**3GPP TSG-RAN WG4 Meeting # 112 draftR4-2413417**

**Maastricht, Netherlands, Aug 19 – Aug 23, 2024**

**Agenda item:** 4.1

**Source:** Moderator (Nokia)

**Title:** Topic summary for [112][317] Demod\_Maintenance

**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

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

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

5.8 Air-to-ground network for NR [NR\_ATG]

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

5.10 NR RF requirements enhancement for FR2, Phase 3 [NR\_RF\_FR2\_req\_Ph3]

**5.10.2 BS demodulation requirements (UL 256QAM) [NR\_RF\_FR2\_req\_Ph3-Perf]**

5.12 NB-IoT/eMTC core & perf. requirements for NTN [LTE\_NBIOT\_eMTC\_NTN\_req]

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

5.13 Requirement for NR FR2 multi-Rx chain DL reception [NR\_FR2\_multiRX\_DL]

**5.13.3 Demodulation performance and CSI requirements [NR\_FR2\_multiRX\_DL-Perf]**

5.17 Enhanced NR support for high speed train scenario in frequency range 2

[NR\_HST\_FR2\_enh]

**5.17.2 Demodulation performance requirements [NR\_HST\_FR2\_enh-Perf]**

5.22 NR sidelink evolution [NR\_SL\_enh2]

**5.22.3 UE demodulation performance requirements [NR\_SL\_enh2-Perf]**

5.29 Network energy saving for NR [Netw\_Energy\_NR]

**5.29.3 UE demodulation performance and CSI requirements [Netw\_Energy\_NR-Perf]**

5.30 IoT (Internet of Things) NTN (non-terrestrial network) enhancements [IoT\_NTN\_enh]

**5.30.3 Demodulation performance requirements [IoT\_NTN\_enh-Perf]**

5.31 NR Network-controlled Repeaters [NR\_netcon\_repeater]

**5.31.6 Demodulation performance requirements [NR\_netcon\_repeater-Perf]**

5.34 Other Rel-18 non-spectrum related WIs

**5.34.4 Demodulation performance and CSI requirements [WI code]**

Additionally, the following Tdocs and CRs have been included in this thread by the chair.

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| --- | --- | --- |
| AI 5.35 moved to AI 5.34.4 | | |
| [**R4-2412307**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412307.zip) | (TEI18) Discussion on PRACH format 1 demodulation requirement for HAPS | Ericsson |
| [**R4-2412308**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412308.zip) | (TEI18) Simulation results on PRACH format 1 demodulation requirement for HAPS | Ericsson |
| [**R4-2412309**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412309.zip) | (TEI18) CR for 38.104 adding PRACH format 1 demodulation requirements | Ericsson, NTT DOCOMO |
| [**R4-2412310**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412310.zip) | CR for 38.141-1 on PRACH format 1 demodulation requirements | Ericsson, NTT DOCOMO |
| [**R4-2412311**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412311.zip) | (TEI18) CR for 38.141-2 adding PRACH format 1 demodulation requirements | Ericsson, NTT DOCOMO |
| [**R4-2412407**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412407.zip) | (TEI18)Discussion on PRACH demodulation impact of adding TDD bands for HAPS | NTT DOCOMO, INC. |

