**3GPP TSG-RAN WG4 Meeting # 113 draftR4-2419605**

**Orlando, US, 18th – 22nd November, 2024**

**Agenda item:** 5.1.3

**Source:** Moderator (Nokia)

**Title:** Topic summary for [113][318] Demod\_Maintenance\_Part1

**Document for:** Information

# Introduction

*Briefly introduce background, the scope of this email discussion (e.g. list of treated agenda items) and provide some guidelines for email discussion if necessary.*

The **scope** of this topic summary for demod maintenance is:

4 Up to Rel-17 maintenance for LTE and NR and TEI

**4.6 Demodulation and CSI requirements [WI code]**

**4.8 Rel-15/16/17 TEI (demod relevant only) [TEI (I)dentifier]
(No submissions.)**

5 Rel-18 maintenance for LTE and NR closed work items

5.6 Air-to-ground network for NR

**5.6.4 Demodulation performance requirements [NR\_ATG-Perf]**

5.7 Further RF requirements enhancement for NR and EN-DC in FR1

**5.7.3 Demodulation and CSI requirements [NR\_ENDC\_RF\_FR1\_enh2-Perf]**

5.8 NR support for dedicated spectrum less than 5MHz for FR1

**5.8.4 Demodulation performance requirements [NR\_FR1\_lessthan\_5MHz\_BW-Perf]
(One initial wrong submission that has been moved to correct AI.)**

