**3GPP TSG-RAN WG4 Meeting #110**

**Athens, Greece, 26th Feb to 1st Mar 2024**

**Source: RAN4 Vice Chair (China Telecom)**

**Title: RAN4 #110 RRM session meeting report**

3A Topic Summary (pre-meeting)

This agenda item is only for at-meeting-generated content related to topic summary.

3A.2 RRM session topic summaries

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TDoc** | **Title** | **Source** | **Type** | **For** | **Abstract** | **Agenda item** | **TDoc Status** | **Decision** |
| R4-2400737 | Topic summary for [110][201] Maintenance\_up\_to\_R16 | Moderator(Huawei) | other | Information | [110][200] RRM Session | 4.8 | reserved |  |
| R4-2400738 | Topic summary for [110][202] Maintenance\_R17\_R18 | Moderator (Apple) | other | Information | [110][200] RRM Session | 5.4 | reserved |  |
| R4-2400739 | Topic summary for [110][203] LTE\_NBIOT\_eMTC\_NTN\_req | Moderator (MediaTek) | other | Information | [110][200] RRM Session | 6.4 | reserved |  |
| R4-2400740 | Topic summary for [110][204] NR\_ENDC\_ RF\_FR1\_enh2 | Moderator (NTT DoCoMo) | other | Information | [110][200] RRM Session | 8.1.4 | reserved |  |
| R4-2400741 | Topic summary for [110][205] FR2\_multiRx\_part1 | Moderator (vivo) | other | Information | [110][200] RRM Session | 8.3.5 | reserved |  |
| R4-2400742 | Topic summary for [110][206] FR2\_multiRx\_part2 | Moderator (Ericsson) | other | Information | [110][200] RRM Session | 8.3.5 | reserved |  |
| R4-2400743 | Topic summary for [110][207] NR\_RRM\_enh3\_part1 | Moderator (Apple) | other | Information | [110][200] RRM Session | 8.4.5 | reserved |  |
| R4-2400744 | Topic summary for [110][208] NR\_RRM\_enh3\_part2 | Moderator (OPPO) | other | Information | [110][200] RRM Session | 8.4.5 | reserved |  |
| R4-2400745 | Topic summary for [110][209] NR\_MG\_enh2\_part1 | Moderator (MediaTek) | other | Information | [110][200] RRM Session | 8.5.5 | reserved |  |
| R4-2400746 | Topic summary for [110][210] NR\_MG\_enh2\_part2 | Moderator (Intel) | other | Information | [110][200] RRM Session | 8.5.5 | reserved |  |
| R4-2400747 | Topic summary for [110][211] NR\_BWP\_wor | Moderator (vivo) | other | Information | [110][200] RRM Session | 8.6.3 | reserved |  |
| R4-2400748 | Topic summary for [110][212] NonCol\_intraB\_ENDC\_NR\_CA | Moderator (Huawei) | other | Information | [110][200] RRM Session | 8.7.5 | reserved |  |
| R4-2400749 | Topic summary for [110][213] NR\_HST\_FR2\_enh\_part1 | Moderator (Nokia) | other | Information | [110][200] RRM Session | 8.8.4 | reserved |  |
| R4-2400750 | Topic summary for [110][214] NR\_HST\_FR2\_enh\_part2 | Moderator (Samsung) | other | Information | [110][200] RRM Session | 8.8.4 | reserved |  |
| R4-2400751 | Topic summary for [110][215] NR\_ATG | Moderator (CMCC) | other | Information | [110][200] RRM Session | 8.9.8 | reserved |  |
| R4-2400752 | Topic summary for [110][216] NR\_FR1\_lessthan\_5MHz\_BW | Moderator (Nokia) | other | Information | [110][200] RRM Session | 8.10.7 | reserved |  |
| R4-2400753 | Topic summary for [110][217] NR\_pos\_enh2\_part1 | Moderator (Ericsson) | other | Information | [110][200] RRM Session | 8.14.4 | reserved |  |
| R4-2400754 | Topic summary for [110][218] NR\_pos\_enh2\_part2 | Moderator (CATT) | other | Information | [110][200] RRM Session | 8.14.4 | reserved |  |
| R4-2400755 | Topic summary for [110][219] NR\_pos\_enh2\_part3 | Moderator (Huawei) | other | Information | [110][200] RRM Session | 8.14.4 | reserved |  |
| R4-2400756 | Topic summary for [110][220] NR\_MC\_enh | Moderator (Huawei) | other | Information | [110][200] RRM Session | 8.15.4 | reserved |  |
| R4-2400757 | Topic summary for [110][221] NR\_Mob\_enh2\_part1 | Moderator (MediaTek) | other | Information | [110][200] RRM Session | 8.16.3 | reserved |  |
| R4-2400758 | Topic summary for [110][222] NR\_Mob\_enh2\_part2 | Moderator (Apple) | other | Information | [110][200] RRM Session | 8.16.3 | reserved |  |
| R4-2400759 | Topic summary for [110][223] NR\_DualTxRx\_MUSIM | Moderator (vivo) | other | Information | [110][200] RRM Session | 8.17.3 | reserved |  |
| R4-2400760 | Topic summary for [110][224] NR\_NTN\_enh | Moderator (Qualcomm) | other | Information | [110][200] RRM Session | 8.18.9 | reserved |  |
| R4-2400761 | Topic summary for [110][225] NR\_netcon\_repeater | Moderator (ZTE) | other | Information | [110][200] RRM Session | 8.20.7 | reserved |  |
| R4-2400762 | Topic summary for [110][226] NR\_MIMO\_evo\_DL\_UL | Moderator (Samsung) | other | Information | [110][200] RRM Session | 8.21.5 | reserved |  |
| R4-2400763 | Topic summary for [110][227] NR\_SL\_enh2\_part1 | Moderator (LGE) | other | Information | [110][200] RRM Session | 8.22.5 | reserved |  |
| R4-2400764 | Topic summary for [110][228] NR\_SL\_enh2\_part2 | Moderator (OPPO) | other | Information | [110][200] RRM Session | 8.22.5 | reserved |  |
| R4-2400766 | Topic summary for [110][230] NR\_SL\_relay\_enh | Moderator (LGE) | other | Information | [110][200] RRM Session | 8.24.3 | reserved |  |
| R4-2400767 | Topic summary for [110][231] NR\_mobile\_IAB | Moderator (Qualcomm) | other | Information | [110][200] RRM Session | 8.25.7 | reserved |  |
| R4-2400768 | Topic summary for [110][232] Netw\_Energy\_NR | Moderator (Huawei) | other | Information | [110][200] RRM Session | 8.26.5 | reserved |  |
| R4-2400769 | Topic summary for [110][233] IoT\_NTN\_enh | Moderator (MediaTek) | other | Information | [110][200] RRM Session | 9.4.6 | reserved |  |
| R4-2400770 | Topic summary for [110][234] Reply\_LS | Moderator (Apple) | other | Information | [110][200] RRM Session | 12.4 | reserved |  |
| R4-2400737 | Topic summary for [110][201] Maintenance\_up\_to\_R16 | Moderator(Huawei) | other | Information | [110][200] RRM Session | 4.8 | reserved |  |