# 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** |
| [**R4-2411029**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411029.zip) | MediaTek inc. | (NR\_DL1024QAM\_FR1-Perf) CR for TS38.101-4, corrections to CodebookSubsetRestriction on 1024QAM CQI requirements | Correct CodebookSubsetRestriction in Table 6.2.2.2.1.4-1 and 6.2.3.2.1.4-1 from 010000 to 000001. | [NR\_DL1024QAM\_FR1-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890256) |
| R4-2411030 | MediaTek inc. | (NR\_DL1024QAM\_FR1-Perf) CR for TS38.101-4, corrections to CodebookSubsetRestriction on 1024QAM CQI requirements | Cat A. | [NR\_DL1024QAM\_FR1-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890256) |
| [**R4-2411278**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411278.zip) | Anritsu Corporation | (NR\_newRAT-Perf) Views on QPSK PDSCH demodulation test with PTRS configuration | **Observation 1**: UE shall assume PTRS is not present in a case of FR2 QPSK PDSCH demodulation test.  **Observation 2**: Information bit payload size per slot in Table A.3.2.2.5-1 or A.3.2.2.5-4 in TS 38.101-4 does not differ regardless of the existence of PTRS.  **Proposal 1: RAN4 agrees with the contents of the previously postponed CR to TS 38.101-4 [2].**  Moderator: Discussion tdoc. Proposed to be noted. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2411526**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411526.zip) | Rohde & Schwarz | (NR\_newRAT-Perf) Correction of TRS configuration for FR1 PDSCH tests | Correct TRS configuration for Tests 1-8 and 1-9. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2411527 | Rohde & Schwarz | (NR\_newRAT-Perf) Correction of TRS configuration for FR1 PDSCH tests | Cat A. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2411528 | Rohde & Schwarz | (NR\_newRAT-Perf) Correction of TRS configuration for FR1 PDSCH tests | Cat A. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2411529 | Rohde & Schwarz | (NR\_newRAT-Perf) Correction of TRS configuration for FR1 PDSCH tests | Cat A. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2411530**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411530.zip) | Rohde & Schwarz | (NR\_newRAT-Perf) Discussion on PTRS configuration for FR2 PDSCH testing | **Observation 1**: If a mismatch between core and test specification is observed, the test specification should be adapted to follow the core requirements.  **Observation 2**: Table 7.2-1 from TS 38.101-4 follows the Rel-15 agreements for PTRS in FR2 demod testing.  **Proposal 1: RAN4 to conclude that TS 38.508-1 shall be adapted to resolve the mismatch.**  Moderator: Discussion tdoc. Proposed to be noted. |  |
| [**R4-2411662**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411662.zip) | Nokia | (NR\_demod\_enh2) CR for 38.101-4 on corrections of RMC references | Corrected wrong RMC references to use RMC from sections A.3.2.1.5 and A.3.2.2.7 | [NR\_demod\_enh2-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890255) |
| R4-2411663 | Nokia | (NR\_demod\_enh2) CR for 38.101-4 on corrections of RMC references | Cat A. | [NR\_demod\_enh2-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890255) |
| [**R4-2412155**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412155.zip) | Ericsson | (NR\_IAB-Perf) CR to 38.176-1 Correction on the IAB requirement | Correct reference channel index for IAB CSI reporting requirement | [NR\_IAB-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=820270) |
| R4-2412156 | Ericsson | (NR\_IAB-Perf) CR to 38.176-1 Correction on the IAB requirement | Cat A. | [NR\_IAB-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=820270) |
| [**R4-2412294**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412294.zip) | Ericsson | CR for 38.108 on Demod FR1-NTN FRC alignments and propogation corrections | Change “FR1” to “FR1-NTN” in all statements and tables.  Change Propagation condition Annex index Correct some editorial errors and adjust table format. | [NR\_NTN\_solutions-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |
| R4-2412295 | Ericsson | (NR\_NTN\_solutions-Perf) CR to 38.108 correction on FRC and naming alignment | Cat A. | [NR\_NTN\_solutions-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |
| [**R4-2412296**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412296.zip) | Ericsson | (NR\_NTN\_solutions-Perf) CR to 38.181 correction on FRC and naming alignment | Adding manufactory declaration and applicability rule for PUSCH repetition type A. Change “FR1” to “FR1-NTN” in all statements and tables.  Change Propagation condition Annex index Correct some editorial errors and adjust table format. | [NR\_NTN\_solutions-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |
| R4-2412297 | Ericsson | (NR\_NTN\_solutions-Perf) CR to 38.181 correction on FRC and naming alignment | Cat A. | [NR\_NTN\_solutions-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |
| [**R4-2412323**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412323.zip) | MediaTek inc. | (NR\_newRAT-Perf) CR to Rel-18 38.101-4 Frequency domain granularity of random PMI for PMI requirements | Cat A. Moderator: Please don't upload cat A before meeting. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2412324**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412324.zip) | MediaTek inc. | (NR\_newRAT-Perf) CR to Rel-17 38.101-4 Frequency domain granularity of random PMI for PMI requirements | Cat A. Moderator: Please don't upload cat A before meeting. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2412325**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412325.zip) | MediaTek inc. | (NR\_newRAT-Perf) CR to Rel-16 38.101-4 Frequency domain granularity of random PMI for PMI requirements |  | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2412326**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412326.zip) | MediaTek inc. | (NR\_newRAT-Perf) CR to Rel-15 38.101-4 Frequency domain granularity of random PMI for PMI requirements |  | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2412408**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412408.zip) | Nokia | (NR\_newRAT-Perf) Discussion on PT-RS configuration in FR2 QPSK PDSCH demodulation requirements | **Observation 1**: if no PT-RS configuration is given in higher layer parameters (timeDensity/LPT-RS and frequencyDensity/KPT-RS), then no PT-RS is to be expected for MCS4/QPSK.  **Observation 2**: The PT-RS configuration in RAN4 test cases matches the default configuration (LPT-RS = 1, KPT-RS = 2) which may have led RAN5 understood the RAN4 intent to be “default configuration” and not “LPT-RS = 1, KPT-RS = 2”.  **Observation 3**: RAN4 WF/agreements, common test parameters specification, and non-zero RMC xOverhead settings, indicate that RAN4 intended for PT-RS to be configured and transmitted in certain FR2 QPSK requirements.  **Proposal 1: RAN4 intended for PT-RS to be configured with LPT-RS = 1, KPT-RS = 2 also for FR2 QPSK requirements, which have xOverhead not equal to 0. RAN4 shall send LS to RAN5 requesting configuration of PT-RS of corresponding test cases.**  **Proposal 2: RAN4 shall decide what to do in xOverhead=0 cases. I.e., whether PT-RS configuration is “default” or “LPT-RS = 1, KPT-RS = 2”, and clarify RAN4 specification accordingly.**  Moderator: Discussion tdoc. Proposed to be noted. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2412545**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412545.zip) | Ericsson | (NR\_redcap) Correction of applicability of RedCap UE demodulation requirements | Correct Table number from Table 5.2.2.1.18-3 to Table 5.2.2.2.18-3 for RedCap with 2RX TDD. | [NR\_redcap-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=900262) |
| R4-2412546 | Ericsson | (NR\_redcap) Correction of applicability of RedCap UE demodulation requirements | Cat A. | [NR\_redcap-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=900262) |
| [**R4-2412740**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412740.zip) | Huawei,HiSilicon | (NR\_demod\_enh2-Perf) Corrections on CQI requirements with inter-cell interference |  | [NR\_demod\_enh2-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890255) |
| R4-2412741 | Huawei,HiSilicon | (NR\_demod\_enh2-Perf) Corrections on CQI requirements with inter-cell interference | Cat A. | [NR\_demod\_enh2-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890255) |
| [**R4-2412742**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412742.zip) | Huawei,HiSilicon | (NR\_HST-Perf) Corrections on NR HST test parameters | Add the antena configuration for test 1-5 in Table 5.2.2.1.1-3 | [NR\_HST-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840292) |
| R4-2412743 | Huawei,HiSilicon | (NR\_HST-Perf) Corrections on NR HST test parameters | Cat A. | [NR\_HST-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840292) |
