**3GPP TSG RAN meeting #109 RP-252329**

**Beijing, China, September 15-18, 2025**

## Status Report to TSG

 **Agenda item:** 10.6.3

|  |  |
| --- | --- |
| **WI / SI Name** | Introduction of IoT-NTN TDD mode |
| included in this status report | Study Item: No | Core part: Yes | Performance part:Yes | Testing part:No |
| **Acronym** | IoT\_NTN\_TDD |
| **Unique ID** | 1050123 |
| **TSG Tdoc of latest approved WI/SI description (if any)** | RP-243293 |
| **Target Completion Date****(indicate if changed)** | Study Item: N/A | Core part: 09/2025 | Performance part: 03/2026 | Testing part:  |
| **Overall Completion level** | Study Item: N/A  | Core part: Overall: 100%RAN1: 100%RAN2: 100%RAN4: 100% | Performance Part: Overall: 0%RAN4: 0% | 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** | RAN1 |
| **Rapporteur** | **Name** | Andjela Ilic-Savoia |
| **Company** | Iridium Satellite LLC |
| **Email** | andjela.savoia@iridium.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.*

## 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 during RAN1#122

#### **RAN1 #122 List of Agreements and Conclusions**

**Agreement**

Adopt the following TP for 36.211

* Reason for change: There are subframes undefined in TDD pattern.
* Summary of change: The 24 subframes after UL subframes are defined as guard periods. Also, it is clarified that the number of uplink subframes is denoted as *U* and the number of downlink subframes is denoted as *D.*
* Consequence if not approved: The definition of TDD pattern is not complete.

|  |
| --- |
| 4.4 Frame structure type 1 for NTN-TDDFrame structure type 1 is applicable to NTN-TDD in band 249. Each radio frame is $T\_{f}=307200T\_{s}=10 ms$ long and consists of 10 subframes of length $30720T\_{s}=1 ms$, numbered from 0 to 9. Subframe $i$ in frame $n\_{f}$ has an absolute subframe number $n\_{sf}^{abs}=10n\_{f}+i$ where $n\_{f}$ is the system frame number.The frame structure for NTN-TDD, at the uplink time synchronization reference point defined in clause 16.1.2 of TS 36.213 [4], consists of *D*=8 consecutive downlink subframes, followed by 50 consecutive guard period subframes, followed by *U*=8 consecutive uplink subframes, followed by 24 consecutive guard period subframes in each 90 ms interval.- The UE shall not assume any signal or channel being transmitted in subframes other than downlink subframes 3, 4, 5, 6, 7, 8, 9, and 0 across two consecutive radio frames.- The UE shall not transmit any signal or channel on a subframe other than the 8 consecutive uplink subframes.\*\*\* Unchanged parts are omitted \*\*\* |

**Agreement**

Adopt the following TP for 36.211

* Reason for change: RAN1 agreed that uplink gaps do not apply to NB-IoT NTN TDD.
* Summary of change: Clarify that uplink gaps only apply to frame structure type 1 for FDD.
* Consequence if not approved: Specification is not in line with RAN1 agreements.

|  |
| --- |
| 10.1.6.1 Time and frequency structure<Unchanged parts are omitted>NPRACH transmission can start only  time units after the start of a radio frame fulfilling . For frame structure type 1 for FDD, after transmissions of  time units for preamble formats 0 and 1, or $16∙6(T\_{CP}+T\_{SEQ})$ time units for preamble format 2, a gap of  time units shall be inserted.<Unchanged parts are omitted> |

**Agreement**

Editor to consider replacing “TDD pattern” with “frame structure for NTN-TDD” in sections 16.5, 16.4 and 16 of TS 36.213.

**Agreement**

The following TP (36.300) is endorsed from RAN1 perspective.

* Send the endorsed TP in an LS to RAN2.
* Highlight in the LS “The change is to correctly capture that there are two guard periods every N radio frames: one before the uplink subframes and one after the uplink subframes. Also, it is clarified that the frame structure is defined at the ULSRP”

|  |
| --- |
| -------------------- Start of TP#1 for CR of 36.300 --------------------\*\*\* Unchanged parts are omitted \*\*\*5.0 Frame structures and channelsDownlink and uplink transmissions are organized into radio frames with 10 ms duration. Three radio frame structures are supported:- Type 1, applicable to FDD;- Type 2, applicable to TDD;*…*For IoT-NTN TDD mode, Frame Structure Type-1 is used where uplink and downlink transmissions are separated in the time domain and constitute of set of D non-overlapping usable contiguous DL subframes and set of U usable contiguous UL subframes separated by fixed guard periods (GP) at the uplink time synchronization reference point defined in clause 16.1.2 of TS 36.213 [6]. This pattern is repeated every N radio frames. IoT-NTN TDD mode is applicable for the IoT-NTN TDD band (1616-1626.5 MHz) specified in [36.102].\*\*\* Unchanged parts are omitted \*\*\*-------------------- End of TP#1 for CR of 36.300 -------------------- |

**Agreement**

The draft LS to RAN2 in R1-2506534 is endorsed. Final LS in R1-2506535.

**Agreement**

The set of D/U-subframes in a non-anchor carrier is the same as the set of D/U-subframes in the anchor carrier, and are time-aligned.

* FFS: specification impact, if any.

**Agreement**

Update RAN1 36.211 and 36.213 specifications to use the term “IoT NTN TDD” instead of “NTN TDD”.

* Note: RAN2 specifications editors have agreed to use the term “IoT NTN TDD” for the RAN2 specifications.

**Conclusion**

For the issue of handling NPDCCH offsets: No further enhancements are specified in Rel-19.

**Conclusion**

For IoT NTN TDD, no new scheduling offsets are introduced in Rel-19.

**RAN1 #122 UE Features for IOT NTN TDD**

**Agreement**

* Confirm “TDD only” in “Need of FDD/TDD differentiation” column in FG 2-1.
* Confirm “N/A” in “Capability interpretation for mixture of FDD/TDD” column in FG 2-1.