5.9 NB-IoT/eMTC core & perf. requirements for NTN

**5.9.4 Demodulation requirements [LTE\_NBIOT\_eMTC\_NTN\_req-Perf]**

# Topic #1: Up to Rel-17 maintenance for LTE and NR (4.6)

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **T-doc number** | **Company** | **Title** | **Proposals, Observations, Changes, Moderator remarks** | **Related WI** |
| [**R4-2417610**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417610.zip) | ROHDE & SCHWARZ, NOKIA | (NR\_cov\_enh-Perf) CR for 38.141-2 on removal of 4/8 Rx Branches for 8.2.13 test case | Removal of 4 and 8 demodulation branch requirements from 38.141-2 for BS Type 1-O. BS Type 2-O demodulation branch requirements are correct already and require no modification.Moderator note: Coversheet says NR\_newRAT. Please check with MCC whether this needs correction. | [**NR\_cov\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=900261) |
| R4-2417611 | ROHDE & SCHWARZ, NOKIA | (NR\_cov\_enh-Perf) CR for 38.141-2 on removal of 4/8 Rx Branches for 8.2.13 test case | Cat A | [**NR\_cov\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=900261) |
| [**R4-2417562**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417562.zip) | MediaTek inc., Huawei, HiSilicon | (NR\_demod\_enh2-Perf) CR for Rel-17 TS38.101-4, corrections on configurations for CQI reporting with inter-cell interference | 1. For FDD requirements in Clause 6.2.2.1.2.3 and 6.2.3.1.2.3, - modify the configuration of ZP CSI-RS from interference cell to k0 = Row5,(6)2. For TDD requirements in Clause 6.2.2.2.2.3 and 6.2.3.2.2.3, - modify the configuration of ZP CSI-RS in serving cell to k0 = Row5,(4)- modify the configuration of ZP CSI-RS for interference cell to k0 = Row5,(6)3. Add “:” in the caption of Table 6.2.2.1.2.3-14. Remove k1 or l1 from ZP and NZP CSI-RS configuration when there is no k1 or l1 from some CSI-RS resource configutation.5. Align the expression for configuraitons of ZP CSI-RS and NZP CSI-RS | [**NR\_demod\_enh2-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890255) |
| R4-2417563 | MediaTek inc., Huawei, HiSilicon | (NR\_demod\_enh2-Perf) CR for Rel-18 TS38.101-4, corrections on configurations for CQI reporting with inter-cell interference | Cat A | [**NR\_demod\_enh2-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890255) |
| [**R4-2417964**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417964.zip) | Rohde & Schwarz | (NR\_DL1024QAM\_FR1-Perf) Correction of Es level for SDR tests | Correct table entry for Es from dBm/kHz to dBm/Hz. | [**NR\_DL1024QAM\_FR1-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890256) |
| R4-2417965 | Rohde & Schwarz | (NR\_DL1024QAM\_FR1-Perf) Correction of Es level for SDR tests | Cat A | [**NR\_DL1024QAM\_FR1-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890256) |
| [**R4-2418952**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418952.zip) | Huawei,HiSilicon | (NR\_eMIMO-Perf) CR on UE CSI requirements | Modify CQI/RI/PMI delay to satisfy Note 2. See R4-2418944 for details.Moderator note: Related to issue 1-1-1. | [**NR\_eMIMO-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=800285) |
| R4-2418953 | Huawei,HiSilicon | (NR\_eMIMO-Perf) CR on UE CSI requirements | Cat A | [**NR\_eMIMO-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=800285) |
| R4-2418954 | Huawei,HiSilicon | (NR\_eMIMO-Perf) CR on UE CSI requirements | Cat A | [**NR\_eMIMO-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=800285) |
| [**R4-2418955**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418955.zip) | Huawei, HiSilicon | (NR\_FeMIMO-Perf) CR on UE CSI requirements | 1. Add applicability rules for CSI enhancement requirements for multi-TRP.2. Modify CQI/RI/PMI delay to satisfy Note 2. See R4-2418944 for details.Moderator note: Related to issue 1-1-1. | [**NR\_feMIMO-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860240) |
| R4-2418956 | Huawei,HiSilicon | (NR\_FeMIMO-Perf) CR on UE CSI requirements | Cat A | [**NR\_feMIMO-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860240) |
| [**R4-2419497**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2419497.zip) | Keysight Technologies | [NR\_HST\_FR1\_enh-Perf] Update FrequencyOccupation for CSI-RS for tracking in HST-SFN CA | Define a limitation on the number of PRB for FrequencyOccupation for TDD 20MHz and higher for CSI-RS resources for tracking. | [**NR\_HST\_FR1\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890258) |
| R4-2419498 | Keysight Technologies UK Ltd | [NR\_HST\_FR1\_enh-Perf] Update FrequencyOccupation for CSI-RS for tracking in HST-SFN CA (Rel-18) | Cat A | [**NR\_HST\_FR1\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890258) |
| [**R4-2417975**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417975.zip) | Nokia | (NR\_L1enh\_URLLC-Perf) CR for 38.101-4 on missing MCS table name in FRC | FRC “R.PDSCH.2-17.1 TDD” is missing the MCS table information | [**NR\_L1enh\_URLLC-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=830274) |
| R4-2417976 | Nokia | (NR\_L1enh\_URLLC-Perf) CR for 38.101-4 on missing MCS table name in FRC | Cat A | [**NR\_L1enh\_URLLC-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=830274) |
| R4-2417977 | Nokia | (NR\_L1enh\_URLLC-Perf) CR for 38.101-4 on missing MCS table name in FRC | Cat A | [**NR\_L1enh\_URLLC-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=830274) |