| R4-2412744 | Huawei,HiSilicon | (NR\_HST-Perf) Corrections on NR HST test parameters | Cat A. | [NR\_HST-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=840292) |
| [**R4-2412745**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412745.zip) | Huawei,HiSilicon, Ericsson | (NR\_newRAT-Perf) CR for 38.101-4 Corrections on test setup for FR2 PMI test | Remove the beam steering approach for FR2 PMI test | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2412746 | Huawei,HiSilicon,Ericsson | (NR\_newRAT-Perf) CR for 38.101-4 Corrections on test setup for FR2 PMI test | Cat A. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2412747 | Huawei,HiSilicon,Ericsson | (NR\_newRAT-Perf) CR for 38.101-4 Corrections on test setup for FR2 PMI test | Cat A. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2412748 | Huawei,HiSilicon,Ericsson | (NR\_newRAT-Perf) CR for 38.101-4 Corrections on test setup for FR2 PMI test | Cat A. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2412749**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412749.zip) | Huawei,HiSilicon, Ericsson | (NR\_redcap-Perf) CR for 38.101-4: Corrections on RedCap PMI test setup | Add the Beam steering approach for ULA configuration Change the note3” Randomization of the principle beam direction shall be used as specified in Annex B.2.3.2.3” to ” Randomization of the principle beam direction shall be used as specified in Annex B.2.3.1.3” to clarify that Beam steering approach for ULA configuration should be applied rather than that for XPL configuration | [NR\_redcap-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=900262) |
| R4-2412750 | Huawei,HiSilicon,Ericsson | (NR\_redcap-Perf) CR for 38.101-4 Corrections on RedCap PMI test setup | Cat A. | [NR\_redcap-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=900262) |
| [**R4-2412751**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412751.zip) | Huawei,HiSilicon,Ericsson | Discussions on Introduction of beam steering approach for ULA antenna configuration | **Observation 1:** TS 38.101-4 B.2.3 specifies the beam steering approach only for the cross-polarized antenna array at gNB.  **Proposal 1: Introduce the beam steering approach for ULA configuration.**  **Proposal 2: For FR2 PMI test, remove the beam steering configuration.**  **Proposal 3: For Rel-17 RedCap PMI test, apply the new defined beam steering configuration for ULA.**  Moderator: Discussion tdoc. Proposed to be noted. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2412775**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412775.zip) | Huawei,HiSilicon | (NR\_newRAT-Perf) Discussion on PTRS configuration for UE demodulation requirements | **Observation 1**: There is mismatching between PTRS configuration and RMC determination / requirements derivation for all FR2 QPSK PDSCH demodulation requirements.  **Observation 2**: There is negligible performance difference between PTRS present and not present using Example 2 phase noise model at 40GHz.  **Proposal 1: Only modify the RMC with PTRS not present for all FR2 QPSK PDSCH demodulation requirements and keep the corresponding performance requirements unchanged.**  Moderator: Discussion tdoc. Proposed to be noted. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| **[R4-2412776](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412776.zip)** | Huawei, HiSilicon | (NR\_newRAT-Perf) CR on PTRS configuration for UE demodulation requirements | For modifying PTRS configuration for FR2 QPSK PDSCH demodulation requirements, update clause A.3.2.2.5. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2412777 | Huawei,HiSilicon | (NR\_newRAT-Perf) CR on PTRS configuration for UE demodulation requirements | Moderator: Cat F not uploaded. But likely intended to be cat A. Check with MCC to change category. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2412778 | Huawei,HiSilicon | (NR\_newRAT-Perf) CR on PTRS configuration for UE demodulation requirements | Moderator: Cat F not uploaded. But likely intended to be cat A. Check with MCC to change category. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2412779 | Huawei,HiSilicon | (NR\_newRAT-Perf) CR on PTRS configuration for UE demodulation requirements | Moderator: Cat F not uploaded. But likely intended to be cat A. Check with MCC to change category. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2412780**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412780.zip) | Huawei,HiSilicon | (NR\_L1enh\_URLLC-Perf) CR on PTRS configuration for UE demodulation requirements | For modifying PTRS configuration for FR2 QPSK PDSCH demodulation requirements, update clause A.3.2.2.5. | [NR\_L1enh\_URLLC-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=830274) |
| R4-2412781 | Huawei,HiSilicon | (NR\_L1enh\_URLLC-Perf) CR on PTRS configuration for UE demodulation requirements | Moderator: Cat F not uploaded. But likely intended to be cat A. Check with MCC to change category.. | [NR\_L1enh\_URLLC-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=830274) |
| R4-2412782 | Huawei,HiSilicon | (NR\_L1enh\_URLLC-Perf) CR on PTRS configuration for UE demodulation requirements | Moderator: Cat F not uploaded. But likely intended to be cat A. Check with MCC to change category. | [NR\_L1enh\_URLLC-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=830274) |
| **[R4-2412870](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412870.zip)** | Samsung | [NR\_newRAT-Perf] Correction CR on applicability of FR1 demodulation requirements (Rel-18) | Update requirements in Clause 5.1.1.4  Moderator: Please don't use square brackets for WI code. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2412871 | Samsung | [NR\_newRAT-Perf] Correction CR on applicability of FR1 demodulation requirements (Rel-17) | Cat A. Moderator: Please don't use square brackets for WI code. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2412872 | Samsung | [NR\_newRAT-Perf] Correction CR on applicability of FR1 demodulation requirements (Rel-16) | Cat A. Moderator: Please don't use square brackets for WI code. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2413037**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413037.zip) | Qualcomm Incorporated | [TEI17] Correct FRC for PMI Reporting Requirements | Align Reference measurement channels for PDSCH performance requirements | [TEI17](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=850047) |
| R4-2413054 | Qualcomm Incorporated | [TEI17] Correct FRC for PMI Reporting Requirements | Cat A. | [TEI17](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=850047) |
| [**R4-2413161**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413161.zip) | Apple | (NR\_newRAT-Perf) Editorial CR to 38.101-4 on PBCH requirements to unify table numbering format | Adding prefix to PBCH test case number in the tables where they are defined. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2413162 | Apple | (NR\_newRAT-Perf) Editorial CR to 38.101-4 on PBCH requirements to unify table numbering format | Cat A. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2413163**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413163.zip) | Apple | (NR\_newRAT-Perf) Editorial CR to 38.101-4 on PBCH requirements to unify table numbering format | Adding prefix to PBCH test cases, both in 1) the tables where these tests are defined, and 2) where these tests are indicated in the applicability of requirements section. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| R4-2413164 | Apple | (NR\_newRAT-Perf) Editorial CR to 38.101-4 on PBCH requirements to unify table numbering format | Cat A. | [NR\_newRAT-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=750267) |
| [**R4-2413446**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413446.zip) | Samsung | [NR\_NTN\_solutions-Perf] Correction CR on performance requirements in TS 38181 | Update terminology of NTN-FR1 for FRC and channel model  Moderator: Please don't use square brackets for WI code. | [NR\_NTN\_solutions-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |
| R4-2413447 | Samsung | [NR\_NTN\_solutions-Perf] Correction CR on performance requirements in TS 38181 | Cat A. Moderator: Please don't use square brackets for WI code. | [NR\_NTN\_solutions-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |
| [**R4-2413448**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413448.zip) | Samsung | [NR\_NTN\_solutions-Perf] Correction CR on performance requirements in TS 38108 | Update terminology of NTN-FR1 for FRC and channel model  Moderator: Please don't use square brackets for WI code. | [NR\_NTN\_solutions-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |
| R4-2413449 | Samsung | [NR\_NTN\_solutions-Perf] Correction CR on performance requirements in TS 38108 | Cat A. Moderator: Please don't use square brackets for WI code. | [NR\_NTN\_solutions-Perf](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=860246) |