4 Up to Rel-16 maintenance for LTE and NR

**Guidance for maintenance agendas (AI 4, AI 5 and AI 6)**

The following guidance are provided for AI 4, AI5 and AI6:

- For maintenance agenda AI 4 (up to Rel-16), AI 5 (Rel-17) and AI 6 (Rel-18), formal CRs are expected and multiple formal CRs per company in the lowest agenda are allowed. For tracking the changes easily, it expected that one batch of CRs (Cat-F/A/…) will just cover a single topic/WI rather than multiple topics/WIs and Cat-F CR with corresponding Cat-A CRs needs be submitted under the same agenda.

- When submitting contributions to AI 4, AI 5 and AI 6.1.15/AI 6.2.8, please add (WI\_code) in the beginning of titles for both discussion files and CRs to facilitate moderators and session chairs handling.

- When reserving the tdoc number, please use the correct WI code rather than simply using TEI and fill the column of “Related WIs” in your reservation spreadsheet. If you submit a CR with TEI as WI code, please inform session chair.

- The contributions corresponding to incoming LS for Rel-17 and Rel-18 are expected to be submitted in AI 12, if there is a dedicated agenda in AI 12.

4.4 RRM requirements

**NR\_newRAT**

**R4-2400287 [NR\_newRAT-Perf] CR to A.6.3.2.1.3 Intra-freq RRC re-establishment**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-3980 rev Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Correction of typo

**Decision:** The document was **withdrawn**.

**R4-2400929 (NR\_newRAT-Perf) CR to A.6.3.2.1.3 Intra-freq RRC re-establishment**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4057 rev Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Correction of typo.

Title of R4-2400287 was corrected to describe WI code with ().

Associated Rel-16 to Rel-18 Cat-A CR: R4-2400288 to R4-2400290.

**Decision: Agreed.**

**R4-2400288 (NR\_newRAT-Perf) CR to A.6.3.2.1.3 Intra-freq RRC re-establishment**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-3981 rev Cat: A (Rel-16)  
  
 Source: Anritsu Corporation*

**Abstract:**

Correction of typo

Associated Rel-15 CR: R4-2400929

**Decision: Agreed.**

**R4-2400289 (NR\_newRAT-Perf) CR to A.6.3.2.1.3 Intra-freq RRC re-establishment**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3982 rev Cat: A (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Correction of typo

Associated Rel-15 CR: R4-2400929

**Decision: Agreed.**

**R4-2400290 (NR\_newRAT-Perf) CR to A.6.3.2.1.3 Intra-freq RRC re-establishment**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3983 rev Cat: A (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

Correction of typo

Associated Rel-15 CR: R4-2400929

**Decision: Agreed.**

**R4-2400291 [NR\_newRAT-Perf, NR\_UE\_pow\_sav\_enh-Perf, NR\_redcap-Perf] CR to EPRE ratio of PDCCH and PDCCH DMRS for RLM tests**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3984 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Correction of EPRE ratio of PDCCH and PDCCH DMRS.