#### 2.1.2 Remaining open issues

#### Remaining maintainance issues to be finalized in the October meeting.

## **2.2** **RAN2**

#### 2.2.1 Agreements during RAN2#131

1. IoT NTN TDD mode capability is conditionally mandatory (as in the draft CR) if the UE supports the relevant TDD band

2. No need to introduce a new list of neighbour cells operating in TDD mode in Rel-19

3. RAN2 assume that for IoT NTN TDD mode, serving cell and neighbor cells are not always synchronized.

4. There is no benefit in introducing a new idle mode DRX cycle length for IoT NTN TDD mode.

5. There is no specification impact for RAN2 (36.304) related to paging scheduling.

6. There is no specification change required in the existing SIB1 scheduling mechanism.

7. RAN2 assumes the network will take into account the invalid subframes when setting the explicit EpochTime

8. RAN2 assumes that OCC defined for IoT NTN Rel-19 can be supported for IoT NTN TDD mode but ask RAN1 for confirmation

9. We aim at introducing the needed changes (if any) to support CB-Msg3 and CB-Msg4 for IoT NTN TDD mode during the ASN.1 review, including at least

 Adding configurations that are aligned with the 90 ms periodicity for npusch-Periodicity and windowPeriodicity-NB

 (FFS other needed enhancements based on the progress of the CB-Msg3-EDT discussion this week)

10. IoT NTN PWS Rel-19 can be supported in IoT NTN TDD (no spec impact)

11. TDD radio frame offset between serving cell and neighbor cell(s) can be provided via SIB33 to the UE for neighbor cell measurement.

#### 2.2.2 Agreements during RAN2#131 Post-meeting email discussion

* CRs to be agreed:
	+ 36.300 CR: Iridium
	+ 36.304 CR: Xiaomi
	+ 36.306 CR: Samsung
	+ 36.321 CR: Toyota
	+ 36.331 CR: Huawei
* An LS Approved: R2-2506300
	+ To RAN1 on RAN2 agreement regarding OCC support for IoT NTN TDD
		- During RAN2#131 meeting, RAN2 discussed OCC for IoT-NTN TDD mode and achieved the following agreement:
		- RAN2 assumes that OCC defined for IoT NTN Rel-19 can be supported for IoT NTN TDD mode but asks RAN1 for confirmation.

#### 2.2.3 Remaining open issues

* + Awaiting LS Reply from RAN1 to R2-2506300.

## 2.3 RAN3

## 2.4 RAN4

2.4.1 Agreements during RAN4#116 **UE/SAN RF**

## 2.4.1.1 SAN Requirements

**Issue 1-1-1: Class type for TDD requirements**

**Agreement:** Consider only LEO SAN class for NTN TDD NB-IoT in 249 band for SAN TS 36.108.

**Issue 1-1-2: ACS NB-IoT NTN TDD SAN requirements**

**Agreement:** Update the ACS NB-IoT NTN SAN TS 36.108 requirements as follows:

* Conducted ACS requirements

**Table 7.4.1.2-2: ACS requirement of SAN supporting standalone NB-IoT operation for FDD**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SAN****channel bandwidth of the lowest/highest carrier received (kHz)** | **Wanted signal mean power (dBm)** | **Interfering signal mean power (dBm)** | **Interfering signal centre frequency offset to the lower/upper SAN RF Bandwidth edge or sub-block edge inside a sub-block gap (kHz)** | **Type of interfering signal** |
| 200 | PREFSENS + 19.5dB (Note) | GEO SAN class: -56.6LEO SAN class: -59.7 | ±100 | 180 kHz NB-IoT signal |
| Note: PREFSENS depends on the sub-carrier spacing as specified in Table 7.2.2-3 and Table 7.2.2-4. |

**Table 7.4.1.2-3: ACS requirement of SAN supporting standalone NB-IoT operation for TDD**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SAN****channel bandwidth of the lowest/highest carrier received (kHz)** | **Wanted signal mean power (dBm)** | **Interfering signal mean power (dBm)** | **Interfering signal centre frequency offset to the lower/upper SAN RF Bandwidth edge or sub-block edge inside a sub-block gap (kHz)** | **Type of interfering signal** |
| 200 | PREFSENS + 19.5dB (Note) | LEO SAN class: -85.5 | ±100 | 180 kHz NB-IoT signal |
| Note: PREFSENS depends on the sub-carrier spacing as specified in Table 7.2.2-5. |

* OTA ACS requirements

**Table 10.5.1.2-2: ACS requirement of SAN supporting standalone NB-IoT operation for FDD**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SAN****channel bandwidth of the lowest/highest carrier received (kHz)** | **Wanted signal mean power (dBm)** | **Interfering signal mean power (dBm)** | **Interfering signal centre frequency offset to the lower/upper SAN RF Bandwidth edge or sub-block edge inside a sub-block gap (kHz)** | **Type of interfering signal** |
| 200 | PREFSENS + 19.5dB - ΔOTAREFSENS(Note) | GEO SAN class: -56.6- ΔOTAREFSENSLEO SAN class: -59.7- ΔOTAREFSENS | ±100 | 180 kHz NB-IoT signal |
| Note: PREFSENS depends on the sub-carrier spacing as specified in Table 7.2.2-3 and Table 7.2.2-4. |

**Table 10.5.1.2-3: ACS requirement of SAN supporting standalone NB-IoT operation for TDD**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SAN****channel bandwidth of the lowest/highest carrier received (kHz)** | **Wanted signal mean power (dBm)** | **Interfering signal mean power (dBm)** | **Interfering signal centre frequency offset to the lower/upper SAN RF Bandwidth edge or sub-block edge inside a sub-block gap (kHz)** | **Type of interfering signal** |
| 200 | PREFSENS + 19.5dB - ΔOTAREFSENS(Note) | LEO SAN class: -85.5- ΔOTAREFSENS | ±100 | 180 kHz NB-IoT signal |
| Note: PREFSENS depends on the sub-carrier spacing as specified in Table 7.2.2-5. |

**Issue 1-1-3:** ACS for FDD NTN NB-IoT potential revision

**Agreement:** RAN4 shall consider correcting ACS for FDD NB-IoT SAN TS 36.108 during maintenance phase.

## 2.4.1.2 UE Requirements

**Issue 2-1-1: UE maximum output power for category NB1 and NB2**

**Agreement:** RAN4 shall update section 6.2B.1 as follows

6.2B.1 UE maximum output power for category NB1 and NB2

Category NB1 and NB2 UE Power Classes are specified in Table 6.2B.1-1 and define the maximum output power for any transmission bandwidth within the category NB1 and NB2 channel bandwidth. For 3.75 kHz sub-carrier spacing the maximum output power is defined as mean power of measurement which period is at least one slot (2ms) excluding the 2304Ts gap when UE is not transmitting. For 15 kHz sub-carrier spacing the maximum output power is defined as mean power of measurement which period is at least one sub-frame (1ms).

