**3GPP TSG-RAN WG4 Meeting #107 R4-23XXXXX**

**Incheon, KR, 22 – 26 May, 2023**

**Agenda item:** 4.7

**Source:** Moderator (Huawei, HiSilicon)

**Title:** Topic summary for [107][201] Maintenance\_up\_to\_R16

**Document for:** Information

# Introduction

*The document summarizes papers submitted to AI 4.4 on Rel-15 and Rel-16 maintenance. One Tdoc R4-2308690 from Huawei is moved to email thread [202].*

*Open issues are based on Discussion paper. Based on Chair’s guidance, all CRs in this email thread will be first handled in NWM flagging procedure which will be triggered separately.*

# Topic #1: Open issues in RRM maintenance up to Rel-16

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| ***Tdocs related to issue sub-topic 1*** | | |
| [**R4-2309320**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309320.zip) | Samsung | **Proposal 1: The following text proposals for MTTD/MRTD are captured in TS38.133 from Rel-16, to clarify Type-2 UE supporting Inter-band EN-DC with overlapping DL bands for non-collocated synchronous deployment.**    **Proposal 2: Similar text proposals for MTTD/MRTD are captured in TS38.133 from Rel-16 for Type 2 NE-DC UE.**  **Proposal A-1: RAN4 shall acknowledge the clarification note in TS38.101-3 is the basis for 3us MRTD requirement (defined in section 7.6.3) being applicable for Rel-15 UE for DC\_42\_77 or DC\_42\_78 (i.e., inter-band EN-DC/NE-DC with overlapping DL bands).** |
| [**R4-2309321**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309321.zip) | Samsung | CR for Rel-16:  For E-UTRA TDD-NR TDD inter-band synchronous EN-DC and NE-DC with overlapping DL bands, the MRTD and MTTD requirements are provided for Type-2 UE (which supports *interBandMRDC-WithOverlapDL-Bands-r16*). |
| [**R4-2307659**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307659.zip) | Apple | **Observation 1: For TDD-TDD EN-DC with overlapping frequency, the MTTD/MRTD requirement for asynchronous operation in 7.5.2/7.6.2 is not applicable.**  **Observation 2: For Rel-15 UE supporting TDD-TDD EN-DC with overlapping frequency, only the MTTD/MRTD requirement for intra-band collocated case in 7.5.3/7.6.3 is applicable.**  **Proposal 1: It is proposed to clarify the requirement applicability in Observation 1&2 for MRTD/MTTD requirement from Rel-15.**  **Proposal 2: It is proposed to apply the MTTD/MTRD requirement for synchronous operation in 7.5.2.1/7.5.5.1/7.6.2.1/7.6.5.1 for TDD inter-band EN-DC/NE-DC with overlapping frequency from R16.**  **Proposal 3: It is proposed to update the description for *interBandMRDC-WithOverlapDL-Bands-r16* as following:** |
| [**R4-2307660**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307660.zip) | Apple | CR for Rel-15:   * Clarify that the asynchronous MRTD/MTTD requirements are not applicable for TDD-TDD inter-band EN-DC/NE-DC with overlapping frequency. * Clarify that only collocated case is considered in this release of the specification for TDD-TDD inter-band EN-DC/NE-DC with overlapping frequency. |
| [**R4-2307661**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307661.zip) | Apple | CR for Rel-16:   * Clarify that the asynchronous MRTD/MTTD requirements are not applicable for TDD-TDD inter-band EN-DC/NE-DC with overlapping frequency. * Delete redundant paragraph in 7.6.5. |
| [**R4-2307664**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307664.zip) | Apple | LS to RAN2 to update the description for interBandMRDC-WithOverlapDL-Bands-r16 |
| [**R4-2309117**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309117.zip) | Nokia, Nokia Shanghai Bell, Ericsson | CR for Rel-16:  Update MRTD and MTTD requirements for non-collocated inter-band EN-DC with overlapping bands due to UE capability of interBandMRDC-WithOverlapDL-Bands-r16. |
| [**R4-2309121**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309121.zip) | Nokia, Nokia Shanghai Bell | 1. The impact of MRTD/MTTD requirements for non-collocated inter-band EN-DC with overlapping bands in R18 should be captured in R18 ongoing WI NonCol\_intraB\_ENDC\_NR\_CA 2. **Impact on Rel-18 MRTD/MTTD requirements due to UE capability of *interBandMRDC-WithOverlapDL-Bands-r16* is introduced in R18 WI NonCol\_intraB\_ENDC\_NR\_CA.** 3. **Impact on legacy MRTD/MTTD requirements due to UE capability of *interBandMRDC-WithOverlapDL-Bands-r16* is introduced for Rel-16 and Rel-17.** 4. **No impact on Rel-15 MRTD/MTTD requirements due to UE capability of *interBandMRDC-WithOverlapDL-Bands-r16*.** |
| ***Tdocs related to issue sub-topic 2*** | | |