CRs for Rel-15 and Rel-16 are not necessary since the associated values are correct in Rel-15/16 specs and only Rel-17 and 18 need to be changed.

**Decision:** The document was **withdrawn**.

**R4-2400930 (NR\_newRAT-Perf, NR\_UE\_pow\_sav\_enh-Perf, NR\_redcap-Perf) CR to EPRE ratio of PDCCH and PDCCH DMRS for RLM tests**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4058 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Correction of EPRE ratio of PDCCH and PDCCH DMRS.

CRs for Rel-15 and Rel-16 are not necessary since the associated values are correct in Rel-15/16 specs and only Rel-17 and 18 need to be changed.

Title of R4-2400291 was corrected to describe WI code with

**Decision: Agreed.**

**R4-2400292 (NR\_newRAT-Perf, NR\_UE\_pow\_sav\_enh-Perf, NR\_redcap-Perf) CR to EPRE ratio of PDCCH and PDCCH DMRS for RLM tests**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3985 rev Cat: A (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

Correction of EPRE ratio of PDCCH and PDCCH DMRS.

CRs for Rel-15 and Rel-16 are not necessary since the associated values are correct in Rel-15/16 specs and only Rel-17 and 18 need to be changed.

Associated Rel-17 CR: R4-2400930

**Decision: Agreed.**

**R4-2400293 [NR\_newRAT-Perf] CR to FR1 SA intra-frequency SS-RSRQ measurement accuracy**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-3986 rev Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Removal of unnecessary Gap pattern ID

**Decision:** The document was **withdrawn**.

**R4-2400931 (NR\_newRAT-Perf) CR to FR1 SA intra-frequency SS-RSRQ measurement accuracy**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4059 rev Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Removal of unnecessary Gap pattern ID.

Title of R4-2400293 was corrected to describe WI code with ().

Associated Cat-A Rel-16 CR: R4-2400294.

**Decision: Agreed.**

**R4-2400294 (NR\_newRAT-Perf) CR to FR1 SA intra-frequency SS-RSRQ measurement accuracy**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-3987 rev Cat: A (Rel-16)  
  
 Source: Anritsu Corporation*

**Abstract:**

Removal of unnecessary Gap pattern ID

Associated Rel-15 CR: R4-2400931

**Decision: Agreed.**

**R4-2400295 [NR\_newRAT-Perf,NR\_redcap-Perf] CR to FR1 SA intra-frequency SS-RSRQ measurement accuracy**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3988 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Removal of unnecessary Gap pattern ID

**Decision:** The document was **withdrawn**.

**R4-2400932 (NR\_newRAT-Perf,NR\_redcap-Perf) CR to FR1 SA intra-frequency SS-RSRQ measurement accuracy**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4060 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Removal of unnecessary Gap pattern ID.

Title of R4-2400295 was corrected to describe WI code with ().

Associated Cat-A Rel-18 CR: R4-2400296.

**Decision: Agreed.**

**R4-2400296 (NR\_newRAT-Perf,NR\_redcap-Perf) CR to FR1 SA intra-frequency SS-RSRQ measurement accuracy**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3989 rev Cat: A (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

Removal of unnecessary Gap pattern ID

Associated Rel-17 CR: R4-2400932

**Decision: Agreed.**

**R4-2400297 [NR\_newRAT-Perf] CR to CORESET and PDSCH RMCs of A.5.6.1.3, A.5.3.1.4 SSB SCS 240kHz config**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-3990 rev Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Update of CORESET and PDSCH RMCs of SSB SCS 240kHz config.

**Decision:** The document was **withdrawn**.

**R4-2400933 (NR\_newRAT-Perf) CR to CORESET and PDSCH RMCs of A.5.6.1.3, A.5.3.1.4 SSB SCS 240kHz config**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4061 rev Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Update of CORESET and PDSCH RMCs of SSB SCS 240kHz config.

Title of R4-2400297 was corrected to describe WI code with ().

Associated Cat-A Rel-16 to 18 CR: R4-2400298 to R4-2400300.

**Decision: Revised to R4-2403335 (from R4-2400933).**

[**R4-2403335**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403335.zip) **(NR\_newRAT-Perf) CR to CORESET and PDSCH RMCs of A.5.6.1.3, A.5.3.1.4 SSB SCS 240kHz config**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4061 rev Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Update of CORESET and PDSCH RMCs of SSB SCS 240kHz config.

Title of R4-2400297 was corrected to describe WI code with ().

Associated Cat-A Rel-16 to 18 CR: R4-2400298 to R4-2400300.

