of these parameters in TS 38.321.

Agreed LS out

* LS in R1-2212929 is endorsed, with correction of the next meeting dates

Other documents agreed

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Email discussions

[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-bis-e, October 10 – 19th 2022, e-meeting**

A.0 General

Agreements:

1. Introduce one indication for cell reselection requirement enhancement for LEO. FFS if in SIB1 or SIB19

Agreements via email (from offline 109):

1. Introduce one indication for cell reselection requirement enhancement for LEO in SIB1. Parameter name is enhancedMeasurementLEO-r17

2. Reuse the exiting relaxedMeasurement-r16 field to enable the relaxed cell reselection requirements for GEO.

3. Changes in R2-2210348 are not pursued.

A.1 User plane

Agreements via email (from offline 111):

1. The Alt1 text proposal from R2-2210641 on cancellation of pending SR for TA report is agreed and included in NR NTN MAC rapporteur CR. (13/17)

2. The baseline text proposal from R2-2210087 on cancellation of RACH due to pending SR for TA report is agreed and included in NR NTN MAC rapporteur CR. (consensus)

3. Editorial corrections to TS 38.321 Sections 5.4.8 and 5.7 from R2-2210768 are agreed and included in NR NTN MAC rapporteur CR. (consensus)

Agreements online:

1. The following editorial correction to TS 38.321 Section 6.1.3.57 is agreed and included in NR NTN MAC rapporteur CR:

Differential Koffset: This field contains indicates the differential Koffset in the number of slots (see clause 4.2 in TS 38.213 [6]), using subcarrier spacing of 15 kHz. The length of the field is 6 bits.

2. The following editorial correction to TS 38.321 Section 6.1.3.56 is agreed and included in NR NTN MAC rapporteur CR:

Timing Advance: In FR1, the Timing Advance field indicates the least integer number of slots, using subcarrier spacing of 15 kHz, greater than or equal to the Timing Advance value (see TS 38.211 [8], clause 4.3.1). The length of the field is 14 bits.

A.2 Control plane - Idle/inactive mode aspects

Agreements via email (from offline 112):

1. The proposed changes in R2-2209504 are not pursued.

2. The 2nd an 3rd changes from R2-2210569 are agreed

2nd change: Add parameters introduced for NTN cell reselection in 5.2.4.7.0

3rd : Editorial changes in 5.2.4.2.

3. The proposed change in R2-2210584 is not pursued.

4. The proposed change in R2-2210640 is not pursued.

A.3 Control plane - RRC aspects

Agreements:

1. In the field description of epochTime, include RAN1’s agreement on the interpretation of the SFN indicating the epoch time for serving cell and neighbor cell

Agreements via email (from offline 113):

1. For UEs in RRC\_CONNECTED state UE, if the UE cannot acquire SIB19 due to no configured common search space with an in the active BWP, it is up to the NW implementation to provide valid UL sync info to the UE via dedicated signalling (no spec impacts)

2. In TS 38.331 clause 5.2.2.4.21, clarification is needed that ntn-UlSyncValidityDuration and epochTime for the serving cell are applied for serving cell T430. TP in R2-2209852 is considered as the baseline for CR.

3. If both epoch time for serving cell and epoch time for neighbor cell are absent, the epoch time for neighbor cell is the implicit serving cell epoch time, i.e. the end of SI window where this SIB19 is scheduled. (no spec impact)

4. if epoch time for neighbor cell is absent, and the serving cell epoch time is reused for neighbor cell, UE considers the indicated SFN to be current SFN or the next upcoming SFN after the frame where the message indicating the Epoch time is received. (implication of the agreement to include in epochTime field description the interpretation of the SFN indicating the epoch time for serving cell and neighbor cell, no other spec impact).

5. In case of HO, the UE considers the target cell epoch time (i.e., indicated explicitly by a SFN and subframe number) to be the frame nearest to the target cell’s frame where the message indicating the Epoch time is received. (to be captured in epochTime field description)

6. In case of CHO, the UE considers the target cell epoch time (i.e., indicated explicitly by a SFN and subframe number) to be the frame nearest to the target cell’s frame where the message indicating the Epoch time is received. (to be captured in epochTime field description)

7. NW provides target cell validity duration in dedicated configuration by NW implementation (no spec impact)

8. When initiating the re-establishment procedure due to HO failure, UE does not stop the current T430 (no spec change; proposal in R2-2209528 regarding T430 stop upon RRC re-establishment is not pursued)

9. RAN2 to update the start and stop conditions in the timer table for T430 (FFS exact wording)

Agreements online:

1. Whether the UE uses the target cell NTN-config in NTN-NeighCellConfig-r17 IE from source cell SIB19 for HO or CHO is up to UE implementation (FFS on spec impact)

2. It’s up to UE implementation what to do with T430 when going to IDLE.

Agreements via email (from offline 115):

1. Do not pursue with R2-2209505

2. Agree R2-2209537

3. Do not discuss further R2-2209981

4. Do not pursue with R2-2209800

5. Do not pursue with R2-2209506

6. Agree to add event descriptions and use CR in R2-2210197. Modify further in final RRC CR review.

7. Agree third change of CR R2-2210570

Agreements online:

1. RAN2 understands that the NW needs to configure the NTN neighbour cell frequencies in SIB19 if it wants the UE to measure them

A.4 UE capabilities

Agreements via email (from offline 116):

1. The changes in R2-2209801, regarding introducing tUE specific capability for the UE coarse location report, are not pursued.

2. RAN2 understands that CA and DC are not supported in NTN

Endorsed draft CR & TP

* R22211046 CR Stage-2 corrections (Thales)
* R2-2210869 CR 38.304 (ZTE)
* R2-2211018 CR RRC (Ericsson)

Agreed LS out:

* R2-2211047 LS on validity of assistance information (Oppo)

Email discussions

* [AT119bis-e][109][NR NTN] cell reselection requirements (Huawei)
* [AT119bis-e][110][NR NTN] Stage-2 corrections (Thales)
* [AT119bis-e][111][NR NTN] UP corrections (Interdigital)
* [AT119bis-e][112][NR NTN] idle mode corrections (ZTE)
* [AT119bis-e][113][NR NTN] epoch time and validity timer (Samsung)
* [AT119bis-e][114][NR NTN] Validity of assistance information (Oppo)
* [AT119bis-e][115][NR NTN] RRC corrections (Ericsson)
* [AT119bis-e][116][NR NTN] UE capabilities (Mediatek)
* [Post119bis-e][110][NR NTN] Stage-2 corrections (Thales)
* [Post119bis-e][112][NR NTN] idle mode corrections (ZTE)
* [Post119bis-e][114][NR NTN] LS on validity of assistance information (Oppo)
* [Post119bis-e][115][NR NTN] RRC CR (Ericsson)
* **RAN2#120, November 14 – 18th 2022, Toulouse**

A.0 General

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A.1 User plane

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A.2 Control plane - Idle/inactive mode aspects

Agreement:

Upon receiving SIB19, the UE in RRC\_CONNECTED shall:

1> start or restart T430 for serving cell with the timer value set to ntn-UlSyncValidityDuration from the subframe indicated by epochTime;

Agreement with the clarification that the start is for the target cell for HO and CHO:

|  |  |  |  |
| --- | --- | --- | --- |
| T430 | Start or restart from the subframe indicated by epochTime upon reception of SIB19, or upon reception of RRCReconfiguration message including reconfigurationWithSync, or upon conditional reconfiguration execution i.e. when applying a stored RRCReconfiguration message including reconfigurationWithSync | Stop T430, if it is running, for the source cell upon reception of RRCReconfiguration message including reconfigurationWithSync, or upon conditional reconfiguration execution i.e. when applying a stored RRCReconfiguration message including reconfigurationWithSync. | Perform the actions as specified in 5.2.2.6. |

Agreement:

1. For timer T430 upon going to RRC\_IDLE, clarify as follow:

1> stop all timers that are running except T302, T320, T325, T330, T331 ~~and~~ T400 and T430;

NOTE: It is left to UE implementation whether to stop T430, if running, when going to RRC\_IDLE

2. Add T430 to the list in the “shall statement” and add a second normative sentence saying that the UE may stop T430 when going in RRC Idle and Inactive

3. add “after security is activated” for T430 handling in TS 38.331

Agreement to the changes below:

epochTime

Indicate the epoch time for the NTN assistance information. When explicitly provided through SIB, or through dedicated signaling, The epochTime is the starting time of a DL sub-frame, indicated by a SFN and a sub-frame number signaled together with the assistance information. For serving cell, the sfn indicates the current SFN or the next upcoming SFN after the frame where the message indicating the epochTime is received. For neighbour cell, the sfn indicates the SFN nearest to the frame where the message indicating the epochTime is received~~Denoted by f0 the frame where the message indicating the epochTime is received and by f1 the frame containing the DL sub-frame defining the epochTime. For serving cell, the UE considers f1 to be f0 if the indicated SFN equals the SFN of f0, or the next frame with the indicated SFN if the indicated SFN differs from the SFN of f0. For neighbor cell, the UE considers f1 to be the frame, with the indicated SFN, that is nearest to f0.~~ The reference point for epoch time of the serving ~~satellite~~ NTN payload ephemeris and Common TA parameters is the uplink time synchronization reference point. If this field is absent, the epoch time is the end of SI window where this SIB19 is scheduled. This field is mandatory present when provided in dedicated configuration. If this field is absent in ntn-Config provided via NTN-NeighCellConfig the UE uses epoch time ~~from~~ of the serving ~~satellite ephemeris~~cell, otherwise the field is based on the timing of the serving cell, i.e. the SFN and sub-frame number indicated in this field refers to the SFN and sub-frame of the serving cell. In case of handover or conditional handover, this field is based on the timing of the target cell, i.e. the SFN and sub-frame number indicated in this field refers to the SFN and sub-frame of the target cell.~~, and~~ For the target cell, the UE considers ~~the target cell~~ epoch time, indicated by the SFN and sub-frame number in this field, to be the target cell frame nearest to the target cell frame in which the message indicating the epoch time is received. This field is excluded when determining changes in system information, i.e. changes to epochTime should neither result in system information change notifications nor in a modification of valueTag in SIB1.

Agreements

* R2-2211341 M RRC correction on NTN measurements OPPO, ZEKU
* Add restriction in field description that the field associatedMeasGapCSIRS2 is not configured in this release. And Introduce corresponding spec changes to the 306 CR
* CR R2-2211370 Correction on frequency band indicator
* R2-2211408 Clarification on NR NTN trackingAreaList
* R2-2211728 Clarification on NTN RRM measurement capability but in the second sentence add “SSB based” measurements

A.3 Control plane - RRC aspects

A.4 UE capabilities

Endorsed draft CR & TP

* R2-2213035 Stage2 CR (Thales)
* R2-2213028 RRC CR (Ericsson)
* R2-2212335 CR 38.321 (InterDigital)
* R2-2212820 CR 38.304 (Idle mode corrections) ZTE
* ?? capability CRs (Intel)
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Agreed LS out:

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Email discussions

* [AT120][101][NR NTN] RNA across TN/NTN (Qualcomm)
* [AT120][102][NR NTN] RRC corrections (Ericsson)
* [AT120][108][NR-NTN] Stage 2 CR (Ericsson)
* [POST120][110][NR NTN] RRC CR (Ericsson)
* [POST120][111][NR NTN] capability CRs (Intel)
* [POST120][112][NR NTN] Stage 2 CR (Thales)

[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-bis-e, October 10 – 18th 2022, e-meeting**

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* **RAN3#118, November 14 – 18th 2022, Toulouse**

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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#104-bis-e, October 10 – 19th 2022, e-meeting**

**GTW Agreements on BSRF Test Demod aspects**

Documents agreed/approved:

* R4-2216150 CR to 38.101-5: Corrections on section 5.3.3 for NTN UE, Source: Xiaomi
* R4-2217316 Corrections to SAN TS 38.108, Source: THALES
* R4-2215412 CR for TS 38.108, Corrrect definiiton order in sub-clause 3.1, Source: CATT
* R4-2215802 TS 38.181 v0.2.0 NR Satellite Access Node (SAN) conformance testing, Source: CATT
* R4-2215401 TP for TS 38.181 – Clause 4.9 RF channels and test models, Source: CATT
* R4-2217322 TP for TS 38.181 - Annex D, Source: THALES
* R4-2217503 TP for TS 38.181 – Clause 4.7 Test configurations and Clause 4.8 Applicability of requirements, Source: CATT
* R4-2215397 TP for TS 38.181 – Clause 1 Scope, Clause 2 References and Clause 3 Definition of terms, symbols and abbreviations, Source: CATT
* R4-2217323 TP for TS 38.181 – Clause 4.1 Measurement uncertainties and test requirements, Source: CATT
* R4-2215399 TP for TS 38.181 – Clause 4.6 Manufacturer declarations, Source: CATT
* R4-2215406 TP for TS 38.181 – A.1 FRCs for RF Rx requriement(QPSK, R=1/3) and A.2 FRCs for dynamic range (16QAM, R=2/3), Source: CATT
* R4-2217324 TP for TS 38.181 – Annex F Calibration, Source: CATT
* R4-2215408 TP for TS 38.181 – Annex H In-channel Tx test, Source: CATT
* R4-2215409 TP for TS 38.181 – Annex I Transmitter spatial emissions declaration, Source: CATT
* R4-2215410 TP for TS 38.181 – Annex K Measuring noise close to the noise-floor, Source: CATT
* R4-2217325 TP to TS 38.181 – Clauses 4.10 and 4.11, Source: Nokia, Nokia Shanghai Bell
* R4-2216489 TS 38.181: TP on clause 5, Source: Ericsson
* R4-2217336 TP to TS 38.181: General test conditions and declarations (4.2 - 4.5), Source: Huawei, HiSilicon
* R4-2215339 TP for TS 38.181 - Clause 6.5.3 EVM, Source: THALES, CATT
* R4-2217321 TP for TS 38.181 - Clause 6.6.5 Spurious Emissions, Source: THALES
* R4-2215402 TP for TS 38.181 – Clause 6.1 General and Clause 6.2 Satellite Access Node output power, Source: CATT, THALES
* R4-2217333 TP for TS 38.181: Section 6.3 Output power dynamics, Source: ZTE Corporation
* R4-2217337 TP to TS 38.181: occupied bandwidth (6.6.1, 6.6.2), Source: Huawei, HiSilicon
* R4-2217338 TP to TS 38.181: OBUE (6.6.4), Source: Huawei, HiSilicon
* R4-2215403 TP for TS 38.181 – Clause 7.1 General and Clause 7.2 Reference sensitivity level, Source: CATT
* R4-2217326 TP to TS 38.181 – Clause 7.4 In-band selectivity and blocking, Source: Nokia, Nokia Shanghai Bell
* R4-2217334 TP for TS 38.181: Section 7.3 Dynamic range, Source: ZTE Corporation
* R4-2216563 TP for TS 38.181: Section 7.6~7.8, Source: ZTE Corporation
* R4-2217339 TP to TS 38.181: Out-of-band blocking (7.5), Source: Huawei, HiSilicon
* R4-2215404 TP for TS 38.181 – Clause 9.1 General, Source: CATT
* R4-2217335 TP for TS 38.181: Section 9.4 OTA output power dynamics, Source: ZTE Corporation
* R4-2217340 TP to TS 38.181: OTA occupied bandwidth (9.7.1, 9.7.2), Source: Huawei, HiSilicon
* R4-2217341 TP to TS 38.181: OTA ACLR (9.7.3), Source: Huawei, HiSilicon
* R4-2217342 TP to TS 38.181: OTA OBUE (9.7.4), Source: Huawei, HiSilicon
* R4-2215405 TP for TS 38.181 – Clause 10.1 General and Clause 10.2 OTA sensitivity, Source: CATT
* R4-2217508 TP to TS 38.181 – Clause 10.5 In-band selectivity and blocking, Source: Nokia, Nokia Shanghai Bell
* R4-2216565 TP for TS 38.181: Section 10.4 OTA dynamic range, Source: ZTE Corporation
* R4-2216566 TP for TS 38.181: Section 10.7~10.9, Source: ZTE Corporation
* R4-2217343 TP to TS 38.181: OTA out-of-band blocking (10.6), Source: Huawei, HiSilicon
* R4-2215978 Big CR on NTN SAN performance requirements (TS38.108, Rel-17), Source: Huawei,HiSilicon
* R4-2217350 pCR on FRC of NTN SAN performance requirements (TS38.181, Rel-17), Source: Huawei,HiSilicon
* R4-2217351 draftCR for TS38.108 introduce FRC tables for SAN PUSCH demodulation, Source: Ericsson
* R4-2217353 Draft CR on NTN SAN PUSCH performance requirements (TS38.108, Rel-17), Source: Huawei,HiSilicon
* R4-2217354 pCR on NTN SAN PUSCH performance requirements (TS38.181, Rel-17), Source: Huawei,HiSilicon
* R4-2217356 draftCR for TS38.108 introduce requirements for SAN PUSCH demodulation, Source: Ericsson
* R4-2217357 draftCR for TS38.181 introduce SAN PUCCH radiated demodulation requirements, Source: Ericsson
* R4-2217358 pCR on NTN SAN PUCCH performance requirements (TS38.181, Rel-17), Source: Huawei,HiSilicon
* R4-2217359 draftCR for TS38.181 introduce SAN PRACH conducted demodulation requirements, Source: Ericsson
* R4-2217360 Draft CR on NTN SAN PRACH performance requirements (TS38.108, Rel-17), Source: Huawei,HiSilicon
* R4-2217361 pCR on NTN SAN PRACH performance requirements (TS38.181, Rel-17), Source: Huawei,HiSilicon
* R4-2217515 Big draftCR for UE NTN performance requirements (TS38.101-5, Rel-17), Source: Samsung
* R4-2217346 Draft CR on general part of UE NTN performance requirements (TS38.101-5, Rel-17), Source: Huawei,HiSilicon
* R4-2217345 Draft CR on Propagation Conditions, Physical Channels, Environmental Conditions for NTN, Source: Apple
* R4-2217347 Draft CR on applicability rules of UE NTN performance requirements (TS38.101-5, Rel-17), Source: Huawei,HiSilicon
* R4-2216396 draft CR to 38.101-5: Throughput and reference channel definition, Source: Ericsson
* R4-2217311 WF on NTN Solutions SAN RF Maintenance, Source: Thales
* R4-2217509 WF on NTN solutions SAN RF conformance, Source: Ericsson
* R4-2217344 WF for NTN demodulation requirements - general and PDSCH, Source: Qualcomm
* R4-2217348 WF for NTN SAN demodulation requirements, Source: Huawei
* R4-2215315 CR: 0005 Doppler test conditions for RF requirements 38.101-5, Source: Qualcomm Incorporated
* R4-2217319 CR: 0005 Doppler test conditions for RF requirements 38.101-5, Source: Qualcomm Incorporated

[Other documents]

Email discussion summaries:

* [104-bis-e][304] NTN\_Solutions\_RF\_Maintenance, AI 4.2.1, 4.2.2, 4.2.4– Dorin Panaitopol
* [104-bis-e][305] NTN\_Solutions\_RFConformance, AI 4.2.3– Dominique Everaere
* [104-bis-e][317] NR\_NTN\_Demod\_Part1, AI 4.2.7.1, 4.2.7.3– Bin Han
* [104-bis-e][318] NR\_NTN\_Demod\_Part2, AI 4.2.7.1, 4.2.7.3– Tricia Li
* Agreement: Further consider the extreme condition in Rel-17 RF conformance maintenance phase.
  + CR can be considered to capture some informative information to TR 38.863.
* Agreement:
  + OTA measurement setup for TN in annex of TS 38.141-2 can be considered as baseline for NTN; further discuss below aspects:
    - Connections between different components
    - The size of chamber and applicable test methods
* Agreement
  + Channel model for NTN-TDLC (LOS): DS=5ns, Doppler=200Hz. K-factor=8.05dB
  + Delay resolution: Adopt 5 ns as the delay resolution
* Agreement: Delay profile for NTN-TDLA

|  |  |  |  |
| --- | --- | --- | --- |
| **Tap #** | **Delay [ns]** | **Power [dB]** | **Fading distribution** |
|
| 1 | 0 | 0 | Rayleigh |
| 2 | 110 | -4.7 | Rayleigh |
| 3 | 285 | -6.5 | Rayleigh |

* Agreement
  + K offset value: Confirm K\_offset equal to 8 slots for 15kHz SCS for all the HARQ configurations
* Agreement: Do not define PDSCH performance requirements for 64QAM
  + It’s not precluded to discuss and specify requirements for 64QAM in future releases.
* Agreement:
  + Define PDSCH test cases for Disabled HARQ, 16 HARQ proc and 32 HARQ processes and further discuss the detailed test cases.
* Agreement (wrt Testability of the disabled HARQ scenario): FFS, RAN4 targets to drawn conclusion in next RAN4 meeting.
* Agreement (wrt HARQ configurations):
  + FFS for the test applicable rules

|  |  |  |
| --- | --- | --- |
| **Prop. Channel** | **MCS** | **HARQ Config** |
| NTN-TDLA100-200 | MCS4 | Disabled HARQ |
| MCS4 | 16 HARQ Proc |
| NTN-TDLC5-200 | MCS4 | 32 HARQ Proc |
| MCS13 | 16 HARQ Proc |

* Agreement (wrt Antenna configuration for PUSCH requirements)
  + Keep previous agreement that both 1Rx and 2Rx shall be considered for NTN SAN PUSCH demodulation requirements
* Agreement (wrt Test applicability rule for different antenna configuration for PUSCH requirements)
  + Unless otherwise stated, for a SAN supporting different numbers of antenna connectors (for SAN type 1-C) or 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.
* Agreement (wrt Antennal configuration for PUCCH requirements):
  + PUCCH long formats 1, 3, 4: Option 1 agreed
    - Further align the results for format 4 required
  + PUCCH short formats 0 and 2:
    - Further effort on the alignment of simulation results required
    - Both LOS and NLOS channel can be further evaluated and considered
    - Companies are encouraged to bring more results

**[GTW Agreements on RRM aspects]**

Documents agreed/approved

* R4-2217174 WF on NR NTN RRM requirements, Source: Qualcomm Incorporated
* R4-2217175 Reply LS to RAN2 on measurement gap enhancements for NTN, Source: Apple
* R4-2217162 CR on correction to cell re-selection requirement for satellite access, Source: CMCC
* R4-2217163 CR on intra-frequency and inter-frequency measurement requirement without MG for NTN, Source: Apple
* R4-2215749 CR on intra-frequency measurements in NTN, Source: Samsung
* R4-2217164 CR on RLM and BFR requirements for NTN, Source: Huawei, HiSilicon
* R4-2217165 CR on MG requirements for NTN, Source: Huawei, HiSilicon
* R4-2217166 CR for Cell Reselection requirements with distance trigger, Source: Nokia, Nokia Shanghai Bell
* R4-2217168 Completing requirements for conditional handover for NTN, Source: CATT
* R4-2217169 CR on cell re-selection, MDT and timing requirements for NTN, Source: CATT
* R4-2217170 CR on scheduling restrictions for L3 measurements in FR1 for NTN, Source: Apple
* R4-2215748 CR on intra-frequency cell reselection in NTN, Source: Samsung
* R4-2216313 CR on RRC re-establishment requirements for NTN, Source: Huawei, HiSilicon
* R4-2217171 CR on UL spatial relation switch requirements for NTN, Source: Huawei, HiSilicon
* R4-2217172 Editorial CR To TS 38.133 Handover requirements, Source: Nokia, Nokia Shanghai Bell
* R4-2217589 Big CR for NTN RRM performance requirements, Source: MCC, Xiaomi
* R4-2217185 WF on performance part for NTN RRM, Source: Xiaomi
* R4-2217183 CR on measurement accuracy requirements for NTN, Source: Huawei, HiSilicon
* R4-2216863 draft CR of BWP switch and CBW change test cases for NR NTN, Source: Qualcomm Incorporated
* R4-2217182 Draft CR on test case for cell reselection to FR1 inter-frequency NR cell for satellite access, Source: LG Electronics UK
* R4-2217184 CR on cell reselection TCs for NTN, Source: Huawei, HiSilicon
* R4-2217176 Test cases for Intra- and inter-frequency HO with known cell for NTN, Source: CATT
* R4-2215454 4-step RA type randon access test for satellite access, Source: Xiaomi, CAICT
* R4-2216322 CR on TCs for RRC Re-establishment for NTN, Source: Huawei, HiSilicon
* R4-2217177 Test cases for Intra- and inter-frequency CHO for NTN, Source: CATT
* R4-2215452 RRC connection release with redirection rest for satellite access, Source: Xiaomi, CAICT
* R4-2215502 draft CR for NTN timing advance adjustment accuracy test, Source: CMCC
* R4-2217282 DraftCR on UE transmit timing tests for NTN, Source: Huawei, HiSilicon
* R4-2215451 Pathloss reference signal switching delay test for satellite access, Source: Xiaomi, CAICT
* R4-2215503 draft CR for CSI-RS based RLM for NTN, Source: CMCC
* R4-2217181 CR to Test case 10-4 to 10-9 intra-frequency measurement delay with gap for satellite access, Source: OPPO
* R4-2216324 CR on TCs for intra-frequency measurement delay for NTN, Source: Huawei, HiSilicon
* R4-2217180 Test case for inter-frequency measurement without gap for satellite access, Source: Xiaomi, CAICT
* R4-2217178 L1-RSRP measurement accuracy test for satellite access, Source: Xiaomi, CAICT
* R4-2217179 SS-SINR measurement accuracy test for satellite access, Source: Xiaomi, CAICT
* R4-2216325 CR on general requirement for NTN RRM test cases, Source: Huawei, HiSilicon

[Other documents]

Email discussion summaries:

* [104-bis-e][201] NR\_NTN\_solutions\_RRM\_1, AI 4.2.5 – CH Park
* [104-bis-e][202] NR\_NTN\_solutions\_RRM\_2, AI 4.2.6 – Xuhua Tao

**Agreement (wrt Measurement accuracy):**

* Reuse the legacy TN measurement accuracy requirements for NTN.
  + Add brackets to the numbers

Agreement (wrt **SMTC setup and scaling factor K\_multi in cell reselection tests)**

* + Use the following SMTC configurations for TC 1-1 – 1-4.
    - TC 1-1: serving cell in SMTC1, neighbor cell in SMTC2, SMTC1 and SMTC2 non-overlapping
    - TC 1-2: serving cell in SMTC1, neighbor cell in SMTC2, SMTC1 and SMTC2 overlapping
    - TC 1-3 and 1-4: serving cell in SMTC1, neighbor cell in SMTC1
    - Scaling factor “K\_multi” is taken into account in the testing requirement for TC 1-1 – 1-4.
  + Use the same SMTC configuration as in A.6.1.1.2 for TC 1-5- 1-8, and scaling factor “K\_multi” is not taken into account in the testing requirement.
  + The requirements in TC 1-3 and 1-4 should be based on UE capability: parallel measurements on more than one NGSO satellite within one SMTC; and different requirements are applied to different UE capabilities.