**Table 6.2B.1-1: UE Power Class**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **E-UTRA band** | **Class 3 (dBm)** | **Tolerance (dB)** | **Class 5 (dBm)** | **Tolerance (dB)** |
| 256 | 23 | +/-2 | 20 | +/-2 |
| 255 | 23 | +/-2 | 20 | +/-2 |
| 254 | 23 | +/-2 | 20 | +/-2 |
| 253 | 23 | +/-2 | 20 | +/-2 |
| 252 | 23 | +/-2 | 20 | +/-2 |
| 249 | 23 | +/-2 | 20 | +/-2 |

The default power class PPowerClass\_Default for an operating band is Power Class 3 unless otherwise stated.

The UE shall meet the following additional requirements for maximum transmission power density specified in Table 6.2B.1-2 when NS is signalled and when the configured channel overlaps with any portion of the specified frequency range.

Table 6.2B.1-2: Additional requirements for transmit EIRP density

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| EUTRABand | NS value | Channel bandwidth (MHz) | Frequency range (MHz) | Maximum power density |
| 254 | NS\_04N | 0.2 | 1610 - 1618.25 | 27dBm/4kHz (mean EIRP limit) |
| NS\_05N | 0.2 | 1618.25 - 1626.5 |
| NS\_11N | 0.2 | 1610 - 1618.25 | 15dBm/4kHz (peak EIRP limit) |
| NS\_12N | 0.2 | 1618.25 - 1626.5 |
| 249 | NS\_04N | 0.2 | 1616 - 1618.25 | 27dBm/4kHz (mean EIRP limit) |
| NS\_05N | 0.2 | 1618.25 - 1626.5 |
| NS\_11N | 0.2 | 1616 - 1618.25 | 15dBm/4kHz (peak EIRP limit) |
| NS\_12N | 0.2 | 1618.25 - 1626.5 |

**Issue 2-1-2: Discussion on frequency error requirement for NB-IoT TDD NTN in TS 36.102**

**Agreement:** Update TS 36.102 for NTN TDD NB-IoT as follows:

## 6.4B Transmit signal quality for category NB1 and NB2

### 6.4B.1 Frequency error for UE category NB1 and NB2

For UE category NB1 and NB2, the UE pre-compensates the uplink modulated carrier frequency by the estimated Doppler shift based on received ephemeris information of the SAN in IE *EphemerisInfo* (TS 36.331 [6]), its own location and UL carrier frequency signalled to the UE by the SAN (according to TS36.300 [8] clause 23.21.2.2).

The UE pre-compensated modulated carrier frequency shall be accurate to within the limits in Table 6.4B.1-1, observed over a period of one time slot (0.5 ms for 15 kHz sub-carrier spacing and 2 ms excluding the 2304Ts gap for 3.75 kHz sub-carrier spacing) and averaged over 72/LCtone slots (where LCtone = {1, 3, 6, 12} is the number of sub-carriers used for the transmission), compared to the ideally pre-compensated reference uplink carrier frequency.

When a repetition period is configured on the uplink for which repetition period (R) >1, the UE shall not change Doppler pre-compensation during an ongoing repetition period, except in the transmission gaps as defined in clause 10.1.3.6 of TS 36.211[3] or except for band 249 in which UE is allowed to perform pre-compensation at the beginning of the uplink burst of 8 consecutive transmitted subframes, pre-compensation gap is not applicable for band 249. When segmentation is applied, then the UE shall update pre-compensation at the beginning of each segment prior to segment transmission.

[NOTE: The ideally pre-compensated reference uplink carrier frequency consists of the UL carrier frequency signalled to the UE by SAN and UL pre-compensated Doppler frequency shift corresponding to the estimated Doppler frequency at the beginning of the transmission.]

Table 6.4B.1-1: Frequency error requirement for UE category NB1 and NB2

|  |  |
| --- | --- |
| Carrier frequency [GHz] | Frequency error [ppm] |
| ≤1 | ±0.2 |
| >1 | ±0.1 |

6.4B.2 Transmit modulation quality for Category NB1 and NB2

Transmit modulation quality requirements for Category NB1 and NB2 UEs for BPSK and QPSK modulation as specified in clause 6.5.2F of 36.101 [7] are applicable.

**Issue 2-2-1: A-MPR definition**

**Agreement:** Leverage the existent NS flags.

Note: draft CR submitted at this meeting.

**Issue 2-2-2: A-MPR relaxation**

**Agreement:**

**To be discussed further how to reduce A-MPR:**

* Option 1: Use **nominated bandwidth** concept as general approach agreed under [116][315] **for all bands** (including 249)
	+ Note 1: this Option may delay band 249 core requirement work by at least 2 meetings since extended guard band will not be endorsed at the meeting (waiting for nominated band introduction for all bands).
* Option 2: Define specific NS values using **extended guard band** concept at RAN4#116 without specifically mentioning “nominated bandwidth” for 249.
	+ Note 1: extended guard band concept already agreed as part of [116][315];
	+ Note 2: this Option will not delay band 249 core requirements work since A-MPR requirements finished.

**NOTE: The following agreements below are related:**

**Agreement: Confirm the following statements** from [116][315] **are applicable to 249:**

* The nominated BW concept will be applied to frequency bands b249 and b254.
* For meeting ETSI SEM requirements, 3GPP can use fixed GB or extended BW such as 400 kHz for meeting nominated BW concept for FR1 NB-IoT NTN band, e.g., apply additional 100 kHz guard band on both sides.

**Agreement: Confirm the general principles** from [116][315] **are applicable to 249:**

* A general framework to enable extended guard-band/channel for NTN IoT
* The framework is applicable to any NTN IOT band
* Extended guard-band/channel size limited to [one or two] options at most, e.g., 400kHz and/or 300kHz extended channel bandwidth for NTN IOT
* Extended guard-band/channel is symmetrical to the transmission channel bandwidth

**Agreement: Confirm the signalling principles from** [116][315] **are applicable to 249:**

* Signalling indicating that SAN uses extended guard band for the NTN IoT band
	+ Option 1: a new parameter indicating value of extended guard band.
	+ Option 2: introduce one new NS value for combination of legacy NS and extended guard band
	+ Option 3: introduce one additional NS to indicate extended guard band, UE receives two NS: one legacy NS and one NS indicating extended guard band
	+ Other
* UE capability signalling, where a UE indicates support of extended guard band feature ([per UE/per band]); if capability is not indicated, then the UE does not support the feature (or doesn’t need to use it).