**Decision: Agreed.**

**R4-2400298 (NR\_newRAT-Perf) CR to CORESET and PDSCH RMCs of A.5.6.1.3, A.5.3.1.4 SSB SCS 240kHz config**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-3991 rev Cat: A (Rel-16)  
  
 Source: Anritsu Corporation*

**Abstract:**

Update of CORESET and PDSCH RMCs of SSB SCS 240kHz config.

Associated Rel-15 CR: R4-2400933

**Decision: Agreed.**

**R4-2400299 (NR\_newRAT-Perf) CR to CORESET and PDSCH RMCs of A.5.6.1.3, A.5.3.1.4 SSB SCS 240kHz config**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3992 rev Cat: A (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Update of CORESET and PDSCH RMCs of SSB SCS 240kHz config.

Associated Rel-15 CR: R4-2400933

**Decision: Agreed.**

**R4-2400300 (NR\_newRAT-Perf) CR to CORESET and PDSCH RMCs of A.5.6.1.3, A.5.3.1.4 SSB SCS 240kHz config**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3993 rev Cat: A (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

Update of CORESET and PDSCH RMCs of SSB SCS 240kHz config.

Associated Rel-15 CR: R4-2400933

**Decision: Agreed.**

**R4-2400439 [NR\_newRAT-Core] On active TCI state list update delay**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400440 [NR\_newRAT-Core] CR on active TCI state list update delay - R15**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4010 rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Postponed.**

**R4-2400441 [NR\_newRAT-Core] CR on active TCI state list update delay - R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4011 rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Postponed.**

**R4-2400442 [NR\_newRAT-Core] CR on active TCI state list update delay - R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4012 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Postponed.**

**R4-2400443 [NR\_newRAT-Core] CR on active TCI state list update delay - R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4013 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Postponed.**

**R4-2400470 (NR\_newRAT) CR on NR-E-UTRAN HO requirement maintenance R15**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4018 rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Revised to R4-2403410 (from R4-2400470).**

[**R4-2403410**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403410.zip) **(NR\_newRAT) CR on NR-E-UTRAN HO requirement maintenance R15**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4018 rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400471 (NR\_newRAT) CR on NR-E-UTRAN HO requirement maintenance R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4019 rev Cat: A (Rel-16)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400472 (NR\_newRAT) CR on NR-E-UTRAN HO requirement maintenance R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4020 rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400473 (NR\_newRAT) CR on NR-E-UTRAN HO requirement maintenance R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4021 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400812 (NR\_newRAT-Perf) 38.133 CR on corrections for SMTC configuration – R15**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4049 rev Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2400813 (NR\_newRAT-Perf) 38.133 CR on corrections for SMTC configuration**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4050 rev Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2400814 (NR\_newRAT-Perf) 38.133 CR on corrections for SMTC configuration**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4051 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2400815 (NR\_newRAT-Perf) 38.133 CR on corrections for SMTC configuration**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4052 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2400988 CR on clarification of MAC CE triggered TCI state switch or TCI state list update - R15**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4068 rev Cat: F (Rel-15)  
  
 Source: OPPO*

**Decision: Merged.**

**R4-2400989 CR on clarification of MAC CE triggered TCI state switch or TCI state list update - R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4069 rev Cat: F (Rel-16)  
  
 Source: OPPO*

**Decision: Merged.**

**R4-2400990 CR on clarification of MAC CE triggered TCI state switch or TCI state list update - R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4070 rev Cat: F (Rel-17)  
  
 Source: OPPO*

**Decision: Merged.**

**R4-2400991 CR on clarification of MAC CE triggered TCI state switch or TCI state list update - R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4071 rev Cat: A (Rel-18)  
  
 Source: OPPO*

**Decision: Withdrawn.**

**R4-2401123 (NR\_newRAT-Core) Correction for aperiodic CSI-RS L1-RSRP measurement (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4076 rev Cat: F (Rel-15)  
  
 Source: MediaTek*

**Decision: Postponed.**

[**R4-2403411**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403411.zip) **(NR\_newRAT-Core) Correction for aperiodic CSI-RS L1-RSRP measurement (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4076 rev Cat: F (Rel-15)  
  
 Source: MediaTek*

**Decision: Withdrawn.**

**R4-2401124 (NR\_newRAT-Core) Correction for aperiodic CSI-RS L1-RSRP measurement (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4077 rev Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2401125 (NR\_newRAT-Core) Correction for aperiodic CSI-RS L1-RSRP measurement (Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4078 rev Cat: A (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2401126 (NR\_newRAT-Core) Correction for aperiodic CSI-RS L1-RSRP measurement (Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4079 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2401130 (NR\_newRAT-Perf) Measurement gap for Inter-frequency measurement (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4083 rev Cat: F (Rel-15)  
  
 Source: MediaTek*

**Decision: Merged.**

**R4-2401131 (NR\_newRAT-Perf) Measurement gap for Inter-frequency measurement (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4084 rev Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2401132 (NR\_newRAT-Perf) Measurement gap for Inter-frequency measurement (Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4085 rev Cat: A (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2401133 (NR\_newRAT-Perf) Measurement gap for Inter-frequency measurement (Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4086 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2401293 (NR\_newRAT-Perf) Correction to inter-frequency measurement test cases\_R15**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4092 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

