**3GPP TSG-RAN WG4 Meeting # 112 R4-2413531**

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

**Agenda item:** 4.1

**Source:** Moderator (Nokia)

**Title:** Adhoc minutes 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.

|  |  |  |
| --- | --- | --- |
| 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 flags and discussion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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) |
|  | Flags 2024/08/20 18h00  Anritsu (Yamashita) flags R4-2411029: Just an editorial error on the CR cover sheet that there is no description at Source to TSG. | | | |
| 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 | 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) |
|  | Flags 2024/08/20 18h00  Huawei, HiSilicon(Tricia Li) flags R4-2411526, because the S slot in TDD pattern DSUU is S = 12D:2G; The S slots in DS1S2U are S1= 10D+2G+2U, S2 =12D+2G+0U, so the S slots can be used to allocate TRS in symbol#4 and 8;  Nokia (Karsten) flags R4-2411526: We see it to be possible to use the special slot for TRS with the given allocation, hence we do not see a need for the proposed CR.  QC flags **R4-2411526:** The intent of the CR is unclear: is a change in the shift proposed, or the removal of the entire TRS transmission on the S slot? | | | |
| 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 | 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) |
|  | Flags 2024/08/20 18h00  Huawei (Li Ke) flags R4-2411662: Orginal FRC is correct, why change it? The new changed FRC is specific for intra cell inter user requirements not for inter-cell interference  Apple (Manasa) flags R4-2411662: The change is to use the FRCs for intra-cell inf case for ICI test cases? Looks like we unnecessarily introduced FRC R.PDSCH.5-1.1 FDD for MU-MIMO which is identical to R.PDSCH.1-2.1 FDD. This change is not required.  QC flags **R4-2411662:** the RMCs recommended for replacement are the same as the existing ones, and the proposed ones are defined for intra-cell interference, not intercell | | | |
| 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) |
|  | Flags 2024/08/20 18:00  Ericsson (Jiakai) flags R4-2412155: There is a space in the work item code and needs to be revised. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Huawei, HiSilicon(Tricia Li) flags R4-2412294/96 from Ericsson and R4-2413448/46 from Samsung, same updates of the terminology from FR1 to FR1-NTN.  Ericsson (Nicholas): flag R4-2412294/2296, R4-2413446/3448 and corresponding cat A CR. Overlapping changes are delivered. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Huawei, HiSilicon(Tricia Li) flags R4-2412294/96 from Ericsson and R4-2413448/46 from Samsung, same updates of the terminology from FR1 to FR1-NTN.  Ericsson (Nicholas): flag R4-2412294/2296, R4-2413446/3448 and corresponding cat A CR. Overlapping changes are delivered. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Huawei(Li Ke) flags R4-2412323: 1) Clauses affected is missing. 2) RAN1 don’t have definition for i1 and i2 for 2Tx codebook, please modify the wording according to the 2Tx codebook defintion in TS 38.214  Apple (Manasa) flags R4-2412323/24/25/26: Not sure if we had agreement for wideband i1 and sub-band i2 for random precoder for Type II/ eType II. Clauses affected is not filled in coversheet | | | |
| [**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) |
|  | Flags 2024/08/20 18h00  Huawei(Li Ke) flags R4-2412324: 1) Clauses affected is missing. 2) RAN1 don’t have definition for i1 and i2 for 2Tx codebook, please modify the wording according to the 2Tx codebook defintion in TS 38.214  Apple (Manasa) flags R4-2412323/24/25/26: Not sure if we had agreement for wideband i1 and sub-band i2 for random precoder for Type II/ eType II. Clauses affected is not filled in coversheet | | | |
| [**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) |
|  | Flags 2024/08/20 18h00  Huawei(Li Ke) flags R4-2412325: 1) Clauses affected is missing. 2) RAN1 don’t have definition for i1 and i2 for 2Tx codebook, please modify the wording according to the 2Tx codebook defintion in TS 38.214  Apple (Manasa) flags R4-2412323/24/25/26: Not sure if we had agreement for wideband i1 and sub-band i2 for random precoder for Type II/ eType II. Clauses affected is not filled in coversheet  Dhananjaya Ponukumati (Qualcomm) flags R4-2412325/26: the wording on i1, and i2 for multiple PMI test cases needs to be discussed for 6.3.2.1.3, and 6.3.3.1.3 | | | |
| [**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) |