Agreement (wrt **Test setup for intra/inter-frequency cell reselection with timer trigger)**

* TC 1-3 and 1-7 consist of two time periods T1 and T2:
  + Before test: UE camps in cell1, and t-Service is included in SIB19 of cell1
  + T1: cell2 is powered off, T1 is long enough to make UE have no information about cell2
  + T2: cell2 is powered on, T2 is [40]s, t-Service is pointed to the time point (start of T2 + [36s])
  + UE should reselect to cell2 before t-Service

Agreement (wrt **UE timing TC for 30 kHz SCS scenario)**

* No need to define UE timing test configuration for FDD 30kHz SCS scenario for UE timing test cases.
  + 30kHz test cases can be added when there is operator demand in the future

Agreement (wrt **Test case for CHO with time/location-based condition)**

* Test case for CHO with time/location-based condition
  + It is not necessity of adding test cases in which settings don’t fulfil power based events and time/location based events simultaneously, to examine UE’s behavior in this type of scenario.
  + Replace the original test cases with the cases in which settings fufil power based events and time/location based events at different time instances; choose 1 or 2 cases to apply this update

Agreement (wrt **SMTC configuration for measurement delay TCs)**

* + RAN4 not to define the SMTC/satellite configuration with 2 SMTC per MO and each SMTC contains 2 SSB/Satellites.
  + For intra-frequency TCs (10-x),
    - Config.1: 2 SMTC per MO, each SMTC contains 1 SSB/Satellites
      * Config.1a: two SMTCs are overlapping
      * Config.1b: two SMTCs are non-overlapping
    - Config.2: 1 SMTC per MO, each SMTC contains 2 SSBs/Satellites
  + For inter-frequency TCs (11-x):
    - Config.0: 1 SMTC per MO, each SMTC contains 1 SSB/Satellites
      * Config.0a: the SMTC for serving carrier and the one for neighbour carrier are overlapping
      * Config.0b: the SMTC for serving carrier and the one for neighbour carrier are non-overlapping

LS out

* R4-2217175 LS out Reply LS to RAN2 on measurement gap enhancements for NTN Apple
* **RAN4#105, November 14 – 18th 2022, Toulouse**

**GTW Agreements on BSRF Test Demod aspects**

General: Documents approved/agreed/endorsed:

* R4-2219968 CR to TS 38.108: removal of colocation requirements (*Huawei, HiSilicon, CATT*)
* R4-2220290 TP for TS 38.181 – Clause 4.1.2 Acceptable uncertainty of Test System (CATT)
* R4-2220292 TP for TS 38.181 – DUT size for applicable MU values (Huawei)
* R4-2220230 TP for TS 38.181 - Annex D Updates (Thales)
* R4-2220231 TP for TS 38.181: Annex B (Ericsson)
* R4-2219835 TP for TS 38.181: Annex C (Ericsson)
* R4-2220232 TP for TS 38.181: Annex E (Ericsson)
* R4-2220293 TP for TS 38.181: Annex J (Ericsson)
* R4-2220234 TP for TS 38.181 - Clause 6.5 Transmitted signal quality (Thales)
* R4-2220305 TP for TS 38.181 - Corrections to Clause 6.6 Unwanted emissions (Thales)
* R4-2220235 TP for TS 38.181: Remove co-location requirement related content (CATT, Huawei)
* R4-2220236 TP for TS 38.181 - Clause 9.6 OTA transmitted signal quality (Thales)
* R4-2220237 TP for TS 38.181 - Clause 9.7.5 OTA transmitter spurious emissions (Thales)
* R4-2220238 TP for TS 38.181 - Clauses 9.2 Radiated transmit power and 9.3 OTA SAN output power (Thales, CATT)
* R4-2220306 TP for TS 38.181 - Corrections to Clause 9.7 OTA unwanted emissions (Thales)
* R4-2219833 TP for TS 38.181: clause 10.3 OTA refsens (Thales)

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

* R4-2220162 TP for TS 38.181 - Clauses 8.1 and 11.1 General performance parts (Thales)
* R4-2220163 Description of general performance part sections for SAN TS 38.108 (Thales)
* R4-2220164 Draft CR on propagation conditions of NTN SAN performance requirements (TS38.108, Rel-17) (*Huawei, HiSilicon*)
* R4-2219665 pCR on FRC of NTN SAN performance requirements (TS38.181, Rel-17) (Huawei, HiSilicon)
* R4-2219674 Big CR on NTN SAN performance requirements (TS38.108, Rel-17) ((Huawei, HiSilicon)
* R4-2218715 draft CR for TS38.108 FRC tables for SAN PUSCH demodulation requirements (Ericsson)
* R4-2220165 TP for TS 38.181 SAN PUSCH demodulation requirements (Ericsson)
* R4-2220166 Draft CR on NTN SAN PUSCH performance requirements (TS38.108, Rel-17) (Huawei, HiSilicon)
* R4-2220167 pCR on NTN SAN PUSCH performance requirements (TS38.181, Rel-17) (Huawei, HiSilicon)
* R4-2220168 draft CR for TS38.108 SAN PUCCH demodulation requirements (Ericsson)
* R4-2220169 TP for TR38.181 SAN PUCCH demodulation radiated requirements (Ericsson)
* R4-2220170 pCR on NTN SAN PUCCH performance requirements (TS38.181, Rel-17) (Huawei, HiSilicon)
* R4-2220171 TP for TR38.181 SAN PRACH demodulation conducted requirements (Ericsson)
* R4-2220172 Draft CR on NTN SAN PRACH performance requirements (TS38.108, Rel-17) (Huawei, HiSilicon)
* R4-2220173 pCR on NTN SAN PRACH performance requirements (TS38.181, Rel-17) (Huawei, HiSilicon)

UE demodulation requirements: Documents approved/agreed/endorsed

* R4-2219676 Draft CR on general part of UE NTN performance requirements (TS38.101-5, Rel-17) (Huawei, HiSilicon)
* R4-2220159 Draft CR on PDSCH demodulation requirements for NTN UE (Qualcomm Incorporated)
* R4-2220160 Draft CR on applicability rules of UE NTN performance requirements (TS38.101-5, Rel-17) (Huawei, HiSilicon)
* R4-2220291 WF for Rel-17 SAN RF maintenance (Thales)
* R4-2220282 WF for NTN UE demodulation part (Qualcomm)
* R4-2220161 WF for NTN BS demodulation part

[Other documents]

Email discussion summaries:

* [105][304] NTN\_Solutions\_RF\_Maintenance (Thales)
* [105][305] NTN\_Solutions\_Conformance (Ericsson)
* [105][318] NR\_NTN\_Demod\_Part1 (Qualcomm)
* NR\_NTN\_Demod\_Part2 (Huawei)

Agreement (wrt Multi-carrier Consideration for OBUE):

* Consider both single-carrier and multi-carrier cases.

Agreement wrt Applicability of ITU-R 1541)

* Current SAN requirements should be updated based on the principle that the out of band emission specified in ITU-R 1541 should be applicable to both multi-carrier and single carrier cases. (R4-2219609/P3)

Agreement (wrt OTA Tx spurious requirement for protection of the own SAN receiver (9.7.5.2.3 TS 38.108))

* Remove the co-location requirements from TS 38.108 Rel-17 specification. It’s not precluded further discuss co-location requirements in Rel-18.
  + Remove the OTA Tx spur requirement for protection of the own SAN receiver from Rel-17 specifications (9.7.5.2.3 TS 38.108).

Tentative agreement (wrt **TS 38.141-2 baseline confirmation)**

* Proceed the work for TP drafting with baseline assumption that existing MU from TN can be reused with [ ]. It’s not precluded to further analyze the suitable chamber together with MU refinement in maintenance phase.

Agreement (wrt Applicability of PDSCH disabled HARQ testing)

* Not introduce test applicable rules between test cases with HARQ enabled and HARQ disabled.

Tentative agreement (wrt **PDSCH testing with the disabled HARQ)**

* Set the number of HARQ Processes as: 4 with feedback disabled, 12 with feedback enabled in 16 HARQ processes with re-Tx disable for all HARQ processes and only transmit initial transmissions with NDI toggling. Throughput shall be measured on processes with HARQ enabled. Which 4 processes to disable are randomly select at test configuration.
  + Note: The test methodology agreement is applicable only to HARQ disabled w/o ReTx cases
  + Note: above decision agreed based on the test effort consideration and test mode E is feasible for the feature testing.

Agreement (wrt **PDSCH requirements)**:

* + PDSCH requirements is average value of PDSCH impairment + 0.5dB margin
  + Include the SNR points with [] into draft CRs

Agreement (wrt **Antenna configuration for PUCCH requirements)**

* Define both 1Rx and 2Rx for SAN PUCCH format 0 and 2 requirements with NLOS channel with the same test applicability rule for different antenna configurations as for PUSCH.

**[GTW Agreements on RRM aspects]**

Documents endorsed

* R4-2219026 CR on intra-frequency measurements in NTN (Samsung)
* R4-2219477 CR on Clarification of Ttrigger Requirements for Cell Reselection (Nokia, Nokia Shanghai Bell)
* R4-2220315 CR on L1-RSRP measurement requirements (Huawei, HiSilicon)
* R4-2220314 CR on MG requirements for NTN (Huawei, HiSilicon)
* R4-2219025 CR on intra-frequency cell reselection in NTN (Samsung)
* R4-2220457 CR on correction to CHO requirement for satellite access (Ericsson)
* R4-2220709 CR on correction to cell re-selection requirement for satellite access (Ericsson)
* R4-2220710 CR on RRC re-establishment requirements for NTN (Huawei, HiSilicon, Nokia, Nokia Shanghai Bell)
* R4-2220424 draftCR on general requirement for NTN RRM test cases (Huawei, HiSilicon)
* R4-2220421 Draft CR on test case for cell reselection to FR1 inter-frequency NR cell for satellite access (LG Electronics UK)
* R4-2220390 Modification on test cases for NTN conditional handover (CATT)
* R4-2220420 Draft CR on timing advance adjustment accuracy test for NTN (CMCC)
* R4-2220423 DraftCR on UE transmit timing tests for NTN (Huawei, HiSilicon )
* R4-2218662 Draft CR on test cases for CSI-RS based RLM for NTN (CMCC)
* R4-2220422 draft CR on test cases of BFD and LR for SA (Ericsson)
* R4-2220418 CR on test cases for Inter-frequency measurement delay for satellite access with gap (MediaTek inc.)
* R4-2220419 CR on test cases for Measurement Accuracy for SS-RSRQ for satellite access (MediaTek inc.)
* R4-2220313 WF on Rel-17 NR NTN RRM Core Requirements maintenance (Qualcomm)
* R4-2220711 WF on Rel-17 NR NTN RRM Performance requirements (Xiaomi)

[Other documents]

Email discussion summaries:

* Topic: [105][204] NR\_NTN\_solutions\_RRM\_1
* Topic: [105][205] NR\_NTN\_solutions\_RRM\_2-

Agreed LS

* R4-2220425 LS to RAN2 on inter-operability testing (IOT) bit for inter-satellite measurement (MediaTek)
* R4-2220741 Reply LS on enhanced cell reselection requirements (Huawei)
* R4-2220427 LS on capability description for enhanced cell reselection requirements in NTN, Source: Nokia

**[GTW Agreements on UE RF requirements]**

Documents endorsed

* [R4-2220820](file:///D:\RAN4%23105\Docs\R4-2220571.zip) CR to 38.101-5 for NTN UE RF requirements corrections (Apple)
* R4-2219043 CR to 38.101-5: Corrections on reference for NTN UE (Xiaomi)

LS out

* R4-2218008 LS in LS on RACH-less handover in NTN RAN2

#### 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 may 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](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-bis-e, October 10 – 19th 2022, e-meeting**

Submitted TDOCs:

* R1-2208829 discussion Discussion on remaining issue for NTN-NR OPPO
* R1-2208830 draftCR Draft CR on interpretation SFN indicating epoch time OPPO
* R1-2208886 draftCR Draft CR on the indication of downlink disabled HARQ feedback for NR NTN vivo
* R1-2208993 draftCR Correction on determination of the number of HARQ-ACK information bits for NTN Langbo
* R1-2208994 draftCR Correction on Type-2 HARQ-ACK codebook in PUSCH for NTN Langbo
* R1-2210045 discussion Additional aspects of Rel-17 maintenance for NR over NTN Nokia, Nokia Shanghai Bell
* R1-2210046 draftCR Draft CR for 38.211 to ensure correct interworking between open and closed loop TA Nokia, Nokia Shanghai Bell
* R1-2210047 draftCR Draft CR for 38.213 to capture correct validity timer expiry behavior for UL synchronization Nokia, Nokia Shanghai Bell
* R1-2210048 draftCR Draft CR for 38.213 to clarify calculation and application of timing advance values for common TA and UE specific TA Nokia, Nokia Shanghai Bell
* R1-2210019 discussion Remaining issues on solutions for NR to support NTN Lenovo
* R1-2209823 draftCR Correction on timing relationship parameter for NR NTN Huawei, HiSilicon
* R1-2209654 discussion On the validity of assistance information for R17 NR NTN Ericsson
* R1-2210436 discussion Summary of [110bis-e-R17-NR-NTN-01] Email discussion to determine maintenance issues to be handled in RAN1#110bis-e Moderator (Thales)
* R1-2210580 discussion Summary#1 of [110bis-e-R17-NR-NTN-02] Email discussion for maintenance on timing relationship enhancements and UL time and frequency synchronization for NR NTN for issues 1-6, 1-1 and 1-4. Moderator (Thales)
* R1-2210581 discussion Summary#2 of [110bis-e-R17-NR-NTN-02] Email discussion for maintenance on timing relationship enhancements and UL time and frequency synchronization for NR NTN for issues 1-6, 1-1 and 1-4. Moderator (Thales)
* R1-2210587 discussion Summary#1 of maintenance on HARQ for Rel-17 NR-NTN Moderator (ZTE)
* R1-2210588 draftCR CR on the Type-2 HARQ-ACK codebook Moderator (ZTE)
* R1-2210680 other Session notes for 8.4 (Maintenance on Solutions for NR to support non-terrestrial networks (NTN)) Ad-Hoc Chair (Huawei)
* R1-2210589 CR CR on the Type-2 HARQ-ACK codebook Moderator (ZTE), Ericsson, Nokia, Thales
* **RAN2#111, November 14 – 18th 2022, Toulouse**

Submitted TDOCs:

* R1-2210870 discussion Discussion on UE backward propagation of the ephemaris and common TA Huawei, HiSilicon
* R1-2211456 draftCR Draft CR on correction for UE performing pre-compensation OPPO, Apple
* R1-2212311 draftCR Corrections on RRC parameter name alignment for NR NTN in TS38.213 Sharp
* R1-2212313 discussion On epoch time and validity of assistance information for R17 NR NTN Ericsson
* R1-2212399 discussion Remaining aspects of Rel-17 maintenance for NR over NTN Nokia, Nokia Shanghai Bell
* R1-2212400 draftCR Draft CR for 38.213 to clarify calculation and application of timing advance values for common TA and UE specific TA Nokia, Nokia Shanghai Bell
* R1-2212613 discussion FL Summary #1: Maintenance on Solutions for NR to support NTN Moderator (Thales)
* R1-2212614 discussion FL Summary #2: Maintenance on Solutions for NR to support NTN Moderator (Thales)
* R1-2212615 discussion FL Summary #3: Maintenance on Solutions for NR to support NTN Moderator (Thales)
* R1-2212616 discussion FL Summary #4: Maintenance on Solutions for NR to support NTN Moderator (Thales)
* R1-2212834 other Session notes for 8.4 (Maintenance on Solutions for NR to support non-terrestrial networks (NTN)) Ad-Hoc Chair (Huawei)
* R1-2212774 discussion Discussion on reply to RAN2 LS on validity of assistance information Moderator (OPPO)
* R1-2212808 LS out [Draft] reply LS on validity of assistance information OPPO
* R1-2212929 LS out [Draft] reply LS on validity of assistance information OPPO
* R1-2212958 LS out Reply LS on validity of assistance information RAN1, OPPO
* R1-2212984 LS out Reply LS on validity of assistance information RAN1, OPPO

## 4.2 RAN2

* **RAN2#119-bis-e, October 10 – 19th 2022, e-meeting**

Submitted TDOCs:

* R2-2210866 LS out Reply LS on enhanced cell reselection requirements RAN2
* R2-2210044 discussion On LS Network indication for applying enhanced cell reselection requirements Ericsson
* R2-2210347 CR NR RRC CR: Introduction of enhanced and relaxed cell reselection for NTN Nokia, Nokia Shanghai Bell
* R2-2210348 CR NR IDLE-mode CR: Introduction of enhanced and relaxed cell reselection for NTN Nokia, Nokia Shanghai Bell
* R2-2210408 discussion Discussion on enhanced cell reselection requirements for NTN Huawei, HiSilicon
* R2-2210409 CR CR on enhanced cell reselection requirements for NTN Huawei, HiSilicon
* R2-2211045 CR CR on enhanced cell reselection requirements for NTN Huawei, HiSilicon
* R2-2210850 discussion Report of [Offline-109][NR NTN] cell reselection requirements (Huawei) Huawei, HiSilicon
* R2-2209337 LS in LS to RAN2 on Network indication for applying enhanced cell reselection requirements (R4-2214472; contact: Huawei) RAN4
* R2-2209354 LS in Reply LS on the deactivation of access stratum due to discontinuous coverage (S2-2207420; contact: Qualcomm) SA2
* R2-2211035 LS in LS on Satellite coverage data transfer to a UE using UP versus CP (S2-2209684; contact: Qualcomm) SA2
* R2-2210868 CR MAC corrections for Rel-17 NR NTN InterDigital
* R2-2210869 CR Idle mode corrections for Rel-17 NR NTN ZTE Corporation
* R2-2211018 CR RRC corrections for Rel-17 NR NTN Ericsson
* R2-2210086 CR NTN stage-2 correction OPPO
* R2-2210462 draftCR Corrections to TS 38.300 for Rel-17 NR NTN Samsung Research America
* R2-2210567 CR Corrections to TS 38.300 for Rel-17 NR NTN Samsung Research America
* R2-2210634 CR Corrections to the UE-Based SMTC Adjustment in NTN Google Inc.
* R2-2210742 CR Corrections on CHO evaluation for NTN CATT
* R2-2210759 discussion R17 NR NTN Stage 2 corrections Ericsson
* R2-2210851 discussion Summary of [AT119bis-e][110][NR NTN] Stage-2 CR (Thales) Thales
* R2-2210852 CR R17 NR NTN Stage 2 corrections Thales
* R2-2211046 CR R17 NR NTN Stage 2 corrections Thales
* R2-2209539 CR Correction on neighbour cells’ satellite ephemeris information (38.300) MediaTek Inc.
* R2-2209658 CR Correction on user consent for UE coarse location request Huawei, HiSilicon
* R2-2211049 other [Post119bis-e][110] Stage-2 corrections Thales
* R2-2210087 CR Correction to TA report triggered SR and DRX OPPO
* R2-2210463 draftCR Corrections to TS 38.321 for Rel-17 NR NTN Samsung Research America
* R2-2210568 CR Corrections to TS 38.321 for Rel-17 NR NTN Samsung Research America
* R2-2210641 CR Correction on SR cancellation and Random Access procedure stop for NTN Nokia, Nokia Shanghai Bell
* R2-2210708 CR Correction on SR triggered by TAR ZTE Corporation, Sanechips
* R2-2210760 discussion R17 NR NTN epoch time and validity Ericsson
* R2-2210768 draftCR Corrections to TS 38.321 for Rel-17 NR NTN Samsung Research America
* R2-2210853 discussion Report of [AT119bis-e][111][NR NTN] UP corrections InterDigital
* R2-2209503 discussion On corrections on random access procedure in NR NTN vivo
* R2-2209849 discussion Discussion on reported value for event-triggered TA report ASUSTeK
* R2-2210034 discussion Discussion on not being able to acquire SIB 19 for NR NTN Xiaomi, CAICT
* R2-2210035 CR Correction on the action upon not being able to acquire SIB19 for NR NTN Xiaomi, CAICT
* R2-2210464 draftCR Corrections to TS 38.304 for Rel-17 NR NTN Samsung Research America
* R2-2210569 CR Corrections to TS 38.304 for Rel-17 NR NTN Samsung Research America
* R2-2210584 CR Correction on cell status for NTN Google Inc.
* R2-2210640 CR Corrections to the Reselection Priorities Handling for NTN Google Inc.
* R2-2210854 discussion Report of [AT119bis-e][112][NR NTN] idle mode corrections (ZTE) ZTE corporation,Sanechips
* R2-2209504 CR Correction on the list of "PLMNs not allowed to operate at the present UE location" in TS 38.304 vivo
* R2-2210091 CR RRC correction on valid timer and SIB19 acquisition OPPO
* R2-2210092 discussion Discussion on validity issue of satellite assistance information OPPO
* R2-2210093 LS out DRAFT LS on the support of backward propagation in NTN OPPO
* R2-2210197 draftCR Draft 331 CR – Addition of missing descriptions of Event D1 and CondEvent T1 Interdigital, Inc.
* R2-2210345 CR NR RRC CR on epochTime and validity timer Nokia, Nokia Shanghai Bell
* R2-2210346 CR NR RRC CR on neighbour cell ephemeris signalling Nokia, Nokia Shanghai Bell
* R2-2210410 CR CR on validity duration Huawei, HiSilicon
* R2-2210411 discussion Discussion on epoch time Huawei, HiSilicon
* R2-2210412 discussion Remaining issues on neighbour cell ephemeris Huawei, HiSilicon
* R2-2210465 draftCR Corrections to TS 38.331 for Rel-17 NR NTN Samsung Research America
* R2-2210466 discussion Discussion on Epoch Time Samsung Research America
* R2-2210484 CR Clarification on the necessity of SIB19 in NTN cell Apple
* R2-2210570 CR Corrections to TS 38.331 for Rel-17 NR NTN Samsung Research America
* R2-2210646 CR Corrections to the SMTC Field Description in System Information Google Inc.
* R2-2210663 discussion Further consideration on NTN neighbour cell list in SIB19 ZTE Corporation, Sanechips
* R2-2210664 CR Clarification on the NTN neighbour cell list in SIB19 ZTE Corporation, Sanechips
* R2-2210729 discussion NTN Configuration at Handover and CHO Sequans Communications
* R2-2210740 CR Corrections on validity of SIB19 CATT
* R2-2210741 CR Corrections on related issues of epoch time CATT
* R2-2210743 discussion Discussion on leftover issues CATT
* R2-2210855 discussion Summary of [AT119bis-e][113][NR-NTN] epoch time and validity timer (Samsung) Samsung
* R2-2210856 discussion Summary of [AT119bis-e][114][NR NTN] Validity of assistance information (OPPO) OPPO
* R2-2210857 LS out [DRAFT] LS on validity of assistance information OPPO
* R2-2211047 LS out LS on validity of assistance information RAN2
* R2-2211048 LS out LS on validity of assistance information RAN2
* R2-2210858 discussion [offline-115] RRC corrections (Ericsson) Ericsson
* R2-2209505 CR Correction on UE behavior on SMTC in TS 38.331 vivo
* R2-2209506 CR Correction on UE coarse location reporting in TS 38.331 vivo
* R2-2209507 CR Correction on UE behavior on T430 in TS 38.331 vivo
* R2-2209526 discussion On neighbour cell SI Ericsson
* R2-2209527 CR Correction for Release 17 NTN Ericsson
* R2-2209528 discussion On timer T430 for Rel-17 NR NTN Ericsson
* R2-2209537 CR Correction on the coincidence of ECI and ECEF MediaTek Inc.
* R2-2209538 CR Correction on neighbour cells’ satellite ephemeris information (38.331) MediaTek Inc.
* R2-2209540 CR IOT bit for inter satellite measurement (38.331) MediaTek Inc.
* R2-2209799 discussion Clarification on validity of the UL sync info Apple
* R2-2209800 CR Clarification on the concurrent measurement gap configuration Apple
* R2-2209803 discussion Clarification on the necessity of SIB19 in NTN cell Apple
* R2-2209850 discussion Discussion on configuration of satellite information for handover ASUSTeK
* R2-2209851 discussion Discussion on T430 handling upon going to RRC\_IDLE ASUSTeK
* R2-2209852 discussion Clarification on validity timer for serving cell ASUSTeK
* R2-2209981 discussion Discussion on the ephemeris information in CHO procedure Spreadtrum Communications
* R2-2210859 discussion [offline-116] [NR NTN] UE capabilities MediaTek
* R2-2209541 CR IOT bit for inter satellite measurement (38.306) MediaTek Inc.
* R2-2209707 CR Missing UE capability for eventD1 Qualcomm Incorporated
* R2-2209708 CR Missing UE capability for eventD1 Qualcomm Incorporated
* R2-2209801 discussion Capability of the UE coarse location report Apple
* R2-2209802 discussion Clarification on the support of DCCA in NTN network Apple
* **RAN2#120, November 14 – 18th 2022, Toulouse**

Submitted TDOCs:

* R2-2212335 CR Corrections to Release-17 NR Non-Terrestrial Networks (NTN): RAN2#119bis-e InterDigital
* R2-2212779 CR RRC corrections for Rel-17 NR NTN Ericsson
* R2-2212960 CR R17 NR NTN Stage 2 corrections THALES
* R2-2212820 CR Idle mode corrections for Rel-17 NR NTN ZTE Corporation, Samsung, Sanechips
* R2-2212607 CR dle mode corrections for Rel-17 NR NTN ZTE Corporation, Samsung, Sanechips
* R2-2212444 discussion Discussion on Stage 2 corrections Samsung Research America
* R2-2212952 discussion R17 NR NTN stage 2 issues Ericsson
* R2-2211570 CR Clarification on support of TN NTN mobility during RRC\_INACTIVE Qualcomm Incorporated
* R2-2211169 LS in Reply LS on measurement gap enhancements for NTN (R4-2217175; contact: Apple) RAN4
* R2-2211340 CR NTN Stage-2 correction OPPO
* R2-2211326 CR Correction on Stage-2 descriptions for NR NTN vivo
* R2-2211516 discussion Clarification on UE behaviour when validity timer expires Huawei, HiSilicon
* R2-2212950 discussion R17 NR NTN MAC issues Ericsson
* R2-2212947 discussion Discussion on epoch time, validity and T430 start/end description Ericsson
* R2-2212804 CR Correction on coarse UE location reporting for TS 38.300 Xiaomi, CAICT
* R2-2212805 CR Correction on the action upon not being able to acquire SIB19 for NR NTN Xiaomi, CAICT
* R2-2212833 CR Corrections on epochTime Huawei, HiSilicon
* R2-2212834 CR CR to 38.331 on neighbour cell ephemeris Huawei, HiSilicon
* R2-2212445 discussion Discussion on concurrent measurement gaps Samsung Research America
* R2-2212446 discussion Discussion on RRC corrections Samsung Research America
* R2-2212277 discussion Further consideration on NTN neighbour cell list in SIB19 ZTE Corporation, Sanechips
* R2-2212661 CR Extend the neighbour cells number for propagation delay difference reporting CATT
* R2-2212662 discussion Discussion on leftover issues CATT
* R2-2212692 discussion NTN Configuration at Handover and CHO Sequans Communications
* R2-2212895 CR Corrections to the SMTC Field Description in System Information Google Inc.
* R2-2211568 discussion Discussion for clarification on TN NTN mobility in RRC\_INACTIVE Qualcomm Incorporated
* R2-2211569 CR Clarification on TN NTN mobility during RRC\_INACTIVE Qualcomm Incorporated
* R2-2211514 discussion Discussion on RNA configuration across TN and NTN cells Huawei, HiSilicon
* R2-2211327 CR Correction on propogation delay reporting for NR NTN in TS 38.331 vivo
* R2-2211328 CR Correction on T430 handling in TS 38.331 vivo
* R2-2211308 CR Corrections on validity of SIB19 CATT
* R2-2211341 CR RRC correction on NTN measurements OPPO, ZEKU
* R2-2211339 CR RRC correction on valid timer and SIB19 acquisition OPPO
* R2-2211368 CR IOT bit for inter satellite measurement Mediatek Inc.
* R2-2211369 CR IOT bit for inter satellite measurement Mediatek Inc.
* R2-2211370 CR Correction on frequency band indicator Mediatek Inc.
* R2-2211371 discussion UE behaviour based on the neighbor cell information between SIB3, SIB4, measObjectNR and SIB19 Mediatek Inc.
* R2-2211406 draftCR Draft 331 CR for NR NTN UE capabilities Intel Corporation, Qualcomm Inc.
* R2-2211407 draftCR Draft 306 CR for NR NTN UE capabilities Intel Corporation, Qualcomm Inc.
* R2-2211408 CR Clarification on NR NTN trackingAreaList Intel Corporation
* R2-2212256 CR CSI-RSs for L3 Measurements in Rel-17 NTN Nokia, Nokia Shanghai Bell
* R2-2212278 CR Clarification on the NTN neighbour cell list in SIB19 ZTE Corporation, Sanechips
* R2-2211894 discussion Discussion on propagation delay difference reporting in TS 38.331 vivo
* R2-2212317 discussion Discussion on IOT bit for inter satellite measurement Mediatek India Technology Pvt.
* R2-2212258 discussion On T430 and epochTime - Final Clarifications Nokia, Nokia Shanghai Bell
* R2-2212257 CR NR RRC CR on Neighbour Cell Ephemeris Signalling Nokia, Nokia Shanghai Bell
* R2-2211807 discussion Clarification on NTN configuration for handover ASUSTeK
* R2-2211727 CR Clarification on the concurrent measurement gap configuration Apple
* R2-2211728 CR Clarification on NTN RRM measurement capability Apple
* R2-2212065 CR Correction for timer T430 upon going to RRC\_IDLE Lenovo Information Technology

## 4.3 RAN3

* **RAN3#117-bis-e, October 10 – 18th 2022, e-meeting**

Submitted TDOCs:

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* **RAN3#118, November 14 – 18th 2022, Toulouse**

Submitted TDOCs:

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## 4.4 RAN4

* **RAN4#104-bis-e, October 10 – 19th 2022, e-meeting**

Submitted TDOCs:

* R4-2216150 CR CR to 38.101-5: Corrections on section 5.3.3 for NTN UE Xiaomi
* R4-2215412 CR CR for TS 38.108, Corrrect definiiton order in sub-clause 3.1 CATT
* R4-2215336 CR Corrections to SAN TS 38.108 THALES
* R4-2215337 discussion Discussion on SAN Out-of-Band Mask THALES
* R4-2217316 CR Corrections to SAN TS 38.108 THALES
* R4-2217313 CR CR to TS 38.108 - Updates related to DfOBUE - conducted clauses Ericsson
* R4-2217315 CR CR for TR 38.863 to maintain SAN parts Huawei, HiSilicon
* R4-2217312 CR CR for 38.108 to maitain unwanted emissions clause Huawei, HiSilicon
* R4-2216064 CR CR for TR 38.863 to maintain SAN parts Huawei, HiSilicon
* R4-2216065 other Discussion on definition of delta FOBUE Huawei, HiSilicon
* R4-2216066 CR CR for 38.108 to maitain unwanted emissions clause Huawei, HiSilicon
* R4-2216526 other NTN - Discussion on remaining open issues Ericsson
* R4-2216527 CR CR to TS 38.108 - Updates related to DfOBUE - conducted clauses Ericsson
* R4-2216528 CR CR to TS 38.108 - Updates related to DfOBUE - radiated clauses Ericsson
* R4-2217314 CR CR to TS 38.108 - Updates related to DfOBUE - radiated clauses Ericsson
* R4-2215802 draft TS TS 38.181 v0.2.0 NR Satellite Access Node (SAN) conformance testing CATT
* R4-2215401 pCR TP for TS 38.181 – Clause 4.9 RF channels and test models CATT
* R4-2215400 pCR TP for TS 38.181 – Clause 4.7 Test configurations and Clause 4.8 Applicability of requirements CATT
* R4-2215350 pCR TP for TS 38.181 - Annex D THALES
* R4-2217322 pCR TP for TS 38.181 - Annex D THALES
* R4-2217503 pCR TP for TS 38.181 – Clause 4.7 Test configurations and Clause 4.8 Applicability of requirements CATT
* R4-2217324 pCR TP for TS 38.181 – Annex F Calibration CATT
* R4-2217323 pCR TP for TS 38.181 – Clause 4.1 Measurement uncertainties and test requirements CATT
* R4-2217325 pCR TP to TS 38.181 – Clauses 4.10 and 4.11 Nokia, Nokia Shanghai Bell
* R4-2217328 pCR TS 38.181: TP on Annex B Ericsson
* R4-2217329 pCR TS 38.181: TP on Annex C Ericsson
* R4-2217330 pCR TS 38.181: TP on Annex E Ericsson
* R4-2217331 pCR TS 38.181: TP on Annex J Ericsson
* R4-2217336 pCR TP to TS 38.181: General test conditions and declarations (4.2 - 4.5) Huawei, HiSilicon
* R4-2216847 pCR TP to TS 38.181: General test conditions and declarations (4.2 - 4.5) Huawei, HiSilicon
* R4-2215338 discussion Discussion on SAN Test Conditions THALES
* R4-2215397 pCR TP for TS 38.181 – Clause 1 Scope, Clause 2 References and Clause 3 Definition of terms, symbols and abbreviations CATT
* R4-2215398 pCR TP for TS 38.181 – Clause 4.1 Measurement uncertainties and test requirements CATT
* R4-2215399 pCR TP for TS 38.181 – Clause 4.6 Manufacturer declarations CATT
* R4-2215406 pCR TP for TS 38.181 – A.1 FRCs for RF Rx requriement(QPSK, R=1/3) and A.2 FRCs for dynamic range (16QAM, R=2/3) CATT
* R4-2215407 pCR TP for TS 38.181 – Annex F Calibration CATT
* R4-2215408 pCR TP for TS 38.181 – Annex H In-channel Tx test CATT
* R4-2215409 pCR TP for TS 38.181 – Annex I Transmitter spatial emissions declaration CATT
* R4-2215410 pCR TP for TS 38.181 – Annex K Measuring noise close to the noise-floor CATT
* R4-2215411 other Discussion on conformance testing for NTN SAN CATT
* R4-2216489 pCR TS 38.181: TP on clause 5 Ericsson
* R4-2216491 pCR TS 38.181: TP on Annex B Ericsson
* R4-2216492 pCR TS 38.181: TP on Annex C Ericsson
* R4-2216493 pCR TS 38.181: TP on Annex E Ericsson
* R4-2216494 pCR TS 38.181: TP on Annex J Ericsson
* R4-2216495 discussion Discussion on relevant test environment for SAN Ericsson
* R4-2216195 pCR TP to TS 38.181 – Clauses 4.10 and 4.11 Nokia, Nokia Shanghai Bell
* R4-2215402 pCR TP for TS 38.181 – Clause 6.1 General and Clause 6.2 Satellite Access Node output power CATT, THALES
* R4-2215339 pCR TP for TS 38.181 - Clause 6.5.3 EVM THALES, CATT
* R4-2215340 pCR TP for TS 38.181 - Clause 6.6.4 OBUE THALES
* R4-2215341 pCR TP for TS 38.181 - Clause 6.6.5 Spurious Emissions THALES
* R4-2215349 pCR TP for TS 38.181 - Occupied BandWidth Clauses 6.6.1 and 6.6.2 THALES
* R4-2216848 pCR TP to TS 38.181: occupied bandwidth (6.6.1, 6.6.2) Huawei, HiSilicon
* R4-2216849 pCR TP to TS 38.181: OBUE (6.6.4) Huawei, HiSilicon
* R4-2216561 pCR TP for TS 38.181: Section 6.3 Output power dynamics ZTE Corporation
* R4-2217337 pCR TP to TS 38.181: occupied bandwidth (6.6.1, 6.6.2) Huawei, HiSilicon
* R4-2217338 pCR TP to TS 38.181: OBUE (6.6.4) Huawei, HiSilicon
* R4-2217333 pCR TP for TS 38.181: Section 6.3 Output power dynamics ZTE Corporation
* R4-2217321 pCR TP for TS 38.181 - Clause 6.6.5 Spurious Emissions THALES
* R4-2217334 pCR TP for TS 38.181: Section 7.3 Dynamic range ZTE Corporation
* R4-2217339 pCR TP to TS 38.181: Out-of-band blocking (7.5) Huawei, HiSilicon
* R4-2217326 pCR TP to TS 38.181 – Clause 7.4 In-band selectivity and blocking Nokia, Nokia Shanghai Bell
* R4-2216562 pCR TP for TS 38.181: Section 7.3 Dynamic range ZTE Corporation
* R4-2216563 pCR TP for TS 38.181: Section 7.6~7.8 ZTE Corporation
* R4-2216850 pCR TP to TS 38.181: Out-of-band blocking (7.5) Huawei, HiSilicon
* R4-2215403 pCR TP for TS 38.181 – Clause 7.1 General and Clause 7.2 Reference sensitivity level CATT
* R4-2216196 pCR TP to TS 38.181 – Clause 7.4 In-band selectivity and blocking Nokia, Nokia Shanghai Bell
* R4-2215404 pCR TP for TS 38.181 – Clause 9.1 General CATT
* R4-2216851 pCR TP to TS 38.181: OTA occupied bandwidth (9.7.1, 9.7.2) Huawei, HiSilicon
* R4-2216852 pCR TP to TS 38.181: OTA ACLR (9.7.3) Huawei, HiSilicon
* R4-2216853 pCR TP to TS 38.181: OTA OBUE (9.7.4) Huawei, HiSilicon
* R4-2216564 pCR TP for TS 38.181: Section 9.4 OTA output power dynamics ZTE Corporation
* R4-2217340 pCR TP to TS 38.181: OTA occupied bandwidth (9.7.1, 9.7.2) Huawei, HiSilicon
* R4-2217341 pCR TP to TS 38.181: OTA ACLR (9.7.3) Huawei, HiSilicon
* R4-2217342 pCR TP to TS 38.181: OTA OBUE (9.7.4) Huawei, HiSilicon
* R4-2217335 pCR TP for TS 38.181: Section 9.4 OTA output power dynamics ZTE Corporation
* R4-2217343 pCR TP to TS 38.181: OTA out-of-band blocking (10.6) Huawei, HiSilicon
* R4-2217332 pCR TS 38.181: TP on clause 10.3 OTA refsens Ericsson
* R4-2217508 pCR TP to TS 38.181 – Clause 10.5 In-band selectivity and blocking Nokia, Nokia Shanghai Bell
* R4-2216565 pCR TP for TS 38.181: Section 10.4 OTA dynamic range ZTE Corporation
* R4-2216566 pCR TP for TS 38.181: Section 10.7~10.9 ZTE Corporation
* R4-2216854 pCR TP to TS 38.181: OTA out-of-band blocking (10.6) Huawei, HiSilicon
* R4-2217327 pCR TP to TS 38.181 – Clause 10.5 In-band selectivity and blocking Nokia, Nokia Shanghai Bell
* R4-2215405 pCR TP for TS 38.181 – Clause 10.1 General and Clause 10.2 OTA sensitivity CATT
* R4-2216197 pCR TP to TS 38.181 – Clause 10.5 In-band selectivity and blocking Nokia, Nokia Shanghai Bell
* R4-2216490 pCR TS 38.181: TP on clause 10.3 OTA refsens Ericsson
* R4-2215315 CR CR: 0005 Doppler test conditions for RF requirements 38.101-5 Qualcomm Incorporated
* R4-2216835 discussion NR NTN Frequency Error MediaTek (Chengdu) Inc.
* R4-2216593 discussion On decoupling DL MIMO from number of Rx branches for NTN UE capabilities Apple
* R4-2216594 CR CR to 38.101-5 on corrections related to 64QAM requirements Apple
* R4-2216640 discussion On NTN Frequency error requirment Ericsson
* R4-2216641 CR CR on NTN Frequency error requirement Ericsson
* R4-2217319 CR CR: 0005 Doppler test conditions for RF requirements 38.101-5 Qualcomm Incorporated
* R4-2217317 CR CR to 38.101-5 on corrections related to 64QAM requirements Apple
* R4-2217318 CR CR on NTN Frequency error requirement Ericsson
* R4-2217162 CR CR on correction to cell re-selection requirement for satellite access CMCC
* R4-2217174 other WF on NR NTN RRM requirements Qualcomm Incorporated
* R4-2217175 LS out Reply LS to RAN2 on measurement gap enhancements for NTN Apple
* R4-2215448 discussion Discussion on the remaining issues for NTN RRM Xiaomi, CAICT
* R4-2215500 CR CR on correction to cell re-selection requirement for satellite access CMCC
* R4-2215603 discussion On measurement procedure for NTN UE Apple
* R4-2215604 CR CR on intra-frequency and inter-frequency measurement requirement without MG for NTN Apple
* R4-2215391 discussion Discussion on fully overlapping concurrent MGs for NTN CATT
* R4-2215749 CR CR on intra-frequency measurements in NTN Samsung
* R4-2215751 discussion Discussion on measurement procedure requirements in NTN MediaTek inc.
* R4-2216502 CR CR on intra-frequency measurements for NTN Ericsson
* R4-2216463 CR CR for Cell Reselection requirements with distance trigger Nokia, Nokia Shanghai Bell
* R4-2216472 discussion Discussion on Colliding Measurement Gaps Nokia, Nokia Shanghai Bell
* R4-2216315 discussion On remaining issues for NTN measurement requirements Huawei, HiSilicon
* R4-2216316 CR CR on RLM and BFR requirements for NTN Huawei, HiSilicon
* R4-2216317 CR CR on MG requirements for NTN Huawei, HiSilicon
* R4-2217167 CR CR on intra-frequency measurements for NTN Ericsson
* R4-2216504 discussion Measurement requirements for NTN Ericsson
* R4-2217163 CR CR on intra-frequency and inter-frequency measurement requirement without MG for NTN Apple
* R4-2217589 CR Big CR for NTN RRM performance requirements MCC, Xiaomi
* R4-2217166 CR CR for Cell Reselection requirements with distance trigger Nokia, Nokia Shanghai Bell
* R4-2217164 CR CR on RLM and BFR requirements for NTN Huawei, HiSilicon
* R4-2217165 CR CR on MG requirements for NTN Huawei, HiSilicon
* R4-2217171 CR CR on UL spatial relation switch requirements for NTN Huawei, HiSilicon
* R4-2217172 CR Editorial CR To TS 38.133 Handover requirements Nokia, Nokia Shanghai Bell
* R4-2217173 LS out Reply LS on measurement gap enhancements for NTN Apple
* R4-2217170 CR CR on scheduling restrictions for L3 measurements in FR1 for NTN Apple
* R4-2217168 CR Completing requirements for conditional handover for NTN CATT
* R4-2217169 CR CR on cell re-selection, MDT and timing requirements for NTN CATT
* R4-2216592 CR Editorial CR To TS 38.133 Handover requirements Nokia, Nokia Shanghai Bell
* R4-2216312 discussion Discussion on other requirements for NTN RRM Huawei, HiSilicon
* R4-2216313 CR CR on RRC re-establishment requirements for NTN Huawei, HiSilicon
* R4-2216314 CR CR on UL spatial relation switch requirements for NTN Huawei, HiSilicon
* R4-2216467 discussion Transmit Timing Aspects for NTN RRM Nokia, Nokia Shanghai Bell
* R4-2216464 CR Editorial CR To TS 38.133 Handover requirements Nokia, Nokia Shanghai Bell
* R4-2215748 CR CR on intra-frequency cell reselection in NTN Samsung
* R4-2215395 CR Completing requirements for conditional handover for NTN CATT
* R4-2215431 CR CR on cell re-selection, MDT and timing requirements for NTN CATT
* R4-2215605 LS out Reply LS on measurement gap enhancements for NTN Apple
* R4-2215582 CR CR on scheduling restrictions for L3 measurements in FR1 for NTN Apple
* R4-2215501 discussion Discussion on RRM test cases for NTN CMCC
* R4-2215449 discussion Discussion on the performance requirements for NTN RRM Xiaomi, CAICT
* R4-2215752 discussion Discussion on RRM performance for NR NTN MediaTek inc.
* R4-2215819 discussion Discussion on general RRM performance requirements for NR NTN OPPO
* R4-2216318 discussion Discussion on measurement accuracy and TCs for NTN Huawei, HiSilicon
* R4-2216319 draftCR CR on measurement accuracy requirements for NTN Huawei, HiSilicon
* R4-2217185 other WF on performance part for NTN RRM Xiaomi
* R4-2216863 draftCR draft CR of BWP switch and CBW change test cases for NR NTN Qualcomm Incorporated
* R4-2216868 discussion Open Issues in NTN RRM Test Case Design Qualcomm Incorporated