**Agreement: Confirm that general behaviour captured with the following table is applicable to 249:**

|  |  |
| --- | --- |
|  UE extended guardband capability  | Network configuration |
| No extended guardband | Is extended guardband |
|  UE capabilty reported | UE applies defined AMPR if needed | No AMPR is applied |
| No UE capability reported | UE cannot understand SAN guard-band configuration, and a UE applies A-MPR, if needed |

**Agreement: Confirm that the following specific behaviour (using 100 kHz extended guard band as an example) is applicable to 249:**

* If extended guard band is signalled as 100 kHz and UE indicates capability *NTN-extendedGuardBand-A-MPR -r19*, then a UE follows “extended” SEM with extended guard band and A-MPR=0
* If extended guard band is not signalled by the network, then a UE follows legacy SEM without extended guard band and uses, if needed, the band specific A-MPRs
* If UE does not indicate *extendedGuardBand-A-MPR -r19*, then a UE follows legacy SEM without extended guard band and uses, if needed, the band specific A-MPRs

**Agreement: Confirm the following draft CR as starting point for A-MPR definition for 249 (currently 3 options, other options not precluded):**

* **Option 1:**

### 6.2B.3 UE additional maximum output power reduction for category NB1 and NB2 UE

#### 6.2B.3.1 General

Additional ACLR and spectrum emission requirements can be signalled by the network to indicate that the UE shall also meet additional requirements in a specific deployment scenario. To meet these additional requirements, Additional Maximum Power Reduction (A-MPR) is allowed for the output power are specified. For the agreed E-UTRA bands for category NB1 and NB2 UE an A-MPR of 0 dB shall be allowed unless specified otherwise.

For UE Power Class 3 and 5 the specific requirements and identified subclauses are specified in Table 6.2B.3.1-1 along with the allowed A-MPR values that may be used to meet these requirements. The allowed A-MPR values specified below in Table 6.2B.3.1-1 are in addition to the allowed MPR requirements specified in subclause 6.2B.2-1. When extended guard band is provided by SAN and UE indicates capability of *extendedGuardBand-A-MPR-r19*, UE sets value of X to indicated value*,* otherwise *value of* X is 0 kHz.

Table 6.2B.3.1-1: Additional Maximum Power Reduction (A-MPR) for category NB1 and NB2 UE

|  |  |  |  |
| --- | --- | --- | --- |
| Network Signalling value | Requirements (subclause) | E-UTRA Band | A-MPR (dB) |
| NS\_01 | 6.5B.4.2 | Table 5.2-1 | N/A |
| NS\_24 | 6.5B.4.4.3 | 256 | PC3 | PC5 |
|  |  |  | ≤ 3.5 | ≤ 0.5 |
| NS\_02N | 6.5B.4.4.2 | 255 | N/A |
| NS\_03N | 6.5B.3.3.2,6.5B.4.4.4 | 249, 254 | N/A |
| NS\_04N | Table 6.2B.1-2, 6.5B.4.4.5 | 249, 254 | 6.2B.3.1 |
| NS\_05N | Table 6.2B.1-2, 6.5B.4.4.6 | 249, 254 | 6.2B.3.2 |
| NS\_06N | 6.5B.4.4.7 | 252 | N/A |
| NS\_07N | 6.5B.4.4.7 | 252 | N/A |
| NS\_08N | 6.5B.4.4.7 | 252 | N/A |
| NS\_11N | Table 6.2B.1-2,6.5B.4.4.5 | 249, 254 | 6.2B.3.3 |
| NS\_12N | Table 6.2B.1-2, 6.5B.4.4.6 | 249, 254 | 6.2B.3.4 |

#### 6.2B.3.2 A-MPR for NS\_04N

Additional maximum power reduction when NS\_04N for X=0 kHz is signalled is in Table 6.2B.3.2-1 for 3.75 kHz and in Table 6.2B.3.2-2 for 15 kHz SCS. If X=100 kHz, as defined in clause 6.2B.3.1, A-MPR is equal to 0 dB.

Table 6.2B.3.2-1: A-MPR for "NS\_04N" with 3.75 kHz SCS for Power Class 3

|  |  |
| --- | --- |
| Modulation | QPSK |
| Tone positions for 3.75 kHz single tone allocation | 0-3 | 4-6 | 6-9 | 10-38 | 39-41 | 42-44 | 45-47 |
| A-MPR (dB) | **≤ 10.5** | **≤ 5.5** | **≤ 3** | **≤ 0** | **≤ 3** | **≤ 5.5** | **≤ 10.5** |

Table 6.2B.3.2-2: A-MPR for "NS\_04N" with 15kHz SCS for Power Class 3

|  |  |
| --- | --- |
| Modulation | QPSK |
| Tone positions for single tone allocation | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| A-MPR (dB) | **≤**12 | **≤**8.5 | **≤**6.5 | **≤**1 | **≤**0.5 | **≤**0.5 | **≤**1 | **≤**6.5 | **≤**8.5 | **≤**12 |
| Tone positions for 3 Tones allocation | **0-2** | **3-5 and 6-8** | **9-11** |
| A-MPR (dB) | **≤ 8.5** | **≤ 2** | **≤ 8.5** |
| Tone positions for 6 Tones allocation | **0-5 and 6-11** |
| A-MPR (dB) | **≤ 6** | **≤ 6** |
| Tone positions for 12 Tones allocation | **0-11** |
| A-MPR (dB) | **≤ 2** |

#### 6.2B.3.3 A-MPR for NS\_05N

Additional maximum power reduction when NS\_05N for X= 0 kHz is signalled is in Table 6.2B.3.3-1 for 3.75 kHz and in Table 6.2B.3.3-2 for 15 kHz SCS. If X=100 kHz, as defined in clause 6.2B.3.1, A-MPR is equal to 0 dB.