| [**R4-2417968**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417968.zip) | Nokia | (NR\_newRAT-Perf) CR for 38.101-4 on FRC corrections | Updates the identified “Max. Throughput averaged over 2 frames“ values to be floored (rounded down) where they previously were rounded up.Moderator note: Related to issue 1-2-1. | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2417969**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417969.zip) | Nokia | (NR\_newRAT-Perf) CR for 38.101-4 on FRC corrections | Moderator notes: Related to issue 1-2-1.Additional changes to initial Cat-F. Please check with MCC, whether NR\_newRAT WIC can be re-used. | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2417970**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417970.zip) | Nokia | (NR\_newRAT-Perf) CR for 38.101-4 on FRC corrections | Moderator notes: Related to issue 1-2-1.Additional changes to initial Cat-F. Please check with MCC, whether NR\_newRAT WIC can be re-used | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2417971**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417971.zip) | Nokia | (NR\_newRAT-Perf) CR for 38.101-4 on FRC corrections | Moderator notes: Related to issue 1-2-1.Additional changes to initial Cat-F. Please check with MCC, whether NR\_newRAT WIC can be re-used | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2417972**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417972.zip) | Nokia | (NR\_newRAT-Perf) Discussion on FRC corrections to maximum throughput | Discussion.Moderator note: Related to issue 1-2-1.**Observation 1**: “Round()” has been used in several FRCs value “Max. Throughput averaged over x frames”, which in some cases result in maximum throughput values that are higher than practically possible. For some FRCs no rounding was done (i.e. full value is kept).We see two ways to solve the problem. Either keep the exact maximum throughput values or use “floor” to 3 decimals (Mbps) instead of “round” to 3 decimals.**Proposal 1: Correct to use “floor()” of the “Max. Throughput averaged over x frames” parameters in the FRCs, where rounding has resulted in a higher throughput that is practically possible.****Proposal 2: For future FRCs always use ”floor()” with 3 decimals (Mbps) when defining the “Max. Throughput averaged over x frames” parameters.****Observation 2**: We have provided CRs for updates to FRCs for FDD cases in this meeting correcting the values where “round()” have been used and the value is rounded up to using “floor()” instead. We plan to provide additional CRs for further updates on TDD and other cases in the following meetings. | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2418012**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418012.zip) | Qualcomm Incorporated | (NR\_newRAT-Perf) Clarify CSI-RS multiplexing for PMI Reporting Requirements  | Clarify PMI Parameters to specify that only CSI-RS for acquisition are blanked for all tests;PMI FRC tables to specify that only CSI-RS for acquisiton are blanked (in the same way the A.4 table specify the PDSCH blanking for CQI/RIModerator note: Initial release is 16, but WI code is NR\_newRAT. Please check with MCC, if mismatched WI can be used in this instance. Notes are using spaces instead of tab. | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2418013 | Qualcomm Incorporated | (NR\_newRAT-Perf) Clarify CSI-RS multiplexing for PMI Reporting Requirements  | Cat A | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2418014 | Qualcomm Incorporated | (NR\_newRAT-Perf) Clarify CSI-RS multiplexing for PMI Reporting Requirements  | Cat A | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2418116**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418116.zip) | MediaTek inc. | CR for Rel-15 TS38.101-4, alignments on the expression of CSI-RS conigurations for CQI, PMI and RI requirements | Align the expression for configuraitons of ZP CSI-RS and NZP CSI-RS for CQI, PMI and RI requirements | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2418117**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418117.zip) | MediaTek inc. | CR for Rel-16 TS38.101-4, alignments on the expression of CSI-RS conigurations for CQI, PMI and RI requirements | Moderator note: Is Cat-F as it captures changes from prior release, plus additional ones. | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2418118**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418118.zip) | MediaTek inc. | CR for Rel-17 TS38.101-4, alignments on the expression of CSI-RS conigurations for CQI, PMI and RI requirements | Moderator note: Is Cat-F as it captures changes from prior release, plus additional ones. | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2418119**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418119.zip) | MediaTek inc. | CR for Rel-18 TS38.101-4, alignments on the expression of CSI-RS conigurations for CQI, PMI and RI requirement | Withdrawn. | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2418597**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418597.zip) | Apple | (NR\_newRAT-Perf) Editorial CR to 38.101-4 on PDCCH requirements to unify table numbering format | Adding prefix to PDCCH test case number in the tables where they are defined.Moderator note: 3GPP styles are missing from CR. Please check with MCC, if they are willing to implement, or fix. Start/end of change does not fit.Additionally, applicability references to PDCCH test case numbers seem unchanged (e.g., DRX Adaptation). | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2418598**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418598.zip) | Apple | (NR\_newRAT-Perf) Editorial CR to 38.101-4 on PDCCH requirements to unify table numbering format | Uploaded Cat A. Please only reserve Cat As, and upload once corresponding Cat F is agreed. | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2418599**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418599.zip) | Apple | (NR\_newRAT-Perf) Editorial CR to 38.101-4 on PDCCH requirements to unify table numbering format | Adding prefix to PDCCH test case number in the tables where they are defined.Moderator note: 3GPP styles are missing from CR. Please check with MCC, if they are willing to implement, or fix. Start/end of change does not fit. Additionally, applicability references to PDCCH test case numbers seem unchanged (e.g., DRX Adaptation). | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2418600**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418600.zip) | Apple | (NR\_newRAT-Perf) Editorial CR to 38.101-4 on PDCCH requirements to unify table numbering format | Uploaded Cat A. Please only reserve Cat As, and upload once corresponding Cat F is agreed. | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2418944**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418944.zip) | Huawei,HiSilicon | Discussion on aperiodic CSI reporting requirements | Discussion.Moderator note: Related to issue 1-1-1.