|  | Flags 2024/08/20 18h00  Huawei(Li Ke) flags R4-2412326: 1) Clauses affected is missing. 2) RAN1 don’t have definition for i1 and i2 for 2Tx codebook, please modify the wording according to the 2Tx codebook defintion in TS 38.214  Apple (Manasa) flags R4-2412323/24/25/26: Not sure if we had agreement for wideband i1 and sub-band i2 for random precoder for Type II/ eType II. Clauses affected is not filled in coversheet  Dhananjaya Ponukumati (Qualcomm) flags R4-2412325/26: the wording on i1, and i2 for multiple PMI test cases needs to be discussed for 6.3.2.1.3, and 6.3.3.1.3 | | | |
| [**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 | 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) |
|  | Flags 2024/08/20 18h00  No flags | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Ericsson (Jiakai) flags R4-2412740: Intention is ok. But need to align the wording between FDD and TDD cases.  Apple (Manasa) flags R4-2412740: The wording is very confusing. Only keep this part in Note 4 across all tables-"Static channel is used for the interference model. In case for white Gaussian noise model Cell 2 is not present."  Nokia (Axel) flags R4-2412740: No need to add a new row, if we have already a note. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Apple (Manasa) flags R4-2412742: This change is also needed in Table 5.2.3.1.1-3 | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Apple (Manasa) flags R4-2412745: This needs further discussion if the beam steering can be removed. Why not take the same approach as in R4-2412749?  Qualcomm (Jahidur) flags R4-2412745: It is unclear why the beamsteering should be removed. We are of the view that beamsteering is relevant even for ULA and there is already a change suggested based on the offline discussion from the last meeting. Therefore, we think that it should be kept as it is currently captured in the spec.  Nokia (Axel) flags R4-2412745: The reason for change in this CR does not match the discussion tdoc. Also, there is no difference between removing the main beam direction rotation from ULA low, or leaving it in. Hence, the change is not needed. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  No flag | | | |
| 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 | 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 | 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) |
|  | Flags 2024/08/20 18h00  Qualcomm (Stefan) flags R4-2412776 since it proposes to leave out PTRS although requirements are defined with PTRS to align with RAN5 specification.  R&S (Niels) flags R4-2412776, R4-2412780, need to further discuss on PTRS. In our understanding of the RAN4 agreements, PTRS should be present.  Apple (Manasa) flags R4-2412776: Note 4 is confusing since we specify a PT-RS configuration. Related to open issue discussion.  Nokia (Axel) flags R4-2412776: RAN4 intention is to have PT-RS turned on in FR2, at least for RMCs with xOverhead not equal 0. Hence the CR is not in line, and it also does not remove xOverhead from the RMC. | | | |
| 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) |
|  | Moderator (Axel) flags R4-2412777/R4-2412778/R4-2412779: Cat F not uploaded. But likely intended to be cat A. Check with MCC to change category. | | | |
| 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) |
|  | Moderator (Axel) flags R4-2412777/R4-2412778/R4-2412779: Cat F not uploaded. But likely intended to be cat A. Check with MCC to change category. | | | |
| 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) |
|  | Moderator (Axel) flags R4-2412777/R4-2412778/R4-2412779: Cat F not uploaded. But likely intended to be cat A. Check with MCC to change category. | | | |
| [**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) |
|  | Flags 2024/08/20 18h00  R&S (Niels) flags R4-2412776, R4-2412780, need to further discuss on PTRS. In our understanding of the RAN4 agreements, PTRS should be present.  Apple (Manasa) flags R4-2412780: Related to open issue discussion.  Qualcomm (Stefan) flags R4-2412780 since it proposes to leave out PTRS although requirements are defined with PTRS to align with RAN5 specification  Nokia (Axel) flags R4-2412780: RAN4 intention is to have PT-RS turned on in FR2, at least for RMCs with xOverhead not equal 0. Hence the CR is not in line, and it also does not remove xOverhead from the RMC. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Moderator (Axel) flags R4-2412781/R4-2412782: Cat F not uploaded. But likely intended to be cat A. Check with MCC to change category. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Moderator (Axel) flags R4-2412781/R4-2412782: Cat F not uploaded. But likely intended to be cat A. Check with MCC to change category. | | | |
| **[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) |