Table 6.2B.3.3-1: A-MPR for "NS\_05N" with 3.75 kHz SCS for Power Class 3

|  |  |
| --- | --- |
| Modulation | QPSK |
| Tone positions for 3.75 kHz single tone allocation | 0-3 | 4-6 | 6-10 | 11-37 | 38-41 | 42-44 | 45-47 |
| A-MPR (dB) | **≤13.5** | **≤8** | **≤5** | **0** | **≤ 3** | **≤ 5.5** | **≤ 13.5** |

Table 6.2B.3.3-2: A-MPR for "NS\_05N" with 15kHz SCS for Power Class 3

|  |  |
| --- | --- |
| Modulation | QPSK |
| Tone positions for single tone allocation | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| A-MPR (dB) | **≤**15 | **≤**10.5 | **≤**8 | **≤**2 | **≤**1.5 | **≤**1.5 | **≤**2 | **≤**8 | **≤**10.5 | **≤**15 |
| Tone positions for 3 Tones allocation | **0-2** | **3-5 and 6-8** | **9-11** |
| A-MPR (dB) | ≤ 11 | ≤ 3.5 | ≤ 11 |
| Tone positions for 6 Tones allocation | **0-5 and 6-11** |
| A-MPR (dB) | ≤ 8.5  | ≤ 8.5 |
| Tone positions for 12 Tones allocation | **0-11** |
| A-MPR (dB) | **≤ 4.5** |

#### 6.2B.3.4 A-MPR for NS\_11N

Additional maximum power reduction when NS\_11N is signalled is in Table 6.2B.3.4-1.

Table 6.2B.3.4-1: A-MPR for "NS\_11N" and "NS\_12N" for Power Class 3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SCS and number of tones | 3.75 kHz | 15 kHz 1-tone | 15 kHz 3-tone  | 15 kHz 6-tone  | 15 kHz 12-tone  |
| A-MPR (dB) | ≤ **18.0** | ≤ **15** | ≤ **11** | ≤ **8.5** | ≤ **4.5** |

#### 6.2B.3.5 A-MPR for NS\_12N

Additional maximum power reduction when NS\_12N is signalled is in Table 6.2B.3.5-1.

Table 6.2B.3.5-1: A-MPR for "NS\_11N" and "NS\_12N" for Power Class 3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SCS and number of tones | 3.75 kHz | 15 kHz 1-tone | 15 kHz 3-tone  | 15 kHz 6-tone  | 15 kHz 12-tone  |
| A-MPR (dB) | ≤ **18.0** | ≤ **15** | ≤ **11** | ≤ **8.5** | ≤ **4.5** |

* **Option 2:**

### 6.2B.3 UE additional maximum output power reduction for category NB1 and NB2 UE

#### 6.2B.3.1 General

Additional ACLR and spectrum emission requirements can be signalled by the network to indicate that the UE shall also meet additional requirements in a specific deployment scenario. To meet these additional requirements, Additional Maximum Power Reduction (A-MPR) is allowed for the output power are specified. For the agreed E-UTRA bands for category NB1 and NB2 UE an A-MPR of 0 dB shall be allowed unless specified otherwise.

For UE Power Class 3 and 5 the specific requirements and identified subclauses are specified in Table 6.2B.3.1-1 along with the allowed A-MPR values that may be used to meet these requirements. The allowed A-MPR values specified below in Table 6.2B.3.1-1 are in addition to the allowed MPR requirements specified in subclause 6.2B.2-1.

Table 6.2B.3.1-1: Additional Maximum Power Reduction (A-MPR) for category NB1 and NB2 UE

|  |  |  |  |
| --- | --- | --- | --- |
| Network Signalling value | Requirements (subclause) | E-UTRA Band | A-MPR (dB) |
| NS\_01 | 6.5B.4.2 | Table 5.2-1 | N/A |
| NS\_24 | 6.5B.4.4.3 | 256 | PC3 | PC5 |
|  |  |  | ≤ 3.5 | ≤ 0.5 |
| NS\_02N | 6.5B.4.4.2 | 255 | N/A |
| NS\_03N | 6.5B.4.4.4 | 249, 254 | N/A |
| NS\_04N | 6.5B.4.4.5 | 249, 254 | 6.2B.3.1 |
| NS\_05N | 6.5B.4.4.6 | 249, 254 | 6.2B.3.2 |
| NS\_06N | 6.5B.4.4.7 | 252 | N/A |
| NS\_07N | 6.5B.4.4.7 | 252 | N/A |
| NS\_08N | 6.5B.4.4.7 | 252 | N/A |
| NS\_11N | 6.5B.4.4.5 | 249, 254 | 6.2B.3.3 |
| NS\_12N | 6.5B.4.4.6 | 249, 254 | 6.2B.3.4 |

* **Option 3:**

#### 6.2B.3.1 General

Additional ACLR and spectrum emission requirements can be signalled by the network to indicate that the UE shall also meet additional requirements in a specific deployment scenario. To meet these additional requirements, Additional Maximum Power Reduction (A-MPR) is allowed for the output power are specified. For the agreed E-UTRA bands for category NB1 and NB2 UE an A-MPR of 0 dB shall be allowed unless specified otherwise.

For UE Power Class 3 and 5 the specific requirements and identified subclauses are specified in Table 6.2B.3.1-1 along with the allowed A-MPR values that may be used to meet these requirements. The allowed A-MPR values specified below in Table 6.2B.3.1-1 are in addition to the allowed MPR requirements specified in subclause 6.2B.2-1. When extended guard band is provided by SAN and UE indicates capability of *extendedGuardBand-A-MPR-r19*, UE sets value of X to indicated value*,* otherwise *value of* X is 0 kHz.

Table 6.2B.3.1-1: Additional Maximum Power Reduction (A-MPR) for category NB1 and NB2 UE

|  |  |  |  |
| --- | --- | --- | --- |
| Network Signalling value | Requirements (subclause) | E-UTRA Band | A-MPR (dB) |
| NS\_01 | 6.5B.4.2 | Table 5.2-1 | N/A |
| NS\_24 | 6.5B.4.4.3 | 256 | PC3 | PC5 |
|  |  |  | ≤ 3.5 | ≤ 0.5 |
| NS\_02N | 6.5B.4.4.2 | 255 | N/A |
| NS\_03N |  6.5B.4.4.4 | 249, 254 | N/A |
| NS\_04N | 6.5B.4.4.5 | 249, 254 | 6.2B.3.1 |
| NS\_05N | 6.5B.4.4.5 | 249, 254 | 6.2B.3.2 |
| NS\_06N | 6.5B.4.4.7 | 252 | N/A |
| NS\_07N | 6.5B.4.4.7 | 252 | N/A |
| NS\_08N | 6.5B.4.4.7 | 252 | N/A |
| NS\_11N |  6.5B.4.4.5 | 249, 254 | 6.2B.3.3 |
| NS\_12N | 6.5B.4.4.6 | 249, 254 | 6.2B.3.4 |

#### 6.2B.3.2 A-MPR for NS\_04N

If X=100 kHz, as defined in clause 6.2B.3.1, A-MPR is equal to 0 dB.