**Proposal 1: Change CQI/RI/PMI delay from 6 ms to 7 ms for FR1 FDD aperiodic PMI reporting requirements less or equal to 4Tx.****Proposal 2: Change CQI/RI/PMI delay from 8 ms to 9 ms for FR1 FDD aperiodic PMI reporting requirements larger than 4Tx.****Proposal 3: Change CQI/RI/PMI delay from 5.5 ms to 6 ms for FR1 TDD aperiodic PMI reporting requirements less or equal to 4Tx.****Proposal 4: Change CQI/RI/PMI delay from 6.5 ms to 7 ms for FR1 TDD aperiodic PMI reporting requirements larger than 4Tx.****Proposal 5: Change Aperiodic Report Slot Offset from 6 slots to 10 slots for FR2 TDD aperiodic CSI reporting requirements with DDSU TDD pattern.****Proposal 6: Change CQI/RI/PMI delay from 1.375 ms to 2.375 ms for FR2 TDD aperiodic CSI reporting requirements with DDSU TDD pattern.** | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2418945**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418945.zip) | Huawei, HiSilicon | (NR\_newRAT-Perf) CR on UE CSI requirements | Modify CQI/RI/PMI delay to satisfy Note 2. See R4-2418944 for details.Moderator note: Related to issue 1-1-1. | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2418946 | Huawei,HiSilicon | (NR\_newRAT-Perf) CR on UE CSI requirements | Cat A | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2418947 | Huawei,HiSilicon | (NR\_newRAT-Perf) CR on UE CSI requirements | Cat A | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2418948 | Huawei,HiSilicon | (NR\_newRAT-Perf) CR on UE CSI requirements | Cat A | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2419616 | MediaTek inc. | CR for Rel-18 TS38.101-4, alignments on the expression of CSI-RS conigurations for CQI, PMI and RI requirement | Cat A (of R4-2418118) | [**NR\_newRAT-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2417646**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417646.zip) | CAICT | (NR\_NTN\_solutions-Perf) CR to 38.101-5 Rel-17 Cat-F for the Note in Table 8.2.1.1.2-1 | Note in Table 8.2.1.1.2-1 of TS 38.101-5 was revised to imply that it only apples to GSO NR NTN UE and does not apply to NGSO NR NTN UE. | [**NR\_NTN\_solutions-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |
| [**R4-2417647**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417647.zip) | CAICT | (NR\_NTN\_solutions-Perf) CR to 38.101-5 Rel-18 Cat-A for the Note in Table 8.2.1.1.2-1 | Uploaded Cat A. Please only reserve Cat As, and upload once corresponding Cat F is agreed. | [**NR\_NTN\_solutions-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |
| [**R4-2418965**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418965.zip) | Huawei,HiSilicon | (NR\_NTN\_solutions-Perf) CR on UE demodulation requirements | 1: Replaced TBDs with proper references and corrected the cross-reference to clause 8.3.1. 2: Specify K\_offset in the test parameters.Moderator note: Clauses affected seems to be incorrect. | [**NR\_NTN\_solutions-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |
| R4-2418966 | Huawei,HiSilicon | (NR\_NTN\_solutions-Perf) CR on UE demodulation requirements | Cat A | [**NR\_NTN\_solutions-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |
| [**R4-2417669**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417669.zip) | Anritsu Corporation | (NR\_perf\_enh-Perf) CR to minimum requirement for periodic CQI reporting | Updated Table 6.2A.3.1.1-3 such that CSI-Report periodicity and offset if configured as SCell with FDD PCell to 5/4. | [**NR\_perf\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840294) |
| R4-2417670 | Anritsu Corporation | (NR\_perf\_enh-Perf) CR to minimum requirement for periodic CQI reporting | Cat A | [**NR\_perf\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840294) |
| R4-2417671 | Anritsu Corporation | (NR\_perf\_enh-Perf) CR to minimum requirement for periodic CQI reporting | Cat A | [**NR\_perf\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840294) |
| [**R4-2418949**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418949.zip) | Huawei,HiSilicon | (NR\_perf\_enh-Perf) CR on UE CSI requirements | Modify CQI/RI/PMI delay to satisfy Note 2. See R4-2418944 for details.Moderator note: Related to issue 1-1-1. | [**NR\_perf\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840294) |
| R4-2418950 | Huawei,HiSilicon | (NR\_perf\_enh-Perf) CR on UE CSI requirements | Cat A | [**NR\_perf\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840294) |
| R4-2418951 | Huawei,HiSilicon | (NR\_perf\_enh-Perf) CR on UE CSI requirements | Cat A | [**NR\_perf\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840294) |
| [**R4-2418961**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418961.zip) | Huawei, HiSilicon | (NR\_perf\_enh-Perf) CR on UE CA demodulation requirements | The PDCCH configuration is wrong for some UE CA demodulation requirements since there is no enough resource to use AL8, e.g. for 30kHz SCS and 5MHz bandwidth and 120kHz SCS and 50MHz bandwidth. | [**NR\_perf\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840294) |
| R4-2418962 | Huawei,HiSilicon | (NR\_perf\_enh-Perf) CR on UE CA demodulation requirements | Cat A | [**NR\_perf\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840294) |
| R4-2418963 | Huawei,HiSilicon | (NR\_perf\_enh-Perf) CR on UE CA demodulation requirements | Cat A | [**NR\_perf\_enh-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840294) |
| [**R4-2418957**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418957.zip) | Huawei, HiSilicon | (NR\_redcap-Perf) CR on UE CSI requirements | Modify CQI/RI/PMI delay to satisfy Note 2. See R4-2418944 for details.Moderator note: Related to issue 1-1-1. | [**NR\_redcap-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=900262) |
| R4-2418958 | Huawei,HiSilicon | (NR\_redcap-Perf) CR on UE CSI requirements | Cat A | [**NR\_redcap-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=900262) |