| [**R4-2308684**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308684.zip) | Huawei, HiSilicon | CR:   1. To clarify that the pathloss reference signal in FR1 is always considered as known. 2. To clarify that longer application time is expected if the target PL-RS is an SSB in FR2. |
| [**R4-2308751**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308751.zip) | Nokia, Nokia Shanghai Bell | 1. The PL-RS is maintained provided UE is not having more than 4 different PL-RS for all activated UL TCI states for PUSCH, PUCCH and SRS transmissions. 2. RAN4 shall define the conditions when a PL-RS is assumed being maintained. 3. The PL-RS is maintained provided:    * **There are no more than 4 different RS configured as PL-RS per serving cell for all active UL TCI states (UL TCI state or joint TCI state) for PUSCH/PUCCH/SRS transmissions.**    * **The target pathloss reference signal remains detectable during TCI state switching period**      + **SNR of the target pathloss reference signal≥-3dB**    * **The associated SSBs with the target pathloss reference signal remain detectable during the TCI state switching period.**      + **SNR of the associated SSB ≥-3dB** |
| [**R4-2308752**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308752.zip) | Nokia, Nokia Shanghai Bell | CR:  Inclusion of conditions for PL-RS maintenance. In this CR we change the specification according to the discussions in RAN4#106 meeting and the proposal in R4-2308751 |
| ***Tdocs related to issue sub-topic 3*** | | |
| [**R4-2307713**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307713.zip) | vivo | **Observation 1: Since no report is needed for CHO if conditions are met, the measurement delay for CHO should not be dependent on configuration of whether SSB index is to be reported or not**  **Proposal 1: For the case that SSB index time is needed for CHO and CPC when *deriveSSB-IndexFromCell* or *deriveSSB-IndexFromCellInter-r17* is NOT enabled, the SSB index detection time is always needed. Correspondingly, the existing requirements on CHO can be improved as:**   * **Only consider the case of “without acquiring the index of the SSB”in the measurement delay. And RAN4 to define a separate time for acquiring the SSB index TSSB\_time\_index\_cond**   + **the value of TSSB\_time\_index \_cond could be [1] \*Trs for intra-freq measurement and [1 or 3] \*Trs for inter-freq measurement** |
| [**R4-2307714**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307714.zip) | vivo | CR:   1. Define the SSB index detection time TSSB\_time\_index\_cond and add it to the FR1-FR1 conditional handover delay requirement. 2. Delte the scenario of with acquiring SSB index from measurement time for FR1-FR1 conditional handover delay requirement. 3. Define the SSB index detection time TSSB\_time\_index\_cond and add it to the FR2-FR2 conditional handover delay requirement. 4. Add the corresponding definition of Tinterrupt in the delay requirement on FR2-FR2 conditional handover 5. Delte the scenario of with acquiring SSB index from measurement time in FR2-FR2 conditional handover delay requirement. 6. define the SSB index detection time TSSB\_time\_index\_cond and add it to the conditional PSCell change delay requirement. 7. Delte the scenario of with acquiring SSB index from measurement time in conditional PSCell change delay requirement. |
| ***Tdocs related to issue sub-topic 4*** | | |
| [**R4-2307201**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307201.zip) | Nokia, Nokia Shanghai Bell | [**Observation 1:** Intra-frequency measurement test cases in A.10, A11, and A.13 do not have test parameters and maximum measurement reporting delay D1.](#_Toc135069718)  [**Proposal 1: RAN4 to discuss test parameters for at least few intra frequency measurement procedure test cases for EN-DC and SA operation.**](#_Toc135069719)  [**Proposal 2: RAN4 to discuss the measurement report with delay D1 for intra frequency measurement procedure test cases.**](#_Toc135069720) |
| [**R4-2307202**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307202.zip) | Nokia, Nokia Shanghai Bell | CR:  Addition of parameters related to intra-freuqency measurement procedure with CCA.  New parameter tables based on configuration 3 of Table A.6.6.1.1.2-2 and Table A.6.6.1.1.2-3, where   * some of the configurations were changed to CCA specific configurations * CCA model parameters were included * Noc, Es/Iot, Et/Iot, RSRP, and Io are kept in brackets for further verification. |