|  | Flags 2024/08/20 18h00  Apple (Manasa) flags R4-2412870: Is this intended to be a Cat-F CR in R18 under[NR\_newRAT-Perf]? Some changes are related to R17 Demod Enh WI. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Huawei(Li Ke) flags R4-2413037 The slot that the channel bit of which to be changed is TRS slot not including CSI-RS, why not schedule PDSCH for that slot? I don’t see the motivation. Furthermore, why only change the channel bits but don’t change the information bit?  Apple (Manasa) flags R4-2413037: What WI is this related to? Why is binary channel bits 0 while TBS is non zero every 10 slots?  Nokia (Karsten) flags R4-2413037: Allocated slots per 2 frames” must be reduced by 1 slot. Updated values for “max. Throughput averaged over 2 frames” are not correct.  Ericsson (Uesaka) flags R4-2413037: This CR proposes not to schedule PDSCH in slots 10, 20, 80 for SCS=15kHz, 30kHz, 120kHz every 20ms for PMI tests. We are not sure the reason of this proposal, since we usually schedule PDSCH in these slots. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Huawei(Li Ke) flags R4-2413161 Only eiditoral changes, CR category should be D rather than F  Ericsson (Uesaka) flags R4-2413161/R4-2413163: We are generally fine for these changes, but it is good to check with MCC if test numbers can be changed from Rel-15 specs. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Ericsson (Uesaka) flags R4-2413161/R4-2413163: We are generally fine for these changes, but it is good to check with MCC if test numbers can be changed from Rel-15 specs. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Huawei, HiSilicon(Tricia Li) flags R4-2412294/96 from Ericsson and R4-2413448/46 from Samsung, same updates of the terminology from FR1 to FR1-NTN.  Ericsson (Nicholas): flag R4-2412294/2296, R4-2413446/3448 and corresponding cat A CR. Overlapping changes are delivered. | | | |
| 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) |
|  | Flags 2024/08/20 18h00  Huawei, HiSilicon(Tricia Li) flags R4-2412294/96 from Ericsson and R4-2413448/46 from Samsung, same updates of the terminology from FR1 to FR1-NTN.  Ericsson (Nicholas): flag R4-2412294/2296, R4-2413446/3448 and corresponding cat A CR. Overlapping changes are delivered. | | | |
| 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.
* Adhoc Discussion
  + R&S: Rel-15 agreements in WFs and meeting minutes. The intent was to always have PT-RS configured in Rel-15. That should take precedence over 38.521/508. RAN5 should follow RAN4 agreement.
  + HW: During Rel-15 discussions, companies agreed to default value. Not go into details. No higher layer message details. Text says use default values. There are discussions in PUSCH whether to configure PT-RS for QPSK in RAN1. There is no gain or necessity for PT-RS configuration. RAN4 Rel-15 PUSCH did not configure PT-RS for QPSK.
  + Apple: We would like to understand, why RAN5 did not take RAN4 spec as it was written. Why did they take RAN1 default. RAN4 table says that PT-RS is configured with K and L given. RAN4 did not write “default value” but specified a value. We also did not leave the value out.  
    To Nokia: Please clarify the RMCs with xOverhead = 0.
  + Nokia: Agree with Apple and xOverhead=6 in RMC.
  + Anritsu: Concerning xOverhead, we don’t have same understanding. xOverhead does not explicitly cover PT-RS in 38.331. If RAN4 previously agreed that we shall configure PT-RS in QPSK we are fine to follow in 38.508-1.
  + HW: In RAN1 spec for TBS calculation, it never explicitly mentions PT-RS. This could have covered CSI-RS overhead.
  + QC: In our understand RAN4 is clearly configure PT-RS. This seems to be common understanding here, except for HW. Asking for other companies to comment. R&S transmits PT-RS and Anritsu is fine to transmit PT-RS. Follow the majority here.
  + HW: All companies should check the prior RAN4 discussions. We should check whether the test case configuration is consistent with real network behaviour. PT-RS off in QPSK is normal NW behaviour.
  + Apple: Then why do we have xOverhead =6 in all Rel-15. TRS cannot result in overhead of 6. We should solve the problem of how to bridge the gap between RAN4 and RAN5 spec. Should not go back. We would need to remove all xOverhead in FR2 QPSK tests and update all RMC.
  + HW: Another concern, all the TE vendors configure PT-RS or not? Anyone not configure it.
  + R&S: There is no additional effort on implementation, whether there is PT-RS or not. We are transmitting PT-RS.
  + KS: We are also ok with PT-RS.
  + Anritsu: Not configuring PT-RS for QPSK, but are open to configure if 508-1 is appropriately updated.
  + HW: Configuring PT-RS in FR2 QPSK is not typical network behaviour. It brings additional overhead without additional performance gain.
  + QC: Recently we had requirements for FR2-2 QPSK tests that configured and used PT-RS.
  + Adhoc Agreement:
    - Configure PT-RS in FR2 QPSK. No change to RAN4 specifications.
    - Nokia to check for the presumed xOverhead=0 FR2 QPSK cases and report back.