## Open issues summary

*Before Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 1-1: CQI/RI/PMI delay

*Sub-topic description:*

In R4-2418944 the proponent is highlighting a potential mismatch between CSI reporting settings (CQI/RI/PMI delay, report slot offset) and a common note on how quickly CQI/RI/PMI can be applied following the reception of a report.

One example given is as follows:

* FR1 FDD aperiodic PMI reporting requirements less or equal to 4Tx

|  |  |  |
| --- | --- | --- |
| Aperiodic Report Slot Offset |  | 4 |
| CQI/RI/PMI delay  | ms | 6 |



*Note 2: If the UE reports in an available uplink reporting instance at slot#n based on PMI estimation at a downlink slot not later than slot#(n-3), this reported PMI cannot be applied at the gNB downlink before slot#(n+3).*

*Open issues and candidate options before meeting:*

**Issue 1-1-1: CSI reporting setting corrections given reporting quantity application timing notes**

* Proposals
	+ Option 1 (Huawei): CSI reporting settings to obey reporting quantity application timing notes
		- Option 1a (Huawei): Make the following changes:
		Change CQI/RI/PMI delay from 6 ms to 7 ms for FR1 FDD aperiodic PMI reporting requirements less or equal to 4Tx.
		Change CQI/RI/PMI delay from 8 ms to 9 ms for FR1 FDD aperiodic PMI reporting requirements larger than 4Tx.
		Change CQI/RI/PMI delay from 5.5 ms to 6 ms for FR1 TDD aperiodic PMI reporting requirements less or equal to 4Tx.
		Change CQI/RI/PMI delay from 6.5 ms to 7 ms for FR1 TDD aperiodic PMI reporting requirements larger than 4Tx.
		Change Aperiodic Report Slot Offset from 6 slots to 10 slots for FR2 TDD aperiodic CSI reporting requirements with DDSU TDD pattern.
		Change CQI/RI/PMI delay from 1.375 ms to 2.375 ms for FR2 TDD aperiodic CSI reporting requirements with DDSU TDD pattern.
	+ Other options not precluded.
* Recommended WF:
	+ Discuss offline and online, whether any change is needed, and if yes, what changes to apply.
	+ Decide related CRs after progress is made on the issue.