## 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 NR\_newRAT: FR2 requirements and RMCs with PTRS configuration

*Sub-topic description:*

* In RAN4#111 [R4-2409994] a mismatch between RAN4 TS 38.101-4 and RAN5 TS 38.508-1 specifications concerning test setups for several FR2 QPSK PDSCH demodulation requirements was observed and discussed.
* Following [TS 38.214, section 5.1.6.3]:
  + “If a UE is configured with the higher layer parameter *phaseTrackingRS* in *DMRS-DownlinkConfig*,
    - - the higher layer parameters *timeDensity* and *frequencyDensity* in *PTRS-DownlinkConfig* indicate the threshold values *ptrs-MCSi*, *i*=1,2,3 and *NRB,i* , *i*=0,1, as shown in Table 5.1.6.3-1 and Table 5.1.6.3-2, respectively.
    - - if either or both of the additional higher layer parameters *timeDensity* and *frequencyDensity* are configured, and the RNTI equals MCS-C-RNTI, C-RNTI or CS-RNTI, the UE shall assume the PT-RS antenna port' presence and pattern is a function of the corresponding scheduled MCS of the corresponding codeword and scheduled bandwidth in corresponding bandwidth part as shown in Table 5.1.6.3-1 and Table 5.1.6.3-2,
      * - if the higher layer parameter *timeDensity* given by *PTRS-DownlinkConfig* is not configured, the UE shall assume *LPT-RS* = 1.
      * - if the higher layer parameter *frequencyDensity* given by *PTRS-DownlinkConfig* is not configured, the UE shall assume *KPT-RS* = 2.
    - - otherwise, if neither of the additional higher layer parameters *timeDensity* and *frequencyDensity* are configured and the RNTI equals MCS-C-RNTI, C-RNTI or CS-RNTI, the UE shall assume the PT-RS is present with *LPT-RS* = 1, *KPT-RS* = 2, and the UE shall assume PT-RS is not present when
      * - the scheduled MCS from Table 5.1.3.1-1 is smaller than 10, or
      * […]
  + - otherwise, if the RNTI equals RA-RNTI, [MSGB-RNTI], SI-RNTI, or P-RNTI, the UE shall assume PT-RS is not present”

However, it is debated whether RAN4 has (and has intended to) configured “the higher layer parameters *timeDensity* and *frequencyDensity*”, i.e., whether the “otherwise” clause takes effect or not.