**R4-2401294 (NR\_newRAT-Perf) Correction to inter-frequency measurement test cases\_R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4093 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401295 (NR\_newRAT-Perf) Correction to inter-frequency measurement test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4094 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401296 (NR\_newRAT-Perf) Correction to inter-frequency measurement test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4095 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401358 (NR\_newRAT-Perf) Corrections to TCI states switching test cases R15**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4114 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401359 (NR\_newRAT-Perf) Corrections to TCI states switching test cases R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4115 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401360 (NR\_newRAT-Perf) Corrections to TCI states switching test cases R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4116 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401361 (NR\_newRAT-Perf) Corrections to TCI states switching test cases R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4117 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401362 (NR\_newRAT-Perf) On AWGN propagation condition of test cases without Noc**

*Type: other For: Approval  
 Source: Huawei, HiSilicon, Qualcomm, Ericsson*

**Decision: Noted.**

**R4-2401363 (NR\_newRAT-Perf) Correcting propagation condition of test cases not configuring Noc Rel-15**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4118 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon, Qualcomm, Ericsson*

**Decision: Revised to R4-2403339 (from R4-2401363).**

[**R4-2403339**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403339.zip) **(NR\_newRAT-Perf) Correcting propagation condition of test cases not configuring Noc Rel-15**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4118 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon, Qualcomm, Ericsson*

**Decision: Agreed.**

**R4-2401364 (NR\_newRAT-Perf) Correcting propagation condition of test cases not configuring Noc Rel-16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4119 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon, Qualcomm, Ericsson*

**Decision: Agreed.**

**R4-2401365 (NR\_newRAT-Perf) Correcting propagation condition of test cases not configuring Noc Rel-17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4120 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon, Qualcomm, Ericsson*

**Decision: Agreed.**

**R4-2401366 (NR\_newRAT-Perf) Correcting propagation condition of test cases not configuring Noc Rel-18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4121 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon, Qualcomm, Ericsson*

**Decision: Agreed.**

**R4-2401450 (NR\_newRAT-Core) CR to correct and clarify Rel-15 TCI state switching delay requirements**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4138 rev Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Proposal how to fix the active TCI state switch requirement + adding references to RAN2 specification.

**Decision: Revised to R4-2403412 (from R4-2401450).**

[**R4-2403412**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403412.zip) **(NR\_newRAT-Core) CR to correct and clarify Rel-15 TCI state switching delay requirements**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4138 rev Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell, OPPO*

**Abstract:**

Proposal how to fix the active TCI state switch requirement + adding references to RAN2 specification.

**Decision: Agreed.**

**R4-2401451 (NR\_newRAT-Core) CR to correct and clarify Rel-15 TCI state switching delay requirements**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4139 rev Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, OPPO*

**Decision: Agreed.**

**R4-2401452 (NR\_newRAT-Core) CR to correct and clarify Rel-15 TCI state switching delay requirements**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4140 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell, OPPO*

**Decision: Agreed.**

**R4-2401453 (NR\_newRAT-Core) CR to correct and clarify Rel-15 TCI state switching delay requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4141 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell, OPPO*

**Decision: Agreed.**

**R4-2401721 (NR\_newRAT-Perf) Clarification on MAC-CE based TCI state switch delay test**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401722 ( NR\_newRAT-Perf) CR clarification on MAC-CE based TCI state switch delay**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4168 rev Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Unclear UE behaviour due to RAN4 test case for MAC based TCI state switch delay is not aligned with the defined core requirements

**Decision: Postponed.**

[**R4-2403413**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403413.zip) **( NR\_newRAT-Perf) CR clarification on MAC-CE based TCI state switch delay**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4168 rev Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Unclear UE behaviour due to RAN4 test case for MAC based TCI state switch delay is not aligned with the defined core requirements

**Decision: Withdrawn.**

**R4-2401723 (NR\_newRAT-Perf) CR clarification on MAC-CE based TCI state switch delay**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4169 rev Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2401724 (NR\_newRAT-Perf) CR clarification on MAC-CE based TCI state switch delay**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4170 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2401725 (NR\_newRAT-Perf) CR clarification on MAC-CE based TCI state switch delay**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4171 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2401921 (NR\_newRAT-Perf)CR on test cases for SCell activation delay reduction in R15**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4190 rev Cat: F (Rel-15)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2401922 (NR\_newRAT-Perf)CR on test cases for SCell activation delay reduction in R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4191 rev Cat: A (Rel-16)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2401923 (NR\_newRAT-Perf)CR on test cases for SCell activation delay reduction in R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4192 rev Cat: A (Rel-17)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2401924 (NR\_newRAT-Perf)CR on test cases for SCell activation delay reduction in R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4193 rev Cat: A (Rel-18)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2402150 (NR\_newRAT-Core) CR on MG related requirements**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4217 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2402151 (NR\_newRAT-Core) CR on MG related requirements R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4218 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2402152 (NR\_newRAT-Core) CR on MG related requirements R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4219 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2402153 (NR\_newRAT-Core) CR on MG related requirements R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4220 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2402775 (NR\_newRAT-Perf) Inter-frequency measurement for UE capable of independentGapConfig (Cat-F Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.24.0 CR-4258 rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2402776 (NR\_newRAT-Perf) Inter-frequency measurement for UE capable of independentGapConfig (Cat-A Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4259 rev Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2402777 (NR\_newRAT-Perf) Inter-frequency measurement for UE capable of independentGapConfig (Cat-A Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4260 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2402778 (NR\_newRAT-Perf) Inter-frequency measurement for UE capable of independentGapConfig (Cat-A Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4261 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**NR\_pos**