### Sub-topic 1-2: Max Throughput calculation in RMCs

*Sub-topic description:*

In R4-2418944 the proponent is highlighting an agreement in a prior CR to use “floor()” operations, when calculating the max TPUT value in RMCs.
A number of CRs is submitted to start unification of the application of this rule.

*Open issues and candidate options before meeting:*

**Issue 1-2-1: Max Throughput calculation in RMCs**

* Proposals
	+ Option 1 (Nokia): Correct current specification and to use “floor()” of the “Max. Throughput averaged over x frames” parameters in the FRCs, where rounding has resulted in a higher throughput that is practically possible, and agree for future use of this rule
	+ Other options not precluded.
* Recommended WF:
	+ Discuss offline and online.
	+ Decide related CRs after progress is made on the issue.

# Topic #2: Air-to-ground network for NR demodulation requirements (5.6.4)

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **T-doc number** | **Company** | **Title** | **Proposals, Observations, Changes, Moderator remarks** | **Related WI** |
| [**R4-2418419**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418419.zip) | CMCC | Discussion on demod performance for ATG UE | Discussion.**Observation 1**: The ideal SNR performance gap between 13/30 HARQ process enabled and all HARQ process enabled is about 0.03-0.01, which can be ignored.**Proposal 1: For UE not supporting outOfOrderOperationDL-r16, mapping relationship between PDSCH and HARQ-ACK as follows: [see contribution].****Proposal 2: For UE not supporting outOfOrderOperationDL-r16, the current SNR requirement can be reused.****Proposal 3: Regarding specification documentation, we prefer to reuse the current test case, but update the TDD UL-DL configuration as follows: [see contribution].** | [**NR\_ATG-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950275) |
| [**R4-2418420**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418420.zip) | CMCC | CR to TS 38.101-4 corrections of PDSCH and corresponding HARQ-ACK relationship for 30D4S6U TDD pattern for ATG | Update the applicability rule to cover the test case for UE that don’t support outOfOrderOperationDL-r16Update the timing relationship between PDSCH and corresponding HARQ-ACK regarding the UE capability | [**NR\_ATG-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950275) |
| [**R4-2419173**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2419173.zip) | ZTE Corporation, Sanechips | Discussion on R18 ATG HARQ k1 value | Discussion.**Observation 1**. From our simulation results, it can be seen that especially at low SNR condition, there is a noticeable decrease in throughput with partial HARQ, which can have a certain impact on system capacity.**Proposal 1. Confirm that the outOfOrderOperationDL-r16 is a solution to the ATG HARQ timing issue.** | [**NR\_ATG-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950275) |

### Sub-topic 2-1: Timing relationship between PDSCH and HARQ-ACK

*Sub-topic description:*

In R4-2418944 the proponent is highlighting a proposal to enable PDSCH requirements with HARQ-ACK feedback for UE not supporting *outOfOrderOperationDL-r16.*

Additionally, an offline email exchange was observed before the meeting. We capture the opened issues here, which may inform the discussion around R4-2418944 and R4-2419173.

**Issue 2-1-1: TPUT counting of PDSCH slots with disabled HARQ**

* Proposals
	+ Option 1 (QC): PDSCH is not allocated on slots with disabled HARQ, i.e., those that do not have a defined K1 value.
	+ Other options not precluded.
* Recommended WF:
	+ Discuss in first offline and collect/align understanding.

**Issue 2-1-2: HARQ-ACK feedback for UE that do support outOfOrderOperationDL-r16**

* Proposals
	+ Option 1 (ZTE, Sanechips): Confirm that the outOfOrderOperationDL-r16 is a solution to the ATG HARQ timing issue.
	+ Other options not precluded.
* Recommended WF:
	+ Option 1 seems agreable.