## Open issues summary

### Sub-topic 1-1: MRTD/MTTD requirement applicability for EN-DC/NE-DC

* Background
  + The concerned scenario is TDD-TDD inter-band EN-DC/NE-DC with overlapping frequency
  + Taking MRTD for EN-DC as example,
    - Current requirements in 7.6.2

**Table 7.6.2-1: Maximum receive timing difference requirement for asynchronous EN-DC**

|  |  |  |
| --- | --- | --- |
| Sub-carrier spacing of E-UTRA cell in MCG (kHz) | DL Sub-carrier spacing of cell in SCG (kHz) (Note 1) | Maximum receive timing difference (µs) |
| 15 | 15 | 500 |
| 15 | 30 | 250 |
| 15 | 60 | 125 |
| 15 | 120Note2 | 62.5 |
| NOTE 1: DL Sub-carrier spacing is min{SCSSS, SCSDATA}.  NOTE 2: For E-UTRA FDD-NR FDD intra-band EN-DC, for which the requirement is defined in clause 7.6.3 and this Table 7.6.2-1 is also applicable, the scenario with 120 kHz does not exit. | | |

* + - Current requirements in 7.6.2.1

**Table 7.6.2.1-1: Maximum receive timing difference requirement for inter-band synchronous EN-DC**

|  |  |  |
| --- | --- | --- |
| Sub-carrier spacing of E-UTRA cell in MCG (kHz) | DL Sub-carrier spacing of cell in SCG (kHz) (Note1) | Maximum receive timing difference (µs) |
| 15 | 15 | 33 |
| 15 | 30 |  |
| 15 | 60 |  |
| 15 | 120 |  |
| Note 1: DL Sub-carrier spacing is min{SCSSS, SCSDATA}. | | |

* + - Current requirements in 7.6.3

**Table 7.6.3-1 Maximum receive timing difference requirement for intra-band synchronous EN-DC**

|  |  |  |
| --- | --- | --- |
| Sub-carrier spacing of E-UTRA cell in MCG (kHz) | DL Sub-carrier spacing of cell in SCG (kHz) Note1 | Maximum receive timing difference (µs) |
| 15 | 15 | 3 |
| 15 | 30 | 3 |
| 15 | 60 | 3 |
| NOTE 1: DL Sub-carrier spacing is min{SCSSS, SCSDATA}. | | |