#### 6.2B.3.3 A-MPR for NS\_05N

If X=100 kHz, as defined in clause 6.2B.3.1, A-MPR is equal to 0 dB.

6.5B.3.3.3 Requirements for network signalling value "NS\_04N"

As specified in 6.5A.3.3.2, except that (ΔfOOB) starting from the ± edge ± X kHz of the assigned category NB1 or NB2 channel bandwidth, where X is defined in 6.2B.3.1.

6.5B.3.3.4 Requirements for network signalling value “NS\_05N"

As specified in 6.5A.3.3.3, except that (ΔfOOB) starting from the ± edge ± X kHz of the assigned category NB1 or NB2 channel bandwidth, where X is defined in 6.2B.3.1.

6.5B.3.3.5 Requirements for network signalling value “NS\_11N"

As specified in 6.5A.3.3.2, except that (ΔfOOB) starting from the ± edge ± X kHz of the assigned category NB1 or NB2 channel bandwidth, where X is defined in 6.2B.3.1.

6.5B.3.3.6 Requirements for network signalling value “NS\_12N"

As specified in 6.5A.3.3.3, except that (ΔfOOB) starting from the ± edge ± X kHz of the assigned category NB1 or NB2 channel bandwidth, where X is defined in 6.2B.3.1.

**Agreement:** Option 2 is agreeable.

* **Note:** A specific draft CR was proposed for agreement at this meeting (R4-2511076)

2.4.1.3 LS

* R4-2512550 LS Reply on precompensation for NB-IoT NTN TDD mode, To RAN1
	+ Source: Iridium Satellite LLC
	+ Decision: Approved

2.4.1.4 Remaining open issues (RAN4 UE/SAN RF)

**Agreement:** Interested companies to consider bringing contributions at next meeting with respect to Extended Guard Band as part of NS update for band 249, with or without requiring a UE specific capability introduction.

2.4.1.5 Agreements during RAN4#116 UE/SAN RF Post-meeting email discussions

* + R4-2511124 (IoT\_NTN\_TDD) Big CR to 36.102 Rel19 UE RF
		- 36.102 v19.0.0 CR-0092 rev Cat: B (Rel-19) *Source: Iridium, THALES*
		- Decision: Agreed
	+ R4-2511149 (IoT\_NTN\_TDD) Big CR to 36.108 Rel19 SAN RF
		- 36.108 v19.0.0 CR-0038 rev Cat: B (Rel-19) Source: Iridium, THALES
		- Decision: Agreed

2.4.2 Agreements during RAN4#116 **RRM**

**Issue 0-A: Measurement resources**

Agreement:

* RRM measurement requirements should be defined based on NRS rather than NSSS for the detected cells.
* For cell measurement in connected mode (8.14A) and RLM (7.23A), the requirement and corresponding test case should be defined such that the capability of NRS monitoring on DL NB-IoT subframes during ongoing UL transmissions is not mandatory.

**Issue 0-B: DRX**

Agreement:

* No RRM requirements in Rel-19 when DRX cycle is equal to or larger than 5.12s

**Issue 1: Cell reselection (4.6A.2)**

Agreement:

* No RRM requirements are defined for scenarios involving WUS.
* No RRM requirements are defined for scenarios involving PUR.
* No RRM requirements are defined for eDRX.
* Define RRC Idle measurement requirements for cell reselection based on Table 4.6A.2.2-1 and Table 4.6A.2.5-1, for intra-frequency and inter-frequency scenarios, respectively.
* Tdetect,NB\_Intra -NC, Tmeasure,NB\_Intra -NC and Tevaluate, NB\_intra -NC for **intra-frequency** based on Table 4.6A.2.2-1

|  |  |  |  |
| --- | --- | --- | --- |
| DRX cycle length [s] | Tdetect,NB\_Intra\_NC [s] (number of DRX cycles) | Tmeasure,NB\_Intra\_NB\_NC [s] (number of DRX cycles) | Tevaluate,NB\_intra\_NB\_NC [s] (number of DRX cycles) |
| 0.32 | 5.12 (16) | 1.28 (4) | 2.56 (8) |
| 0.64 | 5.12 (8) | 1.28  | 2.56 (4) |
| 1.28 | 5.12 (4) | 1.28 (1) | 2.56 (2) |
| 2.56 | 10.24 (4) | 2.56 (1) | 5.12 (2) |
| 5.12 | No requirement in Rel-19 | No requirement in Rel-19 | No requirement in Rel-19 |
| 10.24 | No requirement in Rel-19 | No requirement in Rel-19 | No requirement in Rel-19 |

* + Tdetect,NB\_Inter\_NC, Tmeasure,NB\_Inter\_NC and Tevaluate,NB\_Inter\_NC for **inter-frequency** based on Table 4.6A.2.5-1

|  |  |  |  |
| --- | --- | --- | --- |
| DRX cycle length [s] | Tdetect,NB\_Inter\_ NC [s] (number of DRX cycles) | Tmeasure,NB\_Inter\_ NC [s] (number of DRX cycles) | Tevaluate,NB\_Inter\_ NC [s] (number of DRX cycles) |
| 0.32 | 5.12 (16) | 1.28 (4) | 2.56 (8) |
| 0.64 | 5.12 (8) | 1.28  | 2.56 (4) |
| 1.28 | 5.12 (4) | 1.28 (1) | 2.56 (2) |
| 2.56 | 10.24 (4) | 2.56 (1) | 5.12 (2) |
| 5.12 | No requirement in Rel-19 | No requirement in Rel-19 | No requirement in Rel-19 |
| 10.24 | No requirement in Rel-19 | No requirement in Rel-19 | No requirement in Rel-19 |

**Issue 2: Cell measurement in connected mode (8.14A)**

Agreement:

* For connected mode channel quality report, reuse the existing requirement
* Intra-frequency serving cell measurement requirement
	+ When DRX is not in use
		- Reuse the existing requirements
	+ When DRX is in use
		- Reuse the existing value of Tmeasure\_intra (s) = 5 DRX cycles
		- No requirement in Rel-19 when DRX cycle is 5.12s and larger.
* Intra-satellite **neighbor cell measurement** requirements
	+ When DRX is not in use:
		- Tdetect\_intra\_NB1-NC and Tmeasure \_intra\_NB1-NC are
			* 1.89 sec and 800 ms
	+ When DRX is in use:
		- * Tdetect\_intra\_NB1-NC = 10 DRX cycles
			* Tmeasure \_intra\_NB1-NC = 2 DRX cycles
			* No requirement in Rel-19 when DRX cycle is 5.12s and larger.
			* Scale Tdetect\_intra\_NB1-NC and Tmeasure \_intra\_NB1-NC by a factor of 2, when the UE measures cells across 3 or more different patterns of DL opportunities
* Inter-satellite measurements mode and inter-frequency measurement requirement
	+ Reuse the existing requirement
	+ No requirement in Rel-19 when DRX cycle is 5.12s and larger.

**Issue 3: RRC re-establishment (6.5A)**

Agreement:

* Tsearch\_NB1-NC,i in RRC re-establishment requirement is
	+ If the target cell is *known*, then Tsearch\_NB1-NC,i = 0 ms. If the target cell is unknown, Tsearch\_NB1-NC,i = Ksatellite,i \*2.52 sec.
	+ FFS the definition of Ksatellite,i

**Issue 4: RRC Connection redirection to Non-Anchor Carrier (6.9A)**

Agreement:

* Tperiod\_DL\_bitmap: It is hardcoded as zero in RRM spec.

**Issue 5: RLM (7.23A)**

Agreement:

* Rmax
	+ For the RLM requirement definition, the applicable Rmax should be limited to [2]. Additionally, the ‘Maximum NPDCCH Repetition Level’ should be modified from Rmax/4 in the existing NB-NTN requirements to Rmax/2.

Agreement:

* Rmax
	+ The RLM requirements in terms of RLF evaluation period are applicable only when the configured Rmax is equal to 2.
	+ Rmax is configurable by NW.
* OOS and IS evaluation periods
	+ When DRX is not in use,
		- 800 ms and 200 ms for OOS and IS, respectively.
	+ When DRX is in use,
		- 8 DRX cycles for 0.256 ≤ DRX cycle ≤ 1.024
		- 4 DRX cycles for 1.024 < DRX cycle ≤ 3.072
		- 3 DRX cycle for 4.096 < DRX cycle < 5.12
* Agreement:
	+ R4-2511349 (IoT\_NTN\_TDD) Big CR 36.133 R19 UE RRM
		- 36.133 v19.1.0 CR-7394 rev Cat: B (Rel-19) Source: Iridium, THALES, Qualcomm Inc, Nordic Semi, Huawei, HiSilicon, Nokia
		- Decision: Agreed

2.4.3 Remaining open issues (RAN4 RRM)

**To be further discussed and concluded in RAN4#116-bis**:

* Change ‘110 ms’ in the following bullets to an integer number of 90ms + DL-to-UL gap within the 90 ms TDD pattern, where the exact value is TBD upon completion of RAN1 spec.
	+ TRRC\_procedure\_delay: It is the RRC procedure for processing the received message “CarrierConfigDedicated-NB”. It shall be less than 110 ms.
	+ When the NPUSCH ACK transmission for the received RRC message takes longer than 110ms, the overall RRC connection redirection delay may be extended.
* TBD for the values of 10 ms, 40 ms, and 8 ms in the following bullets, and whether to retain the *DL-Bitmap-NB* IE upon completion of RAN1 and RAN2 spec:
	+ TDL-UL switch: It is the time between the end of the last subframe in the repetition period of NPDCCH received on the non-anchor carrier and the start of the first subframe in the repetition period of the corresponding NPUSCH transmitted on the non-anchor carrier.
		- Option 1: TDL-UL switch is 8 ms.
		- Option 2: TDL-UL switch is 50 ms (THALES, Iridium)

## **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.

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

## **4. References**

## **4.1** **RAN1**

## **RAN1#122 meeting, Bengaluru, India, Aug 25th – 29th, 2025**

IoT-NTN TDD mode – papers

* R1-2505220 Maintenance on IoT-NTN TDD mode Huawei, HiSilicon
* R1-2505279 Maintenance on TDD NB-IoT NTN Ericsson
* R1-2505319 Maintenance on IoT-NTN TDD mode CATT
* R1-2505391 Maintenance on IoT-NTN TDD mode vivo
* R1-2505439 Remaining issues on the support of IoT NTN TDD mode Xiaomi
* R1-2505504 Remaining issues on IoT-NTN TDD mode ZTE Corporation, Sanechips
* R1-2505556 Remaining issues on IoT-NTN TDD mode Samsung
* R1-2505715 Discussion on IoT-NTN TDD mode OPPO
* R1-2505861 Maintenance on IoT-NTN TDD mode Nokia, Nokia Shanghai Bell
* R1-2505866 Remaining aspects and naming convention for IoT NTN TDD Iridium Satellite LLC
* R1-2506192 IOT-NTN TDD mode Qualcomm Incorporated
* R1-2506328 Maintenance on IoT-NTN TDD mode THALES
* R1-2506398 Feature lead summary #1 on IoT-NTN TDD mode Moderator (Qualcomm Incorporated)
* R1-2506534 [DRAFT] LS on updated text proposal for 36.300 for IoT NTN TDD mode Qualcomm
* R1-2506535 LS on updated text proposal for 36.300 for IoT NTN TDD mode RAN1, Qualcomm
* R1-2506563 Session notes for 8.11 (Maintenance on Non-Terrestrial Networks (NTN) for NR Phase 3, Internet of Things (IoT) Phase 3, and IoT-NTN TDD mode) Ad-Hoc Chair (Huawei)

IoT-NTN TDD mode – papers related to UE features

* R1-2505341 Discussion on UE features for IoT-NTN TDD mode CATT
* R1-2505347 UE features for IoT-NTN TDD mode Huawei, HiSilicon
* R1-2505402 UE features for IoT-NTN TDD mode vivo
* R1-2505449 Discussion on UE features for IoT-NTN TDD mode Xiaomi
* R1-2505507 Discussion on the UE feature for IoT-NTN TDD ZTE Corporation, Sanechips
* R1-2505569 UE features for IoT NTN TDD mode Samsung
* R1-2505710 Discussion on UE features for IoT-NTN TDD mode OPPO
* R1-2506203 UE features for IOT-NTN TDD mode Qualcomm Incorporated
* R1-2506291 Discussion on UE features for IoT-NTN TDD mode NTT DOCOMO, INC.
* R1-2506419 Session Notes of AI 9.10 Ad-Hoc Chair (NTT DOCOMO, INC.)