* One contribution [R4-2412775] remarks that there is negligible performance difference between PT-RS present or not in the concerned QPSK RMCs.
* Three main questions were raised in RAN4#111, and have drawn contributions to RAN4#112:
  + What was the intent of RAN4 concerning PT-RS presence in FR2 for QPSK?
  + What is the implementation used in test equipment?
  + Which specification shall be adapted to resolve TS 38.101-4 and TS 38.508-1 mismatch.

*Open issues and candidate options before meeting:*

**Issue 1-1-1: RAN4 intent for PT-RS presence in FR2 QPSK**

* Proposals
  + Option 1 (Anritsu): UE shall assume PTRS is not present in a case of FR2 QPSK PDSCH demodulation test.
  + Option 2 (R&S): PTRS is configured when introducing performance requirements in FR2.
  + Option 3 (Nokia): RAN4 intended for PT-RS to be configured with LPT-RS = 1, KPT-RS = 2 also for FR2 QPSK requirements, which have xOverhead not equal to 0.
  + Option 4 (Nokia): RAN4 shall decide what to do in xOverhead=0 cases. I.e., whether PT-RS configuration is “default” or “LPT-RS = 1, KPT-RS = 2”, and clarify RAN4 specification accordingly
  + Other options not precluded.
* Recommended WF:
  + Discuss offline and online.
  + It is recommended to make it explicit, if statements concern cases with xOverhead equal, or not equal, or both, to 0.

**Issue 1-1-1: Changes to apply to specifications**

* Proposals
  + Option 1 (Anritsu, Huawei): TS 38.101-4 shall adapt test configuration and RMCs. Only modify the RMC with PTRS not present for all FR2 QPSK PDSCH demodulation requirements and keep the corresponding performance requirements unchanged. I.e., agree [R4-2412776].
  + Option 2 (R&S): RAN4 to conclude that TS 38.508-1 shall be adapted to resolve the mismatch.
  + Option 3 (Nokia): For RMC with xOverhead=0, TS 38.501-1 shall be adapted. RAN4 shall send LS to RAN5.  
    RAN4 shall decide what to do in xOverhead=0 cases and clarify RAN4 or RAN5 specification accordingly.
  + Other options not precluded.
* Recommended WF:
  + Discuss offline and online.
  + It is recommended to make it explicit, if statements concern cases with xOverhead equal, or not equal, or both, to 0.

### Sub-topic 1-2 NR\_newRAT: Beam steering approach for ULA antenna configuration

*Sub-topic description:*

For PMI requirement definition, TS 38.101-4 contains the following note:

“Note X: Randomization of the principle [sic] beam direction shall be used as specified in Annex B.2.3.2.3.”

It is the moderator’s understanding that this principal beam direction steering is needed for TDL ULA channels in combination with non-low antenna correlation to create PMI choices that remain valid between PMI feedback and PMI application and create choices, which are not trivially predictable without measurement of the channel.  
[R4-2412751] describes this as “considering low correlation [...] beam steering configuration is pointless since channel is omni-directional”.

Currently, TS 38.101-4 B.2.3 specifies the beam steering approach only for the cross-polarized antenna array at gNB. The specification does not directly extend to not cross-polarized ULA but is currently used as such.

**Issue 1-2-1: Extend beam steering approach to not cross-polarized ULA configuration**

* Proposals
  + Option 1 (Ericsson, Huawei): Introduce the beam steering approach for ULA configuration
  + Other options not precluded.
* Recommended WF:
  + Option 1 seems non-controversial, and can be agreed unless other feedback is received.

**Issue 1-2-2: Rel-15 FR2 PMI test**

* Background
  + FR2 PMI tests only use TDL channel models with **low** correlation.
* Proposals
  + Option 1 (Ericsson, Huawei): Remove the beam steering configuration from requirement setup.
  + Other options not precluded.
* Recommended WF:
  + Discuss offline and online.

**Issue 1-2-3: Rel-17 RedCap PMI test**

* Background
  + Rel-17 RedCap PMI tests use TDL channel models with **non-low** correlation.
* Proposals
  + Option 1 (Ericsson, Huawei): Apply the new defined beam steering configuration for ULA to requirement setup.
  + Other options not precluded.
* Recommended WF:
  + Discuss offline and online.