#### Issue 1-1-1: Update of MRTD/MTTD requirement applicability in Rel-15

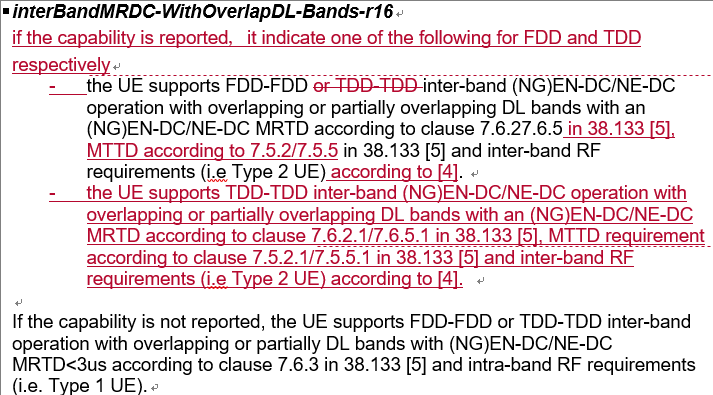
* Proposals
  + Option 1 (Apple, Samsung): clarify the applicability of MRTD/MTTD in Rel-15
    - For TDD-TDD EN-DC with overlapping frequency, the MTTD/MRTD requirement for asynchronous operation in 7.5.2/7.6.2 is not applicable.
    - For Rel-15 UE supporting TDD-TDD EN-DC with overlapping frequency, only the MTTD/MRTD requirement for intra-band collocated case in 7.5.3/7.6.3 is applicable.
  + Option 2 (Nokia, Ericsson): No impact on Rel-15 MRTD/MTTD requirements due to UE capability of interBandMRDC-WithOverlapDL-Bands-r16
* Recommended WF
  + Discuss which MRTD/MTTD requirements should apply in Rel-15 for TDD-TDD inter-band EN-DC/NE-DC with overlapping frequency.
  + Discuss whether and how to update Rel-15 requirements based on common understanding.

#### Issue 1-1-2: Update of MRTD/MTTD requirement applicability in Rel-16

* Proposals
  + Case 1: If UE indicates that it is capable of interBandMRDC-WithOverlapDL-Bands-r16
    - Option 1 (Samsung, Apple, Nokia, Ericsson):
      * apply the MTTD/MTRD requirement for synchronous operation in 7.5.2.1/7.6.2.1 for EN-DC and in 7.5.5.1/7.6.5.1 for NE-DC
  + Case 2: If UE indicates that it is not capable of interBandMRDC-WithOverlapDL-Bands-r16
    - Option 1 (Samsung, Apple):
      * apply the MTTD/MTRD requirement for synchronous operation in 7.5.3/7.6.3 for EN-DC and NE-DC
* Recommended WF
  + For Case 1, all companies agree on option 1, so it is suggested to agree on option 1.
  + For Case 2, check if option 1 is agreeable

#### Issue 1-1-3: Update of UE capability interBandMRDC-WithOverlapDL-Bands-r16

* Proposals
  + Option 1 (Apple): update the description for interBandMRDC-WithOverlapDL-Bands-r16 as following



* Recommended WF
  + Discuss whether to send LS to RAN2 to update the UE capability in 36306, and if so, whether wording in option 1 (draft LS R4-2307664) is agreeable.

#### Issue 1-1-4: Update of MRTD/MTTD requirement applicability in Rel-18

* Proposals
  + Option 1 (Nokia): Impact on Rel-18 MRTD/MTTD requirements due to UE capability of interBandMRDC-WithOverlapDL-Bands-r16 is introduced in R18 WI NonCol\_intraB\_ENDC\_NR\_CA.
* Recommended WF
  + Moderator understands the change to MRTD/MTTD requirement applicability is same from Rel-16 onwards, so the question is whether to agree on Cat-A for Rel-18 as part of RRM maintenance, or to agree on Cat-B CR for Rel-18 in NonCol\_intraB\_ENDC\_NR\_CA WI.
  + Ask for Chair’s opinion.