* R4-2217183 draftCR CR on measurement accuracy requirements for NTN Huawei, HiSilicon
* R4-2217184 draftCR CR on cell reselection TCs for NTN Huawei, HiSilicon
* R4-2217182 draftCR Draft CR on test case for cell reselection to FR1 inter-frequency NR cell for satellite access LG Electronics UK
* R4-2216320 discussion Discussion on cell reselection test for NTN Huawei, HiSilicon
* R4-2216321 draftCR CR on cell reselection TCs for NTN Huawei, HiSilicon
* R4-2216471 discussion Amendments on cell reselection parameters when not using enhanced mode Nokia, Nokia Shanghai Bell
* R4-2215936 draftCR Draft CR on test case for cell reselection to FR1 inter-frequency NR cell for satellite access LG Electronics UK
* R4-2216465 discussion Discussion on configuration of HO aspects for NTN Nokia, Nokia Shanghai Bell
* R4-2216322 draftCR CR on TCs for RRC Re-establishment for NTN Huawei, HiSilicon
* R4-2215393 CR Test cases for Intra- and inter-frequency HO with known cell for NTN CATT
* R4-2215454 draftCR 4-step RA type randon access test for satellite access Xiaomi, CAICT
* R4-2217176 CR Test cases for Intra- and inter-frequency HO with known cell for NTN CATT
* R4-2217177 CR Test cases for Intra- and inter-frequency CHO for NTN CATT
* R4-2215394 CR Test cases for Intra- and inter-frequency CHO for NTN CATT
* R4-2215392 discussion Discussion on test cases for handover for NTN CATT
* R4-2215452 draftCR RRC connection release with redirection rest for satellite access Xiaomi, CAICT
* R4-2216466 discussion Discussion on configuration of CHO aspects for NTN Nokia, Nokia Shanghai Bell
* R4-2216470 discussion Discussion on open issues for timing advance Nokia, Nokia Shanghai Bell
* R4-2216278 discussion Discussion on remaining issues on test cases for NTN UE timing Huawei, HiSilicon
* R4-2216279 draftCR DraftCR on UE transmit timing tests for NTN Huawei, HiSilicon
* R4-2215502 draftCR draft CR for NTN timing advance adjustment accuracy test CMCC
* R4-2217282 draftCR LS on the feasibility of testing UE initiated SDT data transmission in RRC\_INACTIVE Huawei, HiSilicon
* R4-2215503 draftCR draft CR for CSI-RS based RLM for NTN CMCC
* R4-2215451 draftCR Pathloss reference signal switching delay test for satellite access Xiaomi, CAICT
* R4-2216503 draftCR draft CR on test cases of BFD and LR for SA Ericsson
* R4-2216323 discussion Discussion on measurement delay TCs for NTN Huawei, HiSilicon
* R4-2216324 draftCR CR on TCs for intra-frequency measurement delay for NTN Huawei, HiSilicon
* R4-2215820 CR CR to Test case 10-4 to 10-9 intra-frequency measurement delay with gap for satellite access OPPO
* R4-2217181 CR CR to Test case 10-4 to 10-9 intra-frequency measurement delay with gap for satellite access OPPO
* R4-2217180 draftCR Test case for inter-frequency measurement without gap for satellite access Xiaomi, CAICT
* R4-2215455 draftCR Test case for inter-frequency measurement without gap for satellite access Xiaomi, CAICT
* R4-2215450 draftCR L1-RSRP measurement accuracy test for satellite access Xiaomi, CAICT
* R4-2217178 draftCR L1-RSRP measurement accuracy test for satellite access Xiaomi, CAICT
* R4-2217179 draftCR SS-SINR measurement accuracy test for satellite access Xiaomi, CAICT
* R4-2215453 draftCR SS-SINR measurement accuracy test for satellite access Xiaomi, CAICT
* R4-2216325 draftCR CR on general requirement for NTN RRM test cases Huawei, HiSilicon
* R4-2215976 discussion Discussion on UE NTN demod general Huawei,HiSilicon
* R4-2215344 discussion Work Split for Performance Requirements in TS 38.108 and TS 38.181 THALES
* R4-2215674 discussion Discussion on NTN channel model Ericsson
* R4-2215977 other Summary of simulation results for NTN SAN demodulation performance requirements Huawei,HiSilicon
* R4-2215978 CR Big CR on NTN SAN performance requirements (TS38.108, Rel-17) Huawei,HiSilicon
* R4-2215979 draftCR Draft CR on propagation conditions of NTN SAN performance requirements (TS38.108, Rel-17) Huawei,HiSilicon
* R4-2215980 pCR pCR on FRC of NTN SAN performance requirements (TS38.181, Rel-17) Huawei,HiSilicon
* R4-2217515 draftCR Big CR for UE NTN performance requirements Samsung
* R4-2217349 draftCR Draft CR on propagation conditions of NTN SAN performance requirements (TS38.108, Rel-17) Huawei,HiSilicon
* R4-2217350 pCR pCR on FRC of NTN SAN performance requirements (TS38.181, Rel-17) Huawei,HiSilicon
* R4-2217353 draftCR Draft CR on NTN SAN PUSCH performance requirements (TS38.108, Rel-17) Huawei,HiSilicon
* R4-2217354 pCR pCR on NTN SAN PUSCH performance requirements (TS38.181, Rel-17) Huawei,HiSilicon
* R4-2217351 draftCR draftCR for TS38.108 introduce FRC tables for SAN PUSCH demodulation Ericsson
* R4-2217352 pCR pCR for TS38.181 introduce SAN PUSCH conducted demodulation requirements and Annex for test setup Ericsson
* R4-2216697 discussion Initial simulation results on PUSCH demodulation requirement for Rel-17 NTN Samsung
* R4-2215981 discussion Discussion on satellite NTN demod PUSCH Huawei,HiSilicon
* R4-2215982 other Simulation results on satellite NTN demod PUSCH Huawei,HiSilicon
* R4-2215983 draftCR Draft CR on NTN SAN PUSCH performance requirements (TS38.108, Rel-17) Huawei,HiSilicon
* R4-2215984 pCR pCR on NTN SAN PUSCH performance requirements (TS38.181, Rel-17) Huawei,HiSilicon
* R4-2215675 discussion Discussion on general and PUSCH issue SAN demodulation Ericsson
* R4-2215677 other Simulation results for SAN PUSCH demodulation Ericsson
* R4-2215682 draftCR draftCR for TS38.181 introduce SAN PUSCH conducted demodulation requirements and Annex for test setup Ericsson
* R4-2215680 draftCR draftCR for TS38.108 introduce FRC tables for SAN PUSCH demodulation Ericsson
* R4-2215548 discussion Simulation results for NTN SAN PUSCH demodulation Nokia, Nokia Shanghai Bell
* R4-2215549 discussion Discussion on NTN SAN PUSCH demodulation requirements Nokia, Nokia Shanghai Bell
* R4-2215550 discussion Simulation results for NTN SAN PUCCH demodulation Nokia, Nokia Shanghai Bell
* R4-2215551 discussion Discussion on NTN SAN PUCCH demodulation requirements Nokia, Nokia Shanghai Bell
* R4-2215681 draftCR draftCR for TS38.108 introduce requirements for SAN PUSCH demodulation Ericsson
* R4-2215683 draftCR draftCR for TS38.181 introduce SAN PUCCH radiated demodulation requirements Ericsson
* R4-2215678 other Simulation results for SAN PUCCH demodulation Ericsson
* R4-2215676 discussion Discussion on general and PUCCH issue SAN demodulation Ericsson
* R4-2215985 discussion Discussion on satellite NTN demod PUCCH Huawei,HiSilicon
* R4-2215986 other Simulation results on satellite NTN demod PUCCH Huawei,HiSilicon
* R4-2215987 pCR pCR on NTN SAN PUCCH performance requirements (TS38.181, Rel-17) Huawei,HiSilicon
* R4-2216698 discussion Initial simulation results on PUCCH demodulation requirement for Rel-17 NTN Samsung
* R4-2217357 pCR pCR for TS38.181 introduce SAN PUCCH radiated demodulation requirements Ericsson
* R4-2217356 draftCR draftCR for TS38.108 introduce requirements for SAN PUSCH demodulation Ericsson
* R4-2217358 pCR pCR on NTN SAN PUCCH performance requirements (TS38.181, Rel-17) Huawei,HiSilicon
* R4-2217355 discussion Initial simulation results on PUCCH demodulation requirement for Rel-17 NTN Samsung
* R4-2217360 draftCR Draft CR on NTN SAN PRACH performance requirements (TS38.108, Rel-17) Huawei,HiSilicon
* R4-2217361 pCR pCR on NTN SAN PRACH performance requirements (TS38.181, Rel-17) Huawei,HiSilicon
* R4-2217359 pCR pCR for TS38.181 introduce SAN PRACH conducted demodulation requirements Ericsson
* R4-2216699 discussion Initial simulation results on PRACH demodulation requirement for Rel-17 NTN Samsung
* R4-2215988 other Simulation results on satellite NTN demod PRACH Huawei,HiSilicon
* R4-2215989 draftCR Draft CR on NTN SAN PRACH performance requirements (TS38.108, Rel-17) Huawei,HiSilicon
* R4-2215990 pCR pCR on NTN SAN PRACH performance requirements (TS38.181, Rel-17) Huawei,HiSilicon
* R4-2215679 other Simulation results for SAN PRACH demodulation Ericsson
* R4-2215684 draftCR draftCR for TS38.181 introduce SAN PRACH conducted demodulation requirements Ericsson
* R4-2215991 draftCR Draft CR on general part of UE NTN performance requirements (TS38.101-5, Rel-17) Huawei,HiSilicon
* R4-2215992 discussion Discussion on UE NTN demod PDSCH Huawei,HiSilicon
* R4-2215993 other Simulation results on satellite NTN demod PDSCH Huawei,HiSilicon
* R4-2215994 draftCR Draft CR on applicability rules of UE NTN performance requirements (TS38.101-5, Rel-17) Huawei,HiSilicon
* R4-2216420 discussion Summary of simulation results for NTN UE demodulation Qualcomm Incorporated
* R4-2216394 discussion Discussion on the remaining issues for PDSCH requirement of NTN Ericsson
* R4-2216395 other Simulation results for PDSCH requirement of NTN Ericsson
* R4-2216396 draftCR draft CR to 38.101-5: Throughput and reference channel definition Ericsson
* R4-2215860 discussion Simulation Results on NTN UE PDSCH demodulation requirements Qualcomm Incorporated
* R4-2215861 discussion Views on NTN UE PDSCH Requirements Qualcomm Incorporated
* R4-2215546 discussion Discussion on PDSCH demodulation requirements for NTN Nokia, Nokia Shanghai Bell
* R4-2215547 discussion Simulation results on PDSCH demodulation requirements for NTN Nokia, Nokia Shanghai Bell
* R4-2215583 discussion On PDSCH demod requirements for NTN Apple
* R4-2215584 draftCR Draft CR on Propagation Conditions, Physical Channels, Environmental Conditions for NTN Apple
* R4-2216705 discussion Discussion on PDSCH requirements for NR-NTN MediaTek inc.
* R4-2217347 draftCR Draft CR on applicability rules of UE NTN performance requirements (TS38.101-5, Rel-17) Huawei,HiSilicon
* R4-2217345 draftCR Draft CR on Propagation Conditions, Physical Channels, Environmental Conditions for NTN Apple
* R4-2217346 draftCR Draft CR on general part of UE NTN performance requirements (TS38.101-5, Rel-17) Huawei,HiSilicon
* R4-2217478 other Email discussion summary for [104-bis-e][304] NTN\_Solutions\_RF\_Maintenance Moderator (Thales)
* R4-2217479 other Email discussion summary for [104-bis-e][305] NTN\_Solutions\_RFConformance Moderator (Ericsson)
* R4-2217134 other Email discussion summary for [104-bis-e][201] NR\_NTN\_solutions\_RRM\_1 Moderator (Qualcomm)
* R4-2217135 other Email discussion summary for [104-bis-e][202] NR\_NTN\_solutions\_RRM\_2 Moderator (Xiaomi)
* R4-2217480 other [Email discussion summary for 104-bis-e][317] NR\_NTN\_Demod\_Part1 Moderator (Qualcomm)
* R4-2217481 other Email discussion summary for [104-bis-e][318] NR\_NTN\_Demod\_Part2 Moderator (Huawei)
* R4-2217509 other WF on NTN solutions SAN RF conformance Ericsson
* R4-2217348 other WF for NTN SAN demodulation requirements Huawei
* R4-2217320 other WF on NTN solutions SAN RF conformance Ericsson
* R4-2217344 other WF for NTN demodulation requirements - general and PDSCH Qualcomm
* R4-2217311 other WF on NTN Solutions SAN RF Maintenance THALES
* R4-2216888 other Email discussion summary for [104-bis-e][304] NTN\_Solutions\_RF\_Maintenance Moderator (Thales)
* R4-2216889 other Email discussion summary for [104-bis-e][305] NTN\_Solutions\_RFConformance Moderator (Ericsson)
* R4-2216912 other Email discussion summary for [104-bis-e][201] NR\_NTN\_solutions\_RRM\_1 Moderator (Qualcomm)
* R4-2216913 other Email discussion summary for [104-bis-e][202] NR\_NTN\_solutions\_RRM\_2 Moderator (Xiaomi)
* R4-2216901 other [Email discussion summary for 104-bis-e][317] NR\_NTN\_Demod\_Part1 Moderator (Qualcomm)
* R4-2216902 other Email discussion summary for [104-bis-e][318] NR\_NTN\_Demod\_Part2 Moderator (Huawei)
* **RAN4#105, November 14 – 18th 2022, Toulouse**