# Topic #2: Air-to-ground network for NR demodulation requirements (5.8.4)

*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** |
| [**R4-2411754**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411754.zip) | CMCC | (NR\_ATG-Perf) Discussion on k1 value and range correction for ATG | **Observation 1**: The current mapping relationship between PDSCH and HARQ-ACK for 30D4S6U results in the k1 value having a range of (34, 33, 32, ....12 , 11, 10) and a size of 25.  **Observation 2**: RAN2 introduced a new k1 signalling for ATG with size 8 and range 0 to 31, i.e. DL-DataToUL-ACK-r18  **Observation 3**: The size and the range of current k1 for ATG 30D4S6U TDD pattern are beyond the IE DL-DataToUL-ACK-r18.  **Proposal 1: Revise the timing relationship between PDSCH and HARQ-ACK to: 34 if mod(i,40) = 0, 1, 2, 3, 4, 5 28 if mod(i,40) = 6, 7, 8, 9, 10, 11 22 if mod(i,40) = 12, 13, 14, 15, 16, 17 16 if mod(i,40) = 18, 19, 20, 21, 22, 23 10 if mod(i,40) = 24, 25, 26, 27, 28, 29**  Moderator: Discussion tdoc. Proposed to be noted. | NR\_ATG-Perf |
| [**R4-2411755**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411755.zip) | CMCC | (NR\_ATG-Perf) CR to TS 38.101-4 corrections of PDSCH and corresponding HARQ-ACK relationship for 30D4S6U TDD pattern for ATG | Update the timing relationship between PDSCH and corresponding HARQ-ACK | NR\_ATG-Perf |
| [**R4-2412150**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412150.zip) | Ericsson | CR to 38.101-4: Correction on PDSCH demodulation requirement for ATG | Add missing test numbers  Correct the reference channel index | NR\_ATG-Perf |
| [**R4-2412314**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412314.zip) | Ericsson | (NR\_ATG-Perf) CR for 38.141-1 Correction on refering index for ATG requirements | Remove brackets from SNR values.  Adding test torlerance. Fix all unclear refering index in the requirements.  Adjust the table format. | NR\_ATG-Perf |
| [**R4-2412315**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412315.zip) | Ericsson | (NR\_ATG-Perf) CR for 38.141-2 Adding test torlerance for ATG requirements | Adding test torlerance for ATG | NR\_ATG-Perf |
| [**R4-2412769**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412769.zip) | Huawei, HiSilicon | CR on ATG PDSCH demodulation performance requirements | Delete clause 5.2.3.2.22 under clause 5.2.3.1 and add new clause 5.2.3.2.22 under clause 5.2.3.2. | NR\_ATG-Perf |

## 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 2-1 NR\_ATG: Timing relationship between PDSCH and HARQ-ACK

*Sub-topic description:*

In RAN4#111, a discussion concerning the timing relationship between PDSCH and HARQ-ACK [R4-2409994] followed the submission of [R4-2408953].  
The discussion resulted in an LS to RAN2 [R4-2409974] and a CR action for RAN4#112 to change ATG K1 configuration following the RAN2 extension of related higher layer parameters.

**Issue 1-2-1: Timing relationship between PDSCH and HARQ-ACK**

* Proposals
  + Option 1 (CMCC): Revise the timing relationship between PDSCH and HARQ-ACK to:

|  |  |  |
| --- | --- | --- |
| **The number of slots between PDSCH and corresponding HARQ-ACK information (Note 3)** |  | **34 if mod(i,40) = 0, 1, 2, 3, 4, 5 28 if mod(i,40) = 6, 7, 8, 9, 10, 11 22 if mod(i,40) = 12, 13, 14, 15, 16, 17 16 if mod(i,40) = 18, 19, 20, 21, 22, 23 10 if mod(i,40) = 24, 25, 26, 27, 28, 29** |

* + Other options not precluded.
* Recommended WF:
  + Option 1 follows the discussion at RAN4#111 and is proposed to be agreed, unless other comments are received.

# Topic #3: NR RF requirements enhancement for FR2, Phase 3 demodulation requirements (5.10.2)

No submissions.

# Topic #4: NB-IoT/eMTC demodulation requirements (5.12.4)

*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** |
| [**R4-2411132**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411132.zip) | CATT | (LTE\_NBIOT\_eMTC\_NTN\_req-Perf)CR for TS36.181, Correction on Number of RX antennas in header row of tables for radiated demodulation test requirements | Change “Number of RX antennas” to “Number of demodulation branches”. | LTE\_NBIoT\_eMTC\_NTN\_req-Perf |
| [**R4-2412547**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412547.zip) | Ericsson | (LTE\_NBIoT\_eMTC\_NTN\_req) Collection of IoT-NTN SAN demodulation performance requirements | Remove [] from NB-IoT SAN demodulation requirements. Correct referring clause number | LTE\_NBIoT\_eMTC\_NTN\_req-Perf |
| [**R4-2412548**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412548.zip) | Ericsson | (LTE\_NBIoT\_eMTC\_NTN\_req) Collection of IoT-NTN SAN demodulation conformance requirements | Remove [] from SAN PRACH demodulation requirements. Remove [] from SAN IoT-NTN OTA demodulation requirements.  Correct referring clauses | LTE\_NBIoT\_eMTC\_NTN\_req-Perf |

## Open issues summary

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

None.

# Topic #5: NR FR2 multi-Rx chain DL reception demodulation requirements (5.13.3)

*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** |
| [**R4-2411379**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411379.zip) | Apple | CR to 38.101-4 on PDSCH demod requirements for mDCI fully-overlapping with multi-RX in FR2 | Added back the requirements for FR2 Multi-RX with mDCI fully overlapping from CR R4-2407244 Added section 7.2.2.2.8 to capture the requirements for FR2 HST from CR R4-2409840 which were in 7.2.2.2.6 Updated applicability table for FR2 HST to point to the correct section.  Moderator: FR2 HST app rule change overlaps with [R4-2413445]. Please remove change under multiRX WI. Table 7.2.2.2.8-2 has formatting issues.  MCC prefers "delete and add", instead of move. Please check with MCC, if this needs to be changed. | NR\_FR2\_multiRX\_DL-Perf |
| [**R4-2411665**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411665.zip) | Nokia | CR for 38.101-4 on RMC corrections for MultiRx requirements | Corrected wrong values for R.PDSCH.5-2.4 TDD, R.PDSCH.5-2.5 TDD | NR\_FR2\_multiRX\_DL-Perf |
| [**R4-2413398**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413398.zip) | QUALCOMM Europe Inc. - Spain | CR to TR38.751 Receiver assumption and conclusions for FR2 multi-Rx demodulation evaluations | Editorial modification. Remove backgroud color from Table 1 in Sec. 8.3 | NR\_FR2\_multiRX\_DL-Perf |

## Open issues summary

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

None.