**Issue 2-1-3: HARQ-ACK feedback for UE not supporting outOfOrderOperationDL-r16 – K1 setting**

* Background
	+ Graphical representation of option 1 from R4-2418944

	
* Proposals
	+ Option 1 (CMCC): For UE not supporting outOfOrderOperationDL-r16, mapping relationship between PDSCH and HARQ-ACK as follows and capture K1 setting for both UE supporting and not supporting outOfOrderOperationDL-r16:

|  |  |  |
| --- | --- | --- |
| **The number of slots between PDSCH and corresponding HARQ-ACK information for UE not supporting outOfOrderOperationDL-r16 (Note 3)** |  | **34 if mod(i,40) = 030 if mod(i,40) = 4, 526 if mod(i,40) = 9,1022 if mod(i,40) = 14,1518 if mod(i,40) = 19,2014 if mod(i,40) = 24,2511 if mod(i,40) = 2810 if mod(i,40) = 29** |

* + Other options not precluded.
* Recommended WF:
	+ Option 1 seems agreeable.

**Issue 2-1-4: HARQ-ACK feedback for UE not supporting outOfOrderOperationDL-r16 – Requirement re-use**

* Proposals
	+ Option 1 (CMCC): For UE not supporting outOfOrderOperationDL-r16, the current SNR requirement can be reused.
	+ Option 2 (ZTE, Sanechips): Have different SNR requirements for both UE supporting and not supporting outOfOrderOperationDL-r16
	+ Other options not precluded.
* Recommended WF:
	+ Upon conclusion of issue 2-1-1, this issue may be decided quickly.

# Topic #3: Further RF requirements enhancement for NR and EN-DC in FR1 demodulation requirements (5.7.3)

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **T-doc number** | **Company** | **Title** | **Proposals, Observations, Changes, Moderator remarks** | **Related WI** |
| [**R4-2418120**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2418120.zip) | MediaTek inc. | CR for Rel-18 TS38.101-4, alignments on the expression of CSI-RS conigurations for 8Rx CQI requirements | Align the expression for configuraitons of ZP CSI-RS and NZP CSI-RS in Caluse 6.2.4 with that in other Clauses  | [**NR\_ENDC\_RF\_FR1\_enh2-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950280) |
| [**R4-2419332**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2419332.zip) | Ericsson | On the MIMO correlation matrices for 8Rx cases | Discussion.**Observation 1**: There are no MIMO correlation matrices for 2x8, 4x8 and 8x8 cases in the specification**Proposal 1: Add corresponding MIMO correlation matrices for 2x8, 4x8 and 8x8 cases into the specification.** | [**NR\_ENDC\_RF\_FR1\_enh2-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950280) |
| [**R4-2419333**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2419333.zip) | Ericsson | CR to 38101-4 Add MIMO correlation matrices for 8Rx cases | Add the corresponding MIMO correlation matrices 1. 2x8 case for medium correlation B table2. 4x8 and 8x8 cases for low correlation table  | [**NR\_ENDC\_RF\_FR1\_enh2-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950280) |
| [**R4-2419335**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2419335.zip) | Ericsson | CR to 38101-4 Correction on the name of the 8Rx receiver | Add the corresponding MIMO correlation matrices 1. 2x8 case for medium correlation B table2. 4x8 and 8x8 cases for low correlation table  | [**NR\_ENDC\_RF\_FR1\_enh2-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950280) |
| [**R4-2419406**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2419406.zip) | Huawei, HiSilicon | Updates to the requirements applicability for 8Rx | Added a note for the 8Rx performance requirements applicability to keep consistent with the WID scope and core requirements.Moderator note: Note 6 uses spaces instead of tab. | [**NR\_ENDC\_RF\_FR1\_enh2-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950280) |

## Open issues summary

*Before Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

None.