**Issue 1-1-2: 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.
* Adhoc Discussion
  + Discussed in Issue 1-1-1.

### 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 non 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.
* Adhoc Discussion
  + Apple: Would this be applicable for all ULA antenna configurations?
  + Moderator: Yes. For all that use the note.
  + Adhoc agreement:
    - Introduce the beam steering approach for ULA configuration (non cross-polarized).

**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.
* Adhoc Discussion
  + HW: For low correlation test the beamsteering can be removed, as the channel is omnidirectional. The performance will not be impacted by the removal, as every direction has equal performance.
  + QC: It is ok to keep beamsteering even in low correlation. Even in low, PMI can be very close to random PMI, but having beamsteering will further randomize PMIs. There is no harm in having it.
  + Apple: Same comment as QC. Beamsteering impact performance. It just evolves the PMI over the test but no performance impact.
  + Nok: No perf impact. No issue last 6 years, so no need to change.
  + HW: We share consensus that no performance impact. But complicates test setup. Maybe beamsteering increases test time.
  + QC: We should look at how the PMIs are changing, to check performance impact. If they are localized, then the beamsteering could still help. To there may be performance impact in TDL low.
  + MTEK: Agree with companies’ explication. Beamsteering was never functional in the appendix. Did TE vendors just ignore the note?
  + HW: MTEK raised a good question. Allow TE vendors to double check their implementation and keep consistent with TE implementation.
  + R&S: Will try to get response until online.
  + Ericsson: We can wait.

**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.
* Adhoc Discussion
  + Adhoc agreement:
    - Apply the new defined beam steering configuration for ULA to requirement setup. Keep the beamsteering but update to new proposal in CR.

# 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 flags and discussion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 | 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 |
| Flags 2024/08/20 18h00  Huawei, HiSilicon (Tricia Li) flags **R4-2411754/55**: Out of HARQ-ACK feedback will cause long delay for BS to get the complete ACK/NACK feedback information, maybe this feedback scheme is not practical in the real network.  Ericsson (Jiakai) flags **R4-2411755** because the potential issue caused by HARQ-ACKed out-of-order. | | | |
| [**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 |
| Flags 2024/08/20 18h00  No flags | | | |
| [**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 |
| Flags 2024/08/20 18h00  No flags | | | |
| [**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 |
| Flags 2024/08/20 18h00  No flags | | | |
| [**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 |
| Flags 2024/08/20 18h00  Ericsson (Jiakai) flags **R4-2412769** because a duplicated line needs to be removed. Test index 1-4~1-6 need to be included. | | | |

## 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.
* Adhoc Discussion:
  + Ericsson: When checking 38.214, there is a description that UE does not expect and out of order HARQ feedback. Option 1 would result in out of order HARQ and some UE might be behaving unexpectedly.
  + ZTE: Similar view as Ericsson. Timing relationship results in issues.
  + HW: Similar concerns. For Rx side needs to wait until receiving all packets. Causing long delay with out of order.
  + CMCC: Response to Ericsson, in Rel-16 the spec has introduced the out of order UE capability. If we required ATG UE to support we can handle. Response to HW, even in legacy the HARQ slot will be transmitted in next slot structure, so we don’t see more delay issue. This solution is the only one found until now to allow ATG operation.
  + HW: This issue is just for specific TDD pattern and can be configured. If there is an issue here, maybe chosen TDD pattern is not feasible and/or typical. Use different pattern.
  + CMCC: The legacy TDD pattern can be used in ATG it is not precluded. We used a new pattern to avoid large gap in TDD pattern and avoid large DL TPUT decrease.
  + Candidate options for WF:
    - Option 1: Require out of order processing capability for ATG UEs.
    - Option 3: Ask RAN1 to fix.
    - Other options are not precluded.
  + HW: Concerning option 1, it’s only an issue for one TDD pattern. For option 3, don’t know what RAN1 can fix; it will have some release issues. Legacy UEs will not support it.
  + ZTE: Concerning option 2, we have introduced new TDD patterns in spec. If we use requirements for legacy only then this work was not needed. Option 2 is not needed. Regarding option 3, we need to extend value to support new pattern. In favour of option 3.
  + CMCC: WF to leave the options here and discuss until online. We have doubts on how option 2 is feasible, can we remove.