## **4.2 RAN2**

## **RAN2#131 meeting, Bengaluru, India, Aug 25th – 29th, 2025**

IoT-NTN TDD mode – papers

* R2-2505018 LS on TP for 36.300 for IOT NTN TDD mode (R1-2504883)
* R2-2505109 Discussion on support of IoT-NTN TDD mode Xiaomi
* [R2-2505111](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_131/Docs/R2-2505111.zip) Introduction of IoT NTN TDD mode Xiaomi
* R2-2505144 Final aspects on loT NTN TDD mode Iridium Satellite LLC
* R2-2505148 Introduction of capabilities for IoT NTN TDD Samsung
* R2-2505232 Discussion on support of NB-IoT NTN TDD CATT
* R2-2505248 Introduction of IoT NTN TDD mode Huawei, HiSilicon
* [R2-2505250](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_131/Docs/R2-2505250.zip) Introduction of IoT NTN TDD mode TOYOTA Info Technology Center
* R2-2505256 Stage 2 CR for Introduction of IoT NTN TDD mode Iridium Satellite LLC
* R2-2505287 Remaining issues for IoT NTN TDD ZTE Corporation, Sanechips
* R2-2505385 Report of [Post130][314][IoT NTN TDD] capability CR Samsung
* R2-2505539 Discussion on new NB-IoT NTN TDD mode Qualcomm Incorporated
* R2-2505553 Discussion on IoT NTN TDD mode OPPO
* R2-2505634 Remaining issues on support of TDD mode for IoT-NTN Nokia, NSB
* R2-2505701 On early implementation of the IoT-NTN TDD mode Nordic Semi, Iridium, Thales
* R2-2505738 Remaining issues of IoT NTN TDD Huawei, HiSilicon
* R2-2505919 On open issues for IoT NTN TDD Samsung
* R2-2505960 Remaining issues on support of IoT-NTN TDD mode CMCC
* R2-2506176 Remaining issues for IoT-NTN TDD mode THALES
* R2-2506300 LS out: To RAN1 on RAN2 agreement regarding OCC support for IoT NTN TDD Xiaomi

## 4.3 RAN3

## **4.4 RAN4**

**RAN4#116 meeting, Bengaluru, India, Aug 25th – 29th, 2025**IoT-NTN TDD mode – papers

* R4-2509072 Topic summary for [115][230] IoT\_NTN\_TDD Moderator (Qualcomm)
* R4-2509422  LS Reply on precompensation for NB-IoT NTN TDD mode   Iridium Satellite LLC
* R4-2510364  draftCR to TS36.108 Add EVM requirement for IoT-NTN TDD band      ZTE Corporation, Sanechips
* R4-2510365  draftCR to TS36.102 Add blocking requirement for IoT-NTN TDD band ZTE Corporation, Sanechips
* R4-2510509  NTN nominated bandwidth Ericsson
* R4-2510705  (IoT\_NTN\_TDD-Core) CR on frequency error requirement for IoT\_NTN\_TDD    LG Electronics France
* R4-2510969  Benefits of Nominated BW for 249    Qualcomm Inc
* R4-2510970  Draft CR 36.102 on Flexible guard band for 249  Qualcomm Inc, Sony
* R4-2510971  Draft CR 36.102 on Guard band for 249     Qualcomm Inc
* R4-2511076  Draft CR to TS36.102 on  A-MPR for IoT-NTN TDD band   Nordic Semi
* R4-2511218  Draft CR on TS 36.102 Clause 5 - IoT\_NTN\_TDD    THALES, Iridium
* R4-2511220  Draft CR on TS 36.102 Clause 6.2B.1 - IoT\_NTN\_TDD     THALES, Iridium
* R4-2511227  Draft CR on TS 36.102 Clause 6.4B - IoT\_NTN\_TDD THALES, Iridium
* R4-2511236  Draft CR on TS 36.108 Clauses 3, 4.5, 4.6 and 5 - IoT\_NTN\_TDD     THALES, Iridium
* R4-2511247  Draft CR on TS 36.108 Clauses 6 and 7 - IoT\_NTN\_TDD   THALES, Iridium
* R4-2511267  Draft CR on TS 36.108 Clauses 9 and 10 - IoT\_NTN\_TDD  THALES, Iridium
* R4-2511349 Big CR 36.133 R19 UE RRM (Cat-B) Iridium, THALES, Qualcomm Inc, Nordic Semi, Huawei, HiSilicon, Nokia
* R4-2511164 Further Updates on UE RF requirements for NTN NB-IoT TDD Thales, Iridium
* R4-2510208 Discussion on UE RF requirements for NTN NB-IoT TDD mode Nordic
* R4-2511210 Further Updates on SAN RF requirements for NTN NB-IoT TDD Thales, Iridium
* R4-2509535 On A-MPR values for the IOT TDD band Apple
* R4-2509226 Discussion on RRM requirements for IoT-NTN TDD mode MediaTek
* R4-2510209 On reply to RAN1 LS on frequency and time pre-compensations Nordic Semi
* R4-2510604 Discussion on RRM impact due to periodic pattern for IoT NTN Huawei
* R4-2511163 Further Updates on RRM requirements for NTN NB-IoT TDD Thales, Iridium
* R4-2511280 On the measurement framework for the new IOT NTN TDD Punctured frame Nokia
* R4-2511510 RRM requirements for IoT NTN in TDD mode Qualcomm
* R4-2512149 WF on RRM requirements for IoT\_NTN\_TDD Moderator (Qualcomm)
* R4-2512550 LS Reply on precompensation for NB-IoT NTN TDD mode (revision of R4-2509422)
* R4-2512666 WF for [116][316] IoT\_NTN\_TDD\_UE\_SAN\_RF Moderator(Thales)