# Topic #6: Enhanced NR support for high speed train scenario in frequency range 2 demodulation requirements (5.17.2)

*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** |
| [**R4-2413445**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2413445.zip) | Samsung | Correction CR for TS 38.101-4 on Rel-18 FR2 HST demodulation requirements | Correction the section title of 7.2.2.2. Remove the [] in table 7.2.2.2.6-1 Correction the Table 7.1.1.3-1 for FR2 HST | NR\_HST\_FR2\_enh-Perf |

## Open issues summary

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

None.

# Topic #7: NR sidelink evolution UE demodulation requirements (5.22.3)

*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** |
| [**R4-2412756**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412756.zip) | Huawei,HiSilicon | CR for 38.101-4 Corrections on Rel-18 sidelink demod test | Add PSSCH demodulation requirments for CA PSCCH decoding capability test for CA PSFCH decoding capability test for CA FRC for PSSCH requirements with shared spectrum access Sidelink Transmission Model for bands with shared spectrum access Remove square brackets | NR\_SL\_enh2-Perf |

## Open issues summary

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

None.

# Topic #8: Network energy saving for NR demodulation requirements (5.29.3)

No submissions.

# Topic #9: IoT (Internet of Things) NTN (non-terrestrial network) enhancements demodulation requirements (5.30.3)

No submissions.

# Topic #10: NR Network-controlled Repeaters demodulation requirements (5.31.6)

*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** |
| [**R4-2412795**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412795.zip) | ZTE Corporation, Sanechips | CR on 38.106 for NCR requirements | Add TS 38.101-4 in Reference. | NR\_netcon\_repeater-Perf |
| [**R4-2412796**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412796.zip) | ZTE Corporation, Sanechips | CR on 38.115-1 for NCR conformance testing | Correct wording error and remove duplicate references. | NR\_netcon\_repeater-Perf |
| [**R4-2412797**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412797.zip) | ZTE Corporation, Sanechips | CR on 38.115-2 for NCR conformance testing | Replace IAB with NCR. | NR\_netcon\_repeater-Perf |

## Open issues summary

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

None.

# Topic #11: Other Rel-18 non-spectrum related WIs demodulation requirements (5.34.4)

*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** |
| [**R4-2412307**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412307.zip) | Ericsson | (TEI18) Discussion on PRACH format 1 demodulation requirement for HAPS | **Observation 1**: HAPS cell range could reach over 100km and NR PRACH format 1 could be typical configuration for this scenario.  **Observation 2** : LOS channel with very low Doppler shift could be a typical channel model for HAPS deployment.  **Proposal 1: Adding NR PRACH format 1 demodulation requirement to cover HAPS scenario.**  **Proposal 2: Only consider single tap channel model requirement for NR PRACH format 1 if introduced.**  **Proposal 3:Take Table 2-2 for PRACH format 1 parameters configuration.**  **Table 2-1 Parameters configuration for NR PRACH format 1**   |  |  |  | | --- | --- | --- | | **Parameters** | | **Value** | | **PRACH preamble** | | **1** | | **PRACH SCS [kHz]** | | **1.25** | | **Channel model** | | **AWGN + 200 Hz Doppler** | | **Time error tolerance** | **AWGN** | **1.04 us** | | **Ncs** | | **0** | | **Logical sequence index** | | **22** | | **v** | | **0** |     **Proposal 4 : Companies to discuss following options for NR PRACH format 1 if it is agreed to be introduced. Option 1: To avoid new simulations, reuse LTE PRACH format 3 AWGN channel requirement values. Option 2: Run new simulations for NR PRACH format 1 with AWGN + 200Hz Doppler shift.** | TEI18 |
| [**R4-2412308**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412308.zip) | Ericsson | (TEI18) Simulation results on PRACH format 1 demodulation requirement for HAPS | Simulation tdoc. | TEI18 |
| [**R4-2412309**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412309.zip) | Ericsson, NTT DOCOMO | (TEI18) CR for 38.104 adding PRACH format 1 demodulation requirements | Adding FR1 PRACH format 1 demodulation requirements. Adding PRACH configurations.  Moderator: Following TR 21.900 TEI work item codes should not be used for category B CRs. Please check with MCC. | TEI18 |
| [**R4-2412310**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412310.zip) | Ericsson, NTT DOCOMO | CR for 38.141-1 on PRACH format 1 demodulation requirements | Adding manufactory declarations. Adding FR1 PRACH format 1 demodulation requirements. Adding PRACH configurations.  Moderator: Affected clauses missing. Following TR 21.900 TEI work item codes should not be used for category B CRs. Please check with MCC. | TEI18 |
| [**R4-2412311**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412311.zip) | Ericsson, NTT DOCOMO | (TEI18) CR for 38.141-2 adding PRACH format 1 demodulation requirements | Adding manufactory declarations. Adding FR1 PRACH format 1 demodulation requirements. Adding PRACH configurations.  Moderator: Following TR 21.900 TEI work item codes should not be used for category B CRs. Please check with MCC. | TEI18 |
| [**R4-2412407**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2412407.zip) | NTT DOCOMO, INC. | (TEI18)Discussion on PRACH demodulation impact of adding TDD bands for HAPS | **Observation 1**: Adding TDD band (e.g., Band 34/n34) for HAPS is effective in extending coverage and the RAN4 impact on adding the TDD band is mainly PRACH format 1, it can be handled in TEI.  **Proposal 1: Specify PRACH preamble 1 in either of the following options. Option1: Considering multi path scenario, reuse TDLC300-100 for channel model. Option2: Considering only single path scenario, reuse LTE burst format3 or specify new specification, AWGN + doppler shift.** | TEI |