# 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 flags and discussion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 |
| Flags 2024/08/20 18h00  No flags | | | |
| [**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 |
| Flags 2024/08/20 18h00  No flags | | | |
| [**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 |
| Flags 2024/08/20 18h00  No flags | | | |

## 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 flags and discussion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 |
| Moderator offline note: Samsung’s CR R4-2413445 (FR2 HST) might need to be merged into this [R4-2411379], due to heading change in section moved by Apple here.  Flags 2024/08/20 18h00  Huawei, HiSilicon(Tricia Li) flags **R4-2411379:** changes on changes should be removed.  Samsung: flags **R4-2411379:** FR2 HST app rule change overlaps with [R4-2413445] | | | |
| [**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 |
| Flags 2024/08/20 18h00  Qualcomm (Jahidur) flags: **R4-2411665:**The CR cover sheet does not specify what has led to these changes. Would like to understand on this.  Huawei (Zehan) flags **R4-2411665**: Max. Throughput averaged over 2 frames should be 91.0076 Mbps or 91.008 Mbps. | | | |
| [**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 |
| Flags 2024/08/20 18h00  Apple (Manasa) flags **R4-2413398:** is the change with revision mark? There seems to be a fill to the table still. | | | |

## 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 flags and discussion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 |
| Moderator offline note: Samsung’s CR R4-2413445 (FR2 HST) might need to be (partly) merged into [R4-2411379] (multiRX), due to heading change in section moved by Apple. The implementation order by MCC is unknown.  Flags 2024/08/20 18h00  Huawei (Zehan) flags **R4-2413445**: The Test type in Table 7.1.1.3-1 is wrong.  Apple (Manasa) flags **R4-2413445:**This section for FR2 HST should be added in 7.2.2.2.8 section. 7.2.2.2.6/7  already exists in spec and was introduced in v18.3.0 under Applicability of requirements. We tried to correct this in our CR R4-2411379. Please use 7.2.2.2.8 in applicability table.  Ericsson (Uesaka) flags **R4-2413445**: Same comment as Apple. This CR should be coordinated with Mulit-Rx SDM CR R4-2411379 (by Apple). We also prefer to change the clause to 7.2.2.2.8. | | | |

## 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 flags and discussion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 |
| Flags 2024/08/20 18h00  LGE (Jk Huh) flags R4-2412756 because: In the last meeting, the BigCR R4-2409875 was agreed. But some of the contents are missed from the latest released spec. TS38.101-4 v18.4.0. This CR(R4-2412756) is the missed contents. So, we are fine with this CR including the change of removing the square bracket of performance requirement. | | | |

## 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 #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 flags and discussion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 |
| Flags 2024/08/20 18h00  Huawei (Zehan) flags R4-2413445 because: Other specs affected in the cover sheet is wrong. The new reference should not replace the void reference. | | | |
| [**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 |
| Flags 2024/08/20 18h00  Huawei (Zehan) flags R4-2413446 because: Other specs affected in the cover sheet is wrong. The removed reference should be void and keep other reference not change. | | | |
| [**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 |
| Flags 2024/08/20 18h00  Huawei (Zehan) flags R4-2413447 because: Other specs affected in the cover sheet is wrong. | | | |