# NB-IoT/eMTC demodulation requirements (5.9.4)

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **T-doc number** | **Company** | **Title** | **Proposals, Observations, Changes, Moderator remarks** | **Related WI** |
| [**R4-2417644**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417644.zip) | CAICT | (LTE\_NBIoT\_eMTC\_NTN\_req-Perf) Discussion on the understanding of the Note in Table 8.2.1.2-1 of TS 36.102 | Discussion.**Proposal 1: Understanding 1 is correct and the Note in Table 8.2.1.2-1 of TS 36.102 needs to be revised to imply that it only apples to GSO IoT NTN UE and does not apply to NGSO IoT NTN UE.Proposal 2: Understanding 2 is correct and the Note in Table 8.2.1.2-1 of TS 36.102 remains as it is.** | [**LTE\_NBIoT\_eMTC\_NTN\_req-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950274) |
| [**R4-2417645**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_113/Docs/R4-2417645.zip) | CAICT | (LTE\_NBIoT\_eMTC\_NTN\_req-Perf) CR to 36.102 Rel-18 Cat-F for the Note in Table 8.2.1.2-1 | Note in Table 8.2.1.2-1 of TS 36.102 was revised to imply that it only apples to GSO IoT NTN UE and does not apply to NGSO IoT NTN UE. | [**LTE\_NBIoT\_eMTC\_NTN\_req-Perf**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=950274) |

## Open issues summary

*Before Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 4-1: Understanding of note in requirements applicability for optional UE features

*Sub-topic description:*

None.

**Issue 4-1-1: Understanding of note in requirements applicability for optional UE features**

* Background
	+ The note under question is from TS 36.102:

**Table 8.2.1.2-1: Requirements applicability for optional UE features**

|  |  |  |
| --- | --- | --- |
| **UE feature/capability** | **Test list** | **Applicability notes** |
| […] |
| Operation in coverage enhancement mode B (ce-ModeB-r13) | Clause 8.2.1.1 (Test 3) | The requirements apply only for UE Category M1 |
| Note: For UE supports NTN access (*ntn-Connectivity-EPC-r17*), the requirements in TS36.101 Clause 8 and Clause 9 also applies to UE according to the UE category and capability |

* Proposals
	+ Option 1 (CAICT): The Note in Table 8.2.1.2-1 of TS 36.102 only applies to GSO IoT NTN UE and does not apply to NGSO IoT NTN UE. For NGSO IoT NTN only UE that does not support TN and GSO, the requirements in TS36.101 Clause 8 and Clause 9 do not apply.
	The Note in Table 8.2.1.2-1 of TS 36.102 needs to be revised to imply that it only apples to GSO IoT NTN UE and does not apply to NGSO IoT NTN UE.
	+ Option 2 (CAICT): The Note in Table 8.2.1.2-1 of TS 36.102 applies to both GSO IoT NTN UE and NGSO IoT NTN UE. For NGSO IoT NTN only UE that does not support TN and GSO, the requirements in TS36.101 Clause 8 and Clause 9 also apply to UE according to the UE category and capability.
	The Note in Table 8.2.1.2-1 of TS 36.102 remains as it is.
	+ Other options not precluded.
* Recommended WF:
	+ Discuss offline and online.

# Tdoc and CR suggested status

Modified procedure

* Similar to the procedure during e-meetings, the moderator will provide a table at the end of the moderator summary listing all documents and their suggested status
* The format of this table should be 3 columns
	+ First column is the tdoc number
	+ Second column is the suggested status -> see options in the table on the right
	+ Third column is any comments (optional)
* Please use this format because chair will try to directly import into chair’s spreadsheet

**Moderator’s note:**
Note that these suggested statuses will only be created after the NWM flagging process. All non-flagged CRs will be recommended as “agreed”. All discussion tdocs will be proposed as “noted”.

|  |
| --- |
| **Up to Rel-17 maintenance for LTE and NR (4.6)** |
| **T-doc Number** | **Status** | **Comments (optional)** |
|  |  |  |

|  |
| --- |
| **Air-to-ground network for NR demodulation requirements (5.6.4)** |
| **T-doc Number** | **Status** | **Comments (optional)** |
|  |  |  |

|  |
| --- |
| **Further RF requirements enhancement for NR and EN-DC in FR1 demodulation requirements (5.7.3)** |
| **T-doc Number** | **Status** | **Comments (optional)** |
|  |  |  |

|  |
| --- |
| **NB-IoT/eMTC demodulation requirements (5.9.4)** |
| **T-doc Number** | **Status** | **Comments (optional)** |
|  |  |  |