**R4-2400127 (NR\_pos-Perf) Issues on R16 and R17 positioning test cases**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400128 (NR\_pos-Perf) CR on positioning test cases in R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-3965 rev Cat: F (Rel-16)  
  
 Source: CATT*

QC: the changes to the early release in the CR are not essential. For Rel-18, we need to resolve the TE issues to have testable test case.

CATT: some of the side contions are wrong.

R&S: As general principle, the CBW defined is the maximum CBW for TE. Not expect TE to implemente larger CBW.

QC: This is the UE configured CBW.

**Decision: Agreed.**

[**R4-2403364**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403364.zip) **(NR\_pos-Perf) CR on positioning test cases in R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-3965 rev Cat: F (Rel-16)  
  
 Source: CATT*

**Decision: Withdrawn.**

**R4-2400129 (NR\_pos-Perf) CR on positioning test cases in R17 - Cat A**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3966 rev Cat: A (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2400130 (NR\_pos-Perf) CR on positioning test cases in R18 - Cat A**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3967 rev Cat: A (Rel-18)  
  
 Source: CATT*

**Decision: Agreed.**

**NR\_unlic**

**R4-2400474 (NR\_unlic-Core)CR on max function for cell dection in NR-U R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4022 rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Revised to R4-2403414 (from R4-2400474).**

[**R4-2403414**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403414.zip) **(NR\_unlic-Core)CR on max function for cell dection in NR-U R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4022 rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400475 (NR\_unlic-Core) CR on max function for cell dection in NR-U R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4023 rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400476 (NR\_unlic-Core) CR on max function for cell dection in NR-U R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4024 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400501 (NR\_unlic-Core) CR on NR Measurements when CCA is used-Rel16**

*Type: CR For: Agreement  
 36.133 v16.19.0 CR-7281 rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Revised to R4-2403415 (from R4-2400501).**

[**R4-2403415**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403415.zip) **(NR\_unlic-Core) CR on NR Measurements when CCA is used-Rel16**

*Type: CR For: Agreement  
 36.133 v16.19.0 CR-7281 rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400502 (NR\_unlic-Core) CR on NR Measurements when CCA is used-Rel17**

*Type: CR For: Agreement  
 36.133 v17.12.0 CR-7282 rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2403555 (from R4-2400502).**

[**R4-2403555**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403555.zip) **(NR\_unlic-Core) CR on NR Measurements when CCA is used-Rel17**

*Type: CR For: Agreement  
 36.133 v17.12.0 CR-7282 rev Cat: A (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400503 (NR\_unlic-Core) CR on NR Measurements when CCA is used-Rel18**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7283 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Decision: Revised to R4-2403556 (from R4-2400503).**

[**R4-2403556**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403556.zip) **(NR\_unlic-Core) CR on NR Measurements when CCA is used-Rel18**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7283 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400725 (NR\_unlic-Perf) Correction CR on UL CCA model (R16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4046 rev Cat: F (Rel-16)  
  
 Source: Qualcomm*

**Decision: Agreed.**

**R4-2402913 (NR\_unlic-Perf) UL CCA model (R17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4268 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2402914 (NR\_unlic-Perf) UL CCA model (R18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4269 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2402915 (NR\_unlic-Perf) CR for NR-U TC correction (R16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4270 rev Cat: F (Rel-16)  
  
 Source: Qualcomm*

**Decision: Revised to R4-2403416 (from R4-2402915).**

[**R4-2403416**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403416.zip) **(NR\_unlic-Perf) CR for NR-U TC correction (R16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4270 rev Cat: F (Rel-16)  
  
 Source: Qualcomm*

**Decision: Agreed.**

**R4-2402916 (NR\_unlic-Perf) CR for NR-U TC correction (R17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4271 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2402917 (NR\_unlic-Perf) CR for NR-U TC correction (R18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4272 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2402918 (NR\_unlic-Perf) OCNG modeling for NR-U (R16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4273 rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2403417 (from R4-2402918).**

[**R4-2403417**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403417.zip) **(NR\_unlic-Perf) OCNG modeling for NR-U (R16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4273 rev Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

Session Chair: The changes in the CR are agreeable. There is cover sheet error in the Rel-16 Cat F CR, and the CRs are postponed.