### Sub-topic 1-2: eMIMO

#### Issue 1-2-1: definition of ”maintained PL-RS”

* Proposals
  + Option 1 (Nokia): RAN4 shall define the conditions when a PL-RS is assumed being maintained. The PL-RS is maintained provided:
    - There are no more than 4 different RS configured as PL-RS per serving cell for all active UL TCI states (UL TCI state or joint TCI state) for PUSCH/PUCCH/SRS transmissions.
    - The target pathloss reference signal remains detectable during TCI state switching period
      * SNR of the target pathloss reference signal≥-3dB
    - The associated SSBs with the target pathloss reference signal remain detectable during the TCI state switching period.
      * SNR of the associated SSB ≥-3dB
* Recommended WF
  + Check if option 1 is agreeable

#### Issue 1-2-2: known status of PL-RS in FR1

* Proposals
  + Option 1 (Huawei): The pathloss reference signal in FR1 is always considered as known
* Recommended WF
  + Check if option 1 is agreeable

### Sub-topic 1-3: Mobility enhancement

#### Issue 1-3-1: SSB index reading time in CHO/CPC

* Proposals
  + Option 1 (vivo): when deriveSSB-IndexFromCell or deriveSSB-IndexFromCellInter-r17 is NOT enabled, the existing requirements on CHO/CPC can be improved as:
    - Only consider the case “without acquiring the index of the SSB” in the measurement delay.
    - Define a separate time for acquiring the SSB index TSSB\_time\_index\_cond, the value of T TSSB\_time\_index\_cond could be [1] \*Trs for intra-freq measurement and [1 or 3] \* Trs for inter-freq measurement
* Recommended WF
  + Check if option 1 is agreeable

### Sub-topic 1-4: NR-U

#### Issue 1-4-1: NR-U infra frequency RSRP test cases

* Proposals
  + Option 1 (Nokia):
    - RAN4 to discuss test parameters for at least few intra frequency measurement procedure test cases for EN-DC and SA operation.
    - RAN4 to discuss the measurement report with delay D1 for intra frequency measurement procedure test cases.
* Recommended WF
  + Discuss option 1, and whether to update TC list for infra-frequency RSRP

# Topic #2: CRs in RRM maintenance up to Rel-16

*Based on Chair’s guidance, all CRs in this email thread will be first handled in NWM flagging procedure which will be triggered separately. The list in this section is for information only.*

## CRs for Rel-15 core part

|  |  |  |
| --- | --- | --- |
| [**R4-2307620**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307620.zip) | CR of known cell condition for HO on 38.133 R15 | MediaTek inc. |
| [**R4-2308279**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308279.zip) | Correction to inter-RAT NR measurement requirements\_R15 | Huawei, HiSilicon |
| [**R4-2308518**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308518.zip) | Clarification to FR1 spatial relation activation | Nokia, Nokia Shanghai Bell |
| [**R4-2308556**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308556.zip) | Clarification to FR1 spatial relation activation | Nokia, Nokia Shanghai Bell |
| [**R4-2308733**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308733.zip) | CR on R15 SCell activation | ZTE |
| [**R4-2309110**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309110.zip) | 38.133 CR on interruptions at SCell activation and deactivation | Nokia, Nokia Shanghai Bell |

## CRs for Rel-15 performacne part

|  |  |  |
| --- | --- | --- |
| [**R4-2307082**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307082.zip) | CR on relationship between SNR, RSRP level and thresholds for FR1 BFD and LR | Anritsu Corporation |
| [**R4-2307083**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307083.zip) | CR on relationship between SNR, RSRP level and thresholds for FR1 BFD and LR | Anritsu Corporation |
| [**R4-2307084**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307084.zip) | CR on relationship between SNR, RSRP level and thresholds for FR1 BFD and LR | Anritsu Corporation |
| [**R4-2307133**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307133.zip) | CR on R15 NR Inter-RAT measurements testcase correction | Qualcomm Incorporated |
| [**R4-2307149**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307149.zip) | CR to TS 38.133: Corrections to NR RRM test cases (Rel 15) | Rohde & Schwarz |
| [**R4-2307175**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307175.zip) | 2AoA Relative angular offset between active probes for PC1 devices (Rel-15) | Keysight Technologies UK Ltd |
| [**R4-2307267**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307267.zip) | CR to FR2 RLM In-syn test cases (Cat-F Rel-15) | Qualcomm Incorporated |
| [**R4-2308283**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308283.zip) | Correction to inter-RAT NR measurement TCs\_R15 | Huawei, HiSilicon |
| [**R4-2308287**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308287.zip) | Correction to inter-frequency NR measurement TCs\_R15 | Huawei, HiSilicon, Starpoint |
| [**R4-2308680**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308680.zip) | CR on maintaining antenna connections for 4Rx capable UEs R15 | Huawei, HiSilicon |