Submitted TDOCs:

* R4-2219281 discussion Discussion on SAN OBUE and Spurious Emission Limits THALES
* R4-2219608 CR CR for TR 38.863 to maintain SAN parts Huawei, HiSilicon
* R4-2219609 other Discussion on definition of delta FOBUE Huawei, HiSilicon
* R4-2219610 CR CR for 38.108 to maintain unwanted emissions clause Huawei, HiSilicon
* R4-2219967 discussion Discussion on the colocation requirements consideration for SAN RF Huawei, HiSilicon
* R4-2219968 CR CR to TS 38.108: removal of colocation requirements Huawei, HiSilicon
* R4-2219137 other Discussion on synchronization raster ambiguity in NTN Qualcomm Incorporated
* R4-2218501 other NTN - Discussion on remaining open issues Ericsson
* R4-2218502 CR CR to TS 38.108 - Updates related to DfOBUE Ericsson
* R4-2218456 other Further discussion on RF Maintenance for NTN SAN CATT
* R4-2218457 CR CR for TS 38.108, Correct unwanted emission requirements applicability for SAN type 1-H CATT
* R4-2218458 CR CR for TS 38.108, Remove co-location requirement related content CATT
* R4-2218459 CR CR for TS 38.108, On operating band unwaned emission requirement CATT
* R4-2219342 CR Description of general performance part sections for SAN TS 38.108 THALES
* R4-2220163 CR Description of general performance part sections for SAN TS 38.108 THALES
* R4-2220230 pCR TP for TS 38.181 - Annex D Updates THALES
* R4-2220231 pCR TP for TS 38.181: Annex B Ericsson
* R4-2220232 pCR TP for TS 38.181: Annex E Ericsson
* R4-2220233 pCR TP for TS 38.181: Annex J Ericsson
* R4-2220291 other WF for Rel-17 SAN RF maintenance THALES
* R4-2220293 pCR TP for TS 38.181: Annex J Ericsson
* R4-2218462 pCR TP for TS 38.181 – Clause 4.1.2 Acceptable uncertainty of Test System CATT
* R4-2218455 draft TS TS 38.181 v0.3.0 NR Satellite Access Node (SAN) conformance testing CATT
* R4-2219461 pCR TP for TS 38.181 - Annex D Updates THALES
* R4-2220229 other WF for Rel-17 SAN RF maintenance THALES
* R4-2219834 pCR TP for TS 38.181: Annex B Ericsson
* R4-2219835 pCR TP for TS 38.181: Annex C Ericsson
* R4-2219836 pCR TP for TS 38.181: Annex E Ericsson
* R4-2219837 pCR TP for TS 38.181: Annex J Ericsson
* R4-2220290 pCR TP for TS 38.181 – Clause 4.1.2 Acceptable uncertainty of Test System CATT
* R4-2220292 pCR TP for TS 38.181 – DUT size for applicable MU values Huawei
* R4-2220038 discussion Inputs to the discussion on the extreme conditions testing, and suitability of the OTA test chambers Huawei, HiSilicon
* R4-2219469 pCR TP for TS 38.181 - Clause 6.5 Transmitted signal quality THALES
* R4-2219490 pCR TP for TS 38.181 - Corrections to Clause 6.6 Unwanted emissions THALES
* R4-2220234 pCR TP for TS 38.181 - Clause 6.5 Transmitted signal quality THALES
* R4-2220305 pCR TP for TS 38.181 - Corrections to Clause 6.6 Unwanted emissions THALES
* R4-2220236 pCR TP for TS 38.181 - Clause 9.6 OTA transmitted signal quality THALES
* R4-2220237 pCR TP for TS 38.181 - Clause 9.7.5 OTA transmitter spurious emissions THALES
* R4-2220238 pCR TP for TS 38.181 - Clauses 9.2 Radiated transmit power and 9.3 OTA SAN output power THALES, CATT
* R4-2220306 pCR TP for TS 38.181 - Corrections to Clause 9.7 OTA unwanted emissions THALES
* R4-2219647 pCR TP for TS 38.181 - Clause 9.6 OTA transmitted signal quality THALES
* R4-2219650 pCR TP for TS 38.181 - Clause 9.7.5 OTA transmitter spurious emissions THALES
* R4-2219651 pCR TP for TS 38.181 - Clauses 9.2 Radiated transmit power and 9.3 OTA SAN output power THALES
* R4-2219969 pCR TP to TS 38.181: removal of colocation requirements Huawei, HiSilicon
* R4-2219679 pCR TP for TS 38.181 - Corrections to Clause 9.7 OTA unwanted emissions THALES
* R4-2219833 pCR TP for TS 38.181: clause 10.3 OTA refsens Ericsson
* R4-2220235 pCR TP for TS 38.181: Remove co-location requirement related content CATT
* R4-2218460 other Further discussion on conformance testing for NTN SAN CATT
* R4-2218461 pCR TP for TS 38.181: Remove co-location requirement related content CATT
* R4-2219043 CR CR to 38.101-5: Corrections on reference for NTN UE Xiaomi
* R4-2218110 CR CR to 38.101-5 for NTN UE RF requirements corrections Apple
* R4-2218111 CR CR to 38.101-5 on 64QAM requirements related corrections Apple
* R4-2220571 CR CR to 38.101-5 for NTN UE RF requirements corrections Apple
* R4-2220572 CR CR to 38.101-5 on 64QAM requirements related corrections Apple
* R4-2219328 CR CR to include additional emission requirements related to FCC Part 25.202(f) Ligado Networks
* R4-2219308 discussion FCC Part §25.202(f) discussion and implications on SEM, spurious emissions requirements for NR NTN UE Ligado Networks
* R4-2220820 CR CR to 38.101-5 for NTN UE RF requirements corrections Apple
* R4-2218659 discussion Discussion on RRM core requirements for NTN CMCC
* R4-2218573 discussion Discussion on the remaining issues for NTN RRM Xiaomi
* R4-2218574 CR CR on cell reselection requirements with relaxed measurement criterion for satellite access Xiaomi
* R4-2218136 discussion On measurement procedure for NTN UE Apple
* R4-2218226 discussion Discussion on measurement procedure requirements in NTN MediaTek inc.
* R4-2219026 CR CR on intra-frequency measurements in NTN Samsung
* R4-2218991 other Discussion on measurement procedure for NR NTN OPPO
* R4-2219067 discussion Measurement procedure requirements Ericsson
* R4-2218426 discussion Discussion on remaining issues of core requirements for NTN RRM CATT
* R4-2218427 CR Introducing clarification for UE acquiring system information during handover CATT
* R4-2220456 CR CR on cell reselection requirements with relaxed measurement criterion for satellite access Xiaomi
* R4-2219539 CR CR on MG requirements for NTN Huawei, HiSilicon
* R4-2219537 LS out reply LS on enhanced cell reselection requirements Huawei, HiSilicon
* R4-2219538 CR CR on L1-RSRP measurement requirements Huawei, HiSilicon
* R4-2219477 CR CR on Clarification of Ttrigger Requirements for Cell Reselection Nokia, Nokia Shanghai Bell
* R4-2219478 discussion Discussion about RAN2 LS on enhanced cell reselection criteria. Nokia, Nokia Shanghai Bell
* R4-2220315 CR CR on L1-RSRP measurement requirements Huawei, HiSilicon
* R4-2220314 CR CR on MG requirements for NTN Huawei, HiSilicon
* R4-2220710 CR CR on RRC re-establishment requirements for NTN Huawei, HiSilicon
* R4-2220457 CR CR on correction to CHO requirement for satellite access Ericsson
* R4-2220709 CR CR on correction to cell re-selection requirement for satellite access Ericsson
* R4-2219479 CR CR on Re-establishment Requirements for NTN Nokia, Nokia Shanghai Bell
* R4-2219480 discussion Discussion about HO Requirements in NTN Nokia, Nokia Shanghai Bell
* R4-2219534 discussion Discussion on other requirements for NTN RRM Huawei, HiSilicon
* R4-2219535 CR CR on RRC re-establishment requirements for NTN Huawei, HiSilicon
* R4-2219536 CR CR on HO requirements for NTN Huawei, HiSilicon
* R4-2220316 CR CR on HO requirements for NTN Huawei, HiSilicon
* R4-2219065 CR CR on correction to CHO requirement for satellite access Ericsson
* R4-2219066 CR CR on correction to cell re-selection requirement for satellite access Ericsson
* R4-2219025 CR CR on intra-frequency cell reselection in NTN Samsung
* R4-2219068 discussion Performance procedure requirements Ericsson
* R4-2218428 discussion Discussion on performance requirements for NTN RRM CATT
* R4-2218407 other Open Issues in UE and Satellite position details Qualcomm Incorporated
* R4-2218660 discussion Discussion on RRM test cases for NTN CMCC
* R4-2220313 other WF on Rel-17 NR NTN RRM Core Requirements maintenance Qualcomm
* R4-2220425 LS out LS to RAN2 on inter-operability testing (IOT) bit for inter-satellite measurement MediaTek
* R4-2220426 LS out Reply LS on enhanced cell reselection requirements Huawei
* R4-2220427 LS out LS on capability description for enhanced cell reselection requirements in NTN Nokia
* R4-2220413 CR Big CR for NR NTN RRM performance requirements Qualcomm
* R4-2219540 discussion Discussion on test cases for NTN Huawei, HiSilicon
* R4-2219541 draftCR draftCR on general requirement for NTN RRM test cases Huawei, HiSilicon
* R4-2219481 discussion Discussion on SAN Configurations for Test Cases Nokia, Nokia Shanghai Bell
* R4-2220424 draftCR draftCR on general requirement for NTN RRM test cases Huawei, HiSilicon
* R4-2220741 LS out Reply LS on enhanced cell reselection requirements Huawei
* R4-2220421 draftCR Draft CR on test case for cell reselection to FR1 inter-frequency NR cell for satellite access LG Electronics UK
* R4-2219482 discussion Discussion on SIB19 acquisition for Cell Reselection Performance Nokia, Nokia Shanghai Bell
* R4-2218912 draftCR Draft CR on test case for cell reselection to FR1 inter-frequency NR cell for satellite access LG Electronics UK
* R4-2218429 draftCR Modification on test cases for NTN conditional handover CATT
* R4-2220390 draftCR Modification on test cases for NTN conditional handover CATT
* R4-2219483 discussion Test Case Configuration for UE Transmit Timing Nokia, Nokia Shanghai Bell
* R4-2219243 discussion Discussion on remaining issues on test cases for NTN UE timing Huawei, HiSilicon
* R4-2219244 draftCR DraftCR on UE transmit timing tests for NTN Huawei, HiSilicon
* R4-2218661 draftCR Draft CR on timing advance adjustment accuracy test for NTN CMCC
* R4-2220420 draftCR Draft CR on timing advance adjustment accuracy test for NTN CMCC
* R4-2220423 draftCR DraftCR on UE transmit timing tests for NTN Huawei, HiSilicon
* R4-2220422 draftCR draft CR on test cases of BFD and LR for SA Ericsson
* R4-2218662 draftCR Draft CR on test cases for CSI-RS based RLM for NTN CMCC
* R4-2219069 draftCR draft CR on test cases of BFD and LR for SA Ericsson
* R4-2218227 draftCR CR on test cases for Inter-frequency measurement delay for satellite access with gap MediaTek inc.
* R4-2220418 draftCR CR on test cases for Inter-frequency measurement delay for satellite access with gap MediaTek inc.
* R4-2220419 draftCR CR on test cases for Measurement Accuracy for SS-RSRQ for satellite access MediaTek inc.
* R4-2218228 draftCR CR on test cases for Measurement Accuracy for SS-RSRQ for satellite access MediaTek inc.
* R4-2218711 discussion Discussion on general for NTN demodulation requirements Ericsson
* R4-2219484 discussion Discussion on NTN demodulation requirements - general Nokia, Nokia Shanghai Bell
* R4-2219447 pCR TP for TS 38.181 - Clauses 8.1 and 11.1 General performance parts THALES
* R4-2219676 draftCR Draft CR on general part of UE NTN performance requirements (TS38.101-5, Rel-17) Huawei, HiSilicon
* R4-2220162 pCR TP for TS 38.181 - Clauses 8.1 and 11.1 General performance parts THALES
* R4-2220164 draftCR Draft CR on propagation conditions of NTN SAN performance requirements (TS38.108, Rel-17) Huawei, HiSilicon
* R4-2219664 draftCR Draft CR on propagation conditions of NTN SAN performance requirements (TS38.108, Rel-17) Huawei, HiSilicon
* R4-2219665 pCR pCR on FRC of NTN SAN performance requirements (TS38.181, Rel-17) Huawei, HiSilicon
* R4-2219673 other Summary of NTN SAN simulation results Huawei, HiSilicon
* R4-2219674 CR Big CR on NTN SAN performance requirements (TS38.108, Rel-17) Huawei, HiSilicon
* R4-2219672 other Simulation results on satellite NTN demod PUSCH Huawei, HiSilicon
* R4-2219663 draftCR Draft CR on NTN SAN PUSCH performance requirements (TS38.108, Rel-17) Huawei, HiSilicon
* R4-2219668 pCR pCR on NTN SAN PUSCH performance requirements (TS38.181, Rel-17) Huawei, HiSilicon
* R4-2219669 discussion Discussion on satellite NTN demod PUSCH Huawei, HiSilicon
* R4-2219485 other Simulation results for NTN SAN PUSCH demodulation Nokia, Nokia Shanghai Bell
* R4-2220161 other WF for NTN BS demodulation part Huawei, HiSilicon
* R4-2218712 discussion Discussion on SAN PUSCH demodulation requirements Ericsson
* R4-2218715 draftCR draft CR for TS38.108 FRC tables for SAN PUSCH demodulation requirements Ericsson
* R4-2218717 pCR TP for TS 38.181 SAN PUSCH demodulation requirements Ericsson
* R4-2219017 discussion Simulation results on PUSCH demodulation requirement for Rel-17 NTN Samsung
* R4-2220167 pCR pCR on NTN SAN PUSCH performance requirements (TS38.181, Rel-17) Huawei, HiSilicon
* R4-2220166 draftCR Draft CR on NTN SAN PUSCH performance requirements (TS38.108, Rel-17) Huawei, HiSilicon
* R4-2220165 pCR TP for TS 38.181 SAN PUSCH demodulation requirements Ericsson
* R4-2220169 pCR TP for TR38.181 SAN PUCCH demodulation radiated requirements Ericsson
* R4-2220168 draftCR draft CR for TS38.108 SAN PUCCH demodulation requirements Ericsson
* R4-2220170 pCR pCR on NTN SAN PUCCH performance requirements (TS38.181, Rel-17) Huawei, HiSilicon
* R4-2219018 discussion Discussion and simulation results on PUCCH demodulation requirement for Rel-17 NTN Samsung
* R4-2218718 pCR TP for TR38.181 SAN PUCCH demodulation radiated requirements Ericsson
* R4-2218716 draftCR draft CR for TS38.108 SAN PUCCH demodulation requirements Ericsson
* R4-2218713 discussion Discussion on SAN PUCCH demodulation requirements Ericsson
* R4-2218714 other simulation results for SAN PUCCH demodulation requirements Ericsson
* R4-2219486 other Simulation results for NTN SAN PUCCH demodulation Nokia, Nokia Shanghai Bell
* R4-2219667 pCR pCR on NTN SAN PUCCH performance requirements (TS38.181, Rel-17) Huawei, HiSilicon
* R4-2219671 other Simulation results on satellite NTN demod PUCCH Huawei, HiSilicon
* R4-2219670 other Simulation results on satellite NTN demod PRACH Huawei, HiSilicon
* R4-2219666 pCR pCR on NTN SAN PRACH performance requirements (TS38.181, Rel-17) Huawei, HiSilicon
* R4-2219662 draftCR Draft CR on NTN SAN PRACH performance requirements (TS38.108, Rel-17) Huawei, HiSilicon
* R4-2218719 pCR TP for TR38.181 SAN PRACH demodulation conducted requirements Ericsson
* R4-2219019 discussion Simulation results on PRACH demodulation requirement for Rel-17 NTN Samsung
* R4-2220173 pCR pCR on NTN SAN PRACH performance requirements (TS38.181, Rel-17) Huawei, HiSilicon
* R4-2220172 draftCR Draft CR on NTN SAN PRACH performance requirements (TS38.108, Rel-17) Huawei, HiSilicon
* R4-2220171 pCR TP for TR38.181 SAN PRACH demodulation conducted requirements Ericsson
* R4-2220160 draftCR Draft CR on applicability rules of UE NTN performance requirements (TS38.101-5, Rel-17) Huawei, HiSilicon
* R4-2220282 other WF for NTN UE demodulation par Qualcomm
* R4-2218370 draftCR Draft CR on PDSCH demodulation requirements for NTN UE Qualcomm Incorporated
* R4-2218178 discussion On PDSCH demod requirements for NTN Apple
* R4-2218243 discussion Simulation results for NR-NTN PDSCH requirements MediaTek inc.
* R4-2218064 other Views on NTN UE PDSCH Requirements Qualcomm Incorporated
* R4-2218065 discussion Simulation Results on NTN UE PDSCH Demodulation Requirements Qualcomm Incorporated
* R4-2218066 discussion Summary of Simulation Results for NTN UE Demodulation Qualcomm Incorporated
* R4-2219675 draftCR Draft CR on applicability rules of UE NTN performance requirements (TS38.101-5, Rel-17) Huawei, HiSilicon
* R4-2219677 discussion Discussion on UE NTN demod PDSCH Huawei, HiSilicon
* R4-2219678 other Simulation results on satellite NTN demod PDSCH Huawei, HiSilicon
* R4-2219487 other Simulation results on PDSCH demodulation requirements for NTN Nokia, Nokia Shanghai Bell
* R4-2219488 discussion Discussion on testing of PDSCH disabled HARQ requirements for NTN Nokia, Nokia Shanghai Bell
* R4-2220158 other WF for NTN UE demodulation part Qualcomm
* R4-2219278 other Update simulation results for UE PDSCH for NTN Ericsson
* R4-2220159 draftCR Draft CR on PDSCH demodulation requirements for NTN UE Qualcomm Incorporated
* R4-2220050 other Topic summary for [105][204] NR\_NTN\_solutions\_RRM\_1 Moderator (Qualcomm)
* R4-2220051 other Topic summary for [105][205] NR\_NTN\_solutions\_RRM\_2 Moderator (Xiaomi)
* R4-2220130 other Summary for [105][304] NTN\_Solutions\_RF\_Maintenance Moderator (Thales)
* R4-2220131 other Summary for [105][305] NTN\_Solutions\_RFConformance Moderator (Ericsson)
* R4-2220144 other Summary for [105][318] NR\_NTN\_Demod\_Part1 Moderator (Qualcomm)
* R4-2220145 other Summary for [105][319] NR\_NTN\_Demod\_Part2 Moderator (Huawei)

***END***