**Decision: Postponed.**

**R4-2402919 (NR\_unlic-Perf) OCNG modeling for NR-U (R17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4274 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

Session Chair: The changes in the CR are agreeable. There is cover sheet error in the Rel-16 Cat F CR, and the CRs are postponed.

**Decision: Postponed.**

**R4-2402920 (NR\_unlic-Perf) OCNG modeling for NR-U (R18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4275 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

Session Chair: The changes in the CR are agreeable. There is cover sheet error in the Rel-16 Cat F CR, and the CRs are postponed.

**Decision: Postponed.**

**NR\_RRM\_Enh**

**R4-2400548 (NR\_RRM\_Enh-Core) Discussion on R16 no-gap measurement related issue**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401127 (NR\_RRM\_Enh-Core) Correction for aperiodic CSI-RS L1-SINR measurement (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4080 rev Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Decision: Postponed.**

[**R4-2403418**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403418.zip) **(NR\_RRM\_Enh-Core) Correction for aperiodic CSI-RS L1-SINR measurement (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4080 rev Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2401128 (NR\_RRM\_Enh-Core) Correction for aperiodic CSI-RS L1-SINR measurement (Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4081 rev Cat: A (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2401129 (NR\_RRM\_Enh-Core) Correction for aperiodic CSI-RS L1-SINR measurement (Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4082 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2401134 (NR\_RRM\_Enh-Perf) Maintenance perf part CR on event triggered reporting tests with additional mandatory gap pattern (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4087 rev Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2403419 (from R4-2401134).**

[**R4-2403419**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403419.zip) **(NR\_RRM\_Enh-Perf) Maintenance perf part CR on event triggered reporting tests with additional mandatory gap pattern (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4087 rev Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2401135 (NR\_RRM\_Enh-Perf) Maintenance perf part CR on event triggered reporting tests with additional mandatory gap pattern (Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4088 rev Cat: A (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2401136 (NR\_RRM\_Enh-Perf) Maintenance perf part CR on event triggered reporting tests with additional mandatory gap pattern (Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4089 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2401297 (NR\_RRM\_Enh-Perf) Correction to CGI measurement test cases\_R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4096 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403420 (from R4-2401297).**

[**R4-2403420**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403420.zip) **(NR\_RRM\_Enh-Perf) Correction to CGI measurement test cases\_R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4096 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401298 (NR\_RRM\_Enh-Perf) Correction to CGI measurement test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4097 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401299 (NR\_RRM\_Enh-Perf) Correction to CGI measurement test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4098 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401460 (NR\_RRM\_enh-Perf) corrections for FR2 inter-band SCell activation TC – R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4144 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403421 (from R4-2401460).**

[**R4-2403421**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403421.zip) **(NR\_RRM\_enh-Perf) corrections for FR2 inter-band SCell activation TC – R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4144 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2401461 (NR\_RRM\_enh-Perf) corrections for FR2 inter-band SCell activation TC - R17 CatA**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4145 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2401462 (NR\_RRM\_enh-Perf) corrections for FR2 inter-band SCell activation TC - R18 CatA**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4146 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2401583 (NR\_RRM\_enh-Core) Views on next step for Rel-16 NeedforGap**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401656 [NR\_RRM\_enh-Core] CR on the R16 inter-frequency&inter-RAT measurement without gap**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4161 rev Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

Parsing Failure: Change request number wrong on CR cover for TDoc R4-2401656. Database value : 4161. CR cover value : . A revision will be required.

**Decision:** The document was **withdrawn**.

**R4-2402400 [NR\_RRM\_enh-Core] CR on the R16 inter-frequency/inter-RAT measurement without gap**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4230 rev Cat: F (Rel-16)  
  
 Source: ZTE*

**Decision: Postponed.**

[**R4-2403422**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403422.zip) **[NR\_RRM\_enh-Core] CR on the R16 inter-frequency/inter-RAT measurement without gap**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4230 rev Cat: F (Rel-16)  
  
 Source: ZTE*

**Decision: Withdrawn.**

**R4-2401661 [NR\_RRM\_enh-Core] CR on the R16 inter-frequency&inter-RAT measurement without gap**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4166 rev Cat: A (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2401662 [NR\_RRM\_enh-Core] CR on the R16 inter-frequency&inter-RAT measurement without gap**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4167 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2402158 (NR\_RRM\_enh-Core) CR on multiple SCell activation requirements**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4221 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2402159 (NR\_RRM\_enh-Core) CR on multiple SCell activation requirements R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4222 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2402160 (NR\_RRM\_enh-Core) CR on multiple SCell activation requirements R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4223 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2402429 (NR\_RRM\_enh) Discussion on Rel-16 no-gap reporting**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell, BT Plc., Vodafone, Charter Communications Inc., Deutsche Telekom, TELECOM ITALIA S.p.A., Verizon*