## CRs for Rel-16 WIs

|  |  |  |
| --- | --- | --- |
| **LTE\_NR\_DC\_CA\_enh-Core** | | |
| [**R4-2308634**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308634.zip) | CR on direct SCell activation requirements | Huawei, HiSilicon |
| R4-2307240 | Updation of RRM DCCA SCell activation and deactivation test cases | Nokia, Nokia Shanghai Bell |
| **NR\_eMIMO-Core** | | |
| [**R4-2308684**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308684.zip) | CR on maintaining PL-RS switching delay requirements R16 | Huawei, HiSilicon |
| [**R4-2308752**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308752.zip) | CR for definition of PL-RS maintained in section 8.14 | Nokia, Nokia Shanghai Bell |
| **NR\_HST-Perf** | | |
| [**R4-2307260**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307260.zip) | Update to RRM idle mode HST test cases | Qualcomm Inc, |
| [**R4-2307179**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307179.zip) | Corrections to RRM HST A.6.1.1.7 (Rel-16) | Keysight Technologies UK Ltd |
| **NR\_IAB-Perf** | | |
| [**R4-2308301**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308301.zip) | CR on maintenance for IAB R16 | Huawei, HiSilicon |
| **NR\_Mob\_enh-Core** | | |
| [**R4-2307714**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307714.zip) | CR to TS 38.133: Correction to CHO and CPC requirements(Rel-16) | vivo |
| **NR\_RRM\_enh-Perf** | | |
| [**R4-2308291**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308291.zip) | Correction to UE specific CBW RMCs\_R16 | Huawei, HiSilicon |
| **NR\_unlic-Perf** | | |
| [**R4-2307202**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307202.zip) | CR correcting NR-U infra frequency RSRP test cases | Nokia, Nokia Shanghai Bell |
| [**R4-2308298**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308298.zip) | CR on TC maintenance for NR-U R16 | Huawei, HiSilicon |

## CRs for MRTD/MTTD maintenance

|  |  |  |
| --- | --- | --- |
| **[R4-2309321](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309321.zip)** | CR to TS38.133 on MTTD/MRTD requirements for inter-band EN-DC/NE-DC with overlapping DL bands for Rel-16 Type-2 UE | Samsung |
| [**R4-2307660**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307660.zip) | Clarification on MRTD/MTTD requirement for EN-DC/NE-DC in Rel-15 | Apple |
| [**R4-2307661**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307661.zip) | Clarification on MRTD/MTTD requirement for EN-DC/NE-DC in Rel-16 | Apple |
| [**R4-2309119**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309119.zip) | R16 38133CR on interruption requirement for FR1 non-collocated EN-DC | Nokia, Nokia Shanghai Bell |
| [**R4-2308687**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2308687.zip) | CR on interruption requirements due to UE capability interBandMRDC-WithOverlapDL-Bands R16 | Huawei, HiSilicon |
| [**R4-2309117**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2309117.zip) | R16 MRTD/MTTD requirement for non-collocated inter-band EN-DC with overlapping bands | Nokia, Nokia Shanghai Bell, Ericsson |

## CRs for A-GNSS

|  |  |  |
| --- | --- | --- |
| [**R4-2307153**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307153.zip) | CR to TS 38.171: Corrections to NR A-GNSS requirements (Rel 15) | Rohde & Schwarz |
| [**R4-2307420**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307420.zip) | CR on TS 38.171 requirements for relative signal power levels of BDS | CATT, CAICT, CENC |
| [**R4-2307421**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_107/Docs/R4-2307421.zip) | CR on TS 36.171 requirements for relative signal power levels of BDS | CATT, CAICT, CENC |