## 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.

## 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 flags and discussion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 | Moderator: Discussion tdoc. Proposed to be noted. | 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 | Moderator: Discussion tdoc. Proposed to be noted. | 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.  [MCC]: Missing TEI identifier on the CR coversheet. CAT B CR TEI18. | TEI18 |
| Flags 2024/08/20 18h00  Moderator (Axel) flags R4-2412309: [MCC]: Missing TEI identifier on the CR coversheet. CAT B CR TEI18.  Huawei (Zehan) flags R4-2412307/407 because: Whether to define such requirements need to be further discussion. Also the requirements from LTE PF3 cannot be reused since the propagation condition is different from NR. | | | |
| [**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. [MCC]: Missing TEI identifier on the CR coversheet. CAT B CR TEI18. | TEI18 |
| Flags 2024/08/20 18h00  Moderator (Axel) flags R4-2412310: [MCC]: Affected clauses missing. [MCC]: Missing TEI identifier on the CR coversheet. CAT B CR TEI18.  Huawei (Zehan) flags R4-2412307/407 because: Whether to define such requirements need to be further discussion. Also the requirements from LTE PF3 cannot be reused since the propagation condition is different from NR. | | | |
| [**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.  [MCC]: Missing TEI identifier on the CR coversheet. CAT B CR TEI18. | TEI18 |
| Flags 2024/08/20 18h00  Moderator (Axel) flags R4-2412311: [MCC]: Missing TEI identifier on the CR coversheet. CAT B CR TEI18.  Huawei (Zehan) flags R4-2412307/407 because: Whether to define such requirements need to be further discussion. Also the requirements from LTE PF3 cannot be reused since the propagation condition is different from NR. | | | |
| [**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 | Moderator: Discussion tdoc. Proposed to be noted. | 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:

|  |
| --- |
| **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 the “RAN4#112 meeting arrangements and guidelines” it is requested to bring initial CRs as cat B, and to provide a TEI identifier.

|  |
| --- |
| * For TEI, if you plan to trigger a new topic which has no corresponding WI code and have to submit CR(s) with TEI-xx as the work item code for this topic, please contact session Chairs first, because TEI topics are under monitoring by RAN   + Please submit the CRs by providing a TEI identifier and include it in the title of CRs.     - Example of TEI identifier: [n77 Canada].     - TEI identifier should be provided for all the CRs with TEI18 as WI code, otherwise the CRs cannot be approved officially     - If CRs correspond to the previous release but the agreement in the group is to change it from Rel-18, the WI code of the previous release WID plus TEI18 should be used as WI code.     - If TEI17 Cat-F CR was approved, the WI code for its Rel-18 Cat-A CR should be TEI17 rather than TEI18.   + The first CRs of one TEI topic to introduce a new should be prepared as Cat-B CRs. The CRs which correct the specification for the previous TEI topics should be submitted as Cat-F or Cat-A.   + Please refer to **RP-240858** for the rule of TEI.   + Proponents of TEI CRs shall explicitly check during the quarter that all relevant work is completed in all RAN WGs before asking approval from RAN plenary. (Conclusions of RP-241618) |

**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.
* Offline outcome – recommended WF:
  + Define new PRACH format 1 requirements.
  + Have new manufacturer declaration to declare PRACH format1 support for HAPS feature.
  + Have applicability rule to have PRACH format1 be optional.
  + Separate new Rel-18 HAPS requirements from legacy Rel-15 requirements in specification
    - Option 1: New section.
    - Option 2: New table.
  + Choosing new requirement values
    - Option 1: Use AWGN without FO/Doppler and re-use values from LTE burst format 3 AWGN requirements.
    - Option 2: Use AWGN with TO/Doppler 200Hz, postpone CRs, and bring simulation results next meeting.
    - Option 3: Other options not precluded.
* Adhoc Discussion
  + Adhoc Agreement
    - Define new PRACH format 1 requirements.
    - Have new manufacturer declaration to declare PRACH format1 support for HAPS feature.
    - Have applicability rule to test PRACH format1 based on manufacturer declaration.
    - How to capture Rel-18 HAPS requirements in specification
      * Option 1: New section with new table.
      * Option 2: Same section with new table.
      * Option 3: In existing table with note.
    - Use AWGN without FO/Doppler and re-use values from LTE burst format 3 AWGN requirements.

**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.
* Adhoc Discussion
  + Discussed in Issue 1-3-1.

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

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

|  |  |  |
| --- | --- | --- |
| 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.
* Adhoc Discussion
  + Adhoc agreement:

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

# 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)** |
| R4-2411029 | Revised |  |
| R4-2411030 | Return to | Cat A |
| R4-2411278 | noted | Discussion tdoc |
| R4-2411526 | Revised |  |
| R4-2411527 | Return to | Cat A |
| R4-2411528 | Return to | Cat A |
| R4-2411529 | Return to | Cat A |
| R4-2411530 | noted | Discussion tdoc |
| R4-2411662 | Return to |  |
| R4-2411663 | Return to | Cat A |
| R4-2412155 | Revised |  |
| R4-2412156 | Return to | Cat A |
| R4-2412294 | Return to | Can be merged with R4-2413446 (Samsung)? |
| R4-2412295 | Return to | Cat A. Can be merged with R4-2413447 (Samsung)? |
| R4-2412296 | Return to | Can be merged with R4-2413448 (Samsung)? |
| R4-2412297 | Return to | Cat A. Can be merged with R4-2413449 (Samsung)? |
| R4-2412323 | Return to | Cat A. But uploaded. |
| R4-2412324 | Return to | Cat A. But uploaded. |
| R4-2412325 | Return to |  |
| R4-2412326 | Return to |  |
| R4-2412408 | noted | Discussion tdoc |
| R4-2412545 | Agreed |  |
| R4-2412546 | Agreed | Cat A. |
| R4-2412740 | Revised |  |
| R4-2412741 | Return to | Cat A. |
| R4-2412742 | Revised |  |
| R4-2412743 | Return to | Cat A. |
| R4-2412744 | Return to | Cat A. |
| R4-2412745 | Return to |  |
| R4-2412746 | Return to | Cat A. |
| R4-2412747 | Return to | Cat A. |
| R4-2412748 | Return to | Cat A. |
| R4-2412749 | Agreed |  |
| R4-2412750 | Agreed | Cat A. |
| R4-2412751 | noted | Discussion tdoc |
| R4-2412775 | noted | Discussion tdoc |
| R4-2412776 | Return to | Likely withdrawn following adhoc agreements on PT-RS. |
| R4-2412777 | Return to | Check category with MCC. |
| R4-2412778 | Return to | Check category with MCC. |
| R4-2412779 | Return to | Check category with MCC. |
| R4-2412780 | Return to | Likely withdrawn following adhoc agreements on PT-RS. |
| R4-2412781 | Return to | Check category with MCC. |
| R4-2412782 | Return to | Check category with MCC. |
| R4-2412870 | Return to |  |
| R4-2412871 | Return to | Cat A. |
| R4-2412872 | Return to | Cat A. |
| R4-2413037 | Revised |  |
| R4-2413054 | Return to | Cat A. |
| R4-2413161 | Return to |  |
| R4-2413162 | Return to | Cat A. |
| R4-2413163 | Return to |  |
| R4-2413164 | Return to | Cat A. |
| R4-2413446 | Return to | Can be merged with R4-2412294 (Ericsson)? |
| R4-2413447 | Return to | Cat A. Can be merged with R4-2412295 (Ericsson)? |
| R4-2413448 | Return to | Can be merged with R4-2412296 (Ericsson)? |
| R4-2413449 | Return to | Cat A. Can be merged with R4-2412297 (Ericsson)? |

|  |  |  |
| --- | --- | --- |
| **Air-to-ground network for NR demodulation requirements (5.8.4)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
| R4-2411754 | noted | Discussion tdoc |
| R4-2411755 | Return to |  |
| R4-2412150 | Agreed |  |
| R4-2412314 | Agreed |  |
| R4-2412315 | Agreed |  |
| R4-2412769 | Revised |  |

|  |  |  |
| --- | --- | --- |
| **NB-IoT/eMTC demodulation requirements (5.12.4)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
| R4-2411132 | Agreed |  |
| R4-2412547 | Agreed |  |
| R4-2412548 | Agreed |  |

|  |  |  |
| --- | --- | --- |
| **NR FR2 multi-Rx chain DL reception demodulation requirements (5.13.3)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
| R4-2411379 | Revised |  |
| R4-2411665 | Revised |  |
| R4-2413398 | Revised |  |

|  |  |  |
| --- | --- | --- |
| **Enhanced NR support for high speed train scenario in frequency range 2 demodulation requirements (5.17.2)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
| R4-2413445 | Revised |  |

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| **NR sidelink evolution UE demodulation requirements (5.22.3)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
| R4-2412756 | Return to | Can likely be agreed. Flag does not raise issue. |

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| **NR Network-controlled Repeaters demodulation requirements (5.31.6)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
| R4-2412795 | Revised |  |
| R4-2412796 | Revised |  |
| R4-2412797 | Revised |  |

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| **Other Rel-18 non-spectrum related WIs demodulation requirements (5.34.4)** | | |
| **T-doc Number** | **Status** | **Comments (optional)** |
| R4-2412307 | noted | Discussion tdoc |
| R4-2412308 | noted | Discussion tdoc |
| R4-2412309 | Revised |  |
| R4-2412310 | Revised |  |
| R4-2412311 | Revised |  |
| R4-2412407 | noted | Discussion tdoc |