## 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 11-1-1 (TEI18)/[HAPS]: PRACH demod requirement for HAPS

*Sub-topic description:*

Following the discussion of potential inclusion of HAPS TDD bands (e.g., Band 34/n34) in addition to FDD during RAN4#111, the question of needing BS/SAN TDD demodulation requirements has come up. In RAN4#111 this discussion was had in the main session under TEI HAPS, and the demod relevant agreements are captured in the chair minutes as follows:

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| --- |
| **TEI: HAPS**  **R4-2409121 (TEI18)Discussion on RAN4 impact of adding TDD bands for HAPS (High Altitude Platform Station)**  *Type: discussion For: Discussion  Source: NTT DOCOMO, Inc.*  […]  **Agreement:**   * Define the BS demodulation requirements for PRACH format 1 if needed in TEI   **Decision: Noted.** |

Following TR 21.900, it is the moderator’s understanding that TEI work item codes should not be used for category B CRs:

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| 6.2 Types of Work Item Modifications of the standard could in principle be of two different types:  - New services/features/functions that in general affect several specifications and involve several TSGs / WGs;  - Technical enhancements or improvements that affect one or a small number of specifications and involve a single or a few Groups only.  Modifications of the latter type may be submitted to the Working Group(s) and then to the TSG directly as a Change Request without prior presentation/agreement of a WI Description sheet. Such CRs shall instead refer to the pseudo Work Item 'Technical Enhancements and Improvements'. The CRs relating to this type of modification shall be tagged with the work item code TEI<x> where <x> represents the Release number: e.g. for Release 16, the code would be "TEI16".  TEI Work Item codes shall not be used where an appropriate Work Item code exists.  TEI Work Item codes should not be used for the definition of new services/features/functions (i.e. Category B CRs).  TEI Work Item codes should not be used alone for functional modification of existing services/features/functions (i.e. Category C CRs).  Nevertheless, if a feature is functionally modified by a Category C CR using a TEI<x> Work Item code, the code(s) for the Work Item(s) which introduced that feature shall be used, plus the appropriate TEI<x> code for the first Release in which the CR is introduced. |

**Issue 1-3-1: Add NR PRACH demodulation requirements to cover HAPS scenario**

* Proposals
  + Option 1 (Ericsson, DCM): Add new NR PRACH format 1 demodulation requirements (AWGN + 200Hz Doppler shift) to cover HAPS scenario.
  + Option 2 (DCM, Ericsson): Add new requirements by reusing LTE burst format3 AWGN demodulation requirement values to cover HAPS scenario.
  + Other options not precluded.
* Recommended WF:
  + Input for other companies requested.  
    Please discuss offline and online.

**Issue 1-3-2: Channel model for HAPS scenario**

* Proposals
  + Option 1 (Ericsson): Only consider single tap channel model requirement for NR PRACH format 1 if introduced.
  + Option 2 (DCM): Either format 1 with TDLC300-100 (multi path), or LTE burst format 3 with AWGN + doppler shift (single path)
  + Other options not precluded.
* Recommended WF:
  + Input for other companies requested.  
    Please discuss offline and online.

**Issue 1-3-3: PRACH format 1 configuration**

* Proposals
  + Option 1 (Ericsson): PRACH format 1 parameters configuration.

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| Parameters | | Value |
| PRACH preamble | | 1 |
| PRACH SCS [kHz] | | 1.25 |
| Channel model | | AWGN + 200 Hz Doppler |
| Time error tolerance | AWGN | 1.04 us |
| Ncs | | 0 |
| Logical sequence index | | 22 |
| v | | 0 |

* + Other options not precluded.
* Recommended WF:
  + Discuss after introduction of format 1 is agreed.

# 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”.

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| **Up to Rel-17 maintenance for LTE and NR (4.6)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
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| **Air-to-ground network for NR demodulation requirements (5.8.4)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
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| **NB-IoT/eMTC demodulation requirements (5.12.4)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
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| **NR FR2 multi-Rx chain DL reception demodulation requirements (5.13.3)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
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| **Enhanced NR support for high speed train scenario in frequency range 2 demodulation requirements (5.17.2)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
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| **NR sidelink evolution UE demodulation requirements (5.22.3)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
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| **NR Network-controlled Repeaters demodulation requirements (5.31.6)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
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| **Other Rel-18 non-spectrum related WIs demodulation requirements (5.34.4)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
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