**Decision: Noted.**

**R4-2402430 (NR\_RRM\_enh) CR to 36.133 Clarification of interruption behavior for measurements without gaps r16**

*Type: CR For: Agreement  
 36.133 v16.19.0 CR-7308 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, BT Plc., Charter Communications Inc., Deutsche Telekom, Vodafone, TELECOM ITALIA S.p.A.*

**Decision: Postponed.**

[**R4-2403423**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403423.zip) **(NR\_RRM\_enh) CR to 36.133 Clarification of interruption behavior for measurements without gaps r16**

*Type: CR For: Agreement  
 36.133 v16.19.0 CR-7308 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, BT Plc., Charter Communications Inc., Deutsche Telekom, Vodafone, TELECOM ITALIA S.p.A.*

**Decision: Withdrawn.**

**R4-2402431 (NR\_RRM\_enh) CR to 36.133 Clarification of interruption behavior for measurements without gaps r17**

*Type: CR For: Agreement  
 36.133 v17.12.0 CR-7309 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell, BT Plc., Charter Communications Inc., Deutsche Telekom, Vodafone, TELECOM ITALIA S.p.A.*

**Decision: Postponed.**

[**R4-2403424**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403424.zip) **(NR\_RRM\_enh) CR to 36.133 Clarification of interruption behavior for measurements without gaps r17**

*Type: CR For: Agreement  
 36.133 v17.12.0 CR-7309 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell, BT Plc., Charter Communications Inc., Deutsche Telekom, Vodafone, TELECOM ITALIA S.p.A.*

**Decision: Withdrawn.**

**R4-2402432 (NR\_RRM\_enh) CR to 36.133 Clarification of interruption behavior for measurements without gaps r18**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7310 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell, BT Plc., Charter Communications Inc., Deutsche Telekom, Vodafone, TELECOM ITALIA S.p.A.*

**Decision: Postponed.**

**R4-2402433 (NR\_RRM\_enh) CR to 38.133 Clarification of interruption behavior for measurements without gaps r16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4231 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, BT Plc., Charter Communications Inc., Deutsche Telekom, Vodafone, TELECOM ITALIA S.p.A.*

**Decision: Withdrawn.**

**R4-2402434 (NR\_RRM\_enh) CR to 38.133 Clarification of interruption behavior for measurements without gaps r17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4232 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell, BT Plc., Charter Communications Inc., Deutsche Telekom, Vodafone, TELECOM ITALIA S.p.A.*

**Decision: Postponed.**

**R4-2402435 (NR\_RRM\_enh) CR to 38.133 Clarification of interruption behavior for measurements without gaps r18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4233 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell, BT Plc., Charter Communications Inc., Deutsche Telekom, Vodafone, TELECOM ITALIA S.p.A.*

**Decision: Withdrawn.**

**LTE\_NR\_DC\_CA\_enh**

**R4-2401445 (LTE\_NR\_DC\_CA\_enh-Core) CR to correct Inactive mode CA/DC measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4133 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Inactive mode requirements are called idle mode requirements. This CR fixes this.

**Decision: Agreed.**

**R4-2401446 (LTE\_NR\_DC\_CA\_enh-Core) CR to correct Inactive mode CA/DC measurement requirements**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4134 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2401447 (LTE\_NR\_DC\_CA\_enh-Core) CR to correct Inactive mode CA/DC measurement requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4135 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**TEI**

**R4-2400537 Signalling mismatch for RRC\_IDLE/INACTIVE state**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4033 rev Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

Parsing Failure: Specification version number wrong on CR cover for TDoc R4-2400537. Database value : 16.18.0. CR cover value : 16.8.0. A revision will be required.

**Decision:** The document was **revised to R4-2402939**.

**R4-2402939 Signalling mismatch for RRC\_IDLE/INACTIVE state**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4033 rev 1 Cat: F (Rel-16)  
  
 Source: Apple*

(Replaces R4-2400537)

**Decision: Merged.**

**R4-2400538 [TEI17] Signalling mismath for RRC\_IDLE/INACTIVE state**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4034 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Merged.**

**R4-2400539 [TEI18] Signalling mismath for RRC\_IDLE/INACTIVE state**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4035 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Merged.**

**R4-2400977 Remaining issues on R16 NeedForGaps**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the remaining issues on R16 NeedForGaps

**Decision: Noted.**

4.7 Rel-15/16 TEI

**R4-2402154 (TEI16) Discussion on interruption requirements for R16 NFG**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

Session Chair: Treat this under email thread [201].

**Decision: Noted.**

**R4-2402155 (TEI16) CR on requirements for R16 NFG**

*Type: CR For: Agreement  
 36.133 v16.19.0 CR-7302 rev Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Session Chair: Treat this under email thread [201].

**Decision: Postponed.**

**R4-2402156 (TEI16) CR on requirements for R16 NFG R17**

*Type: CR For: Agreement  
 36.133 v17.12.0 CR-7303 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Session Chair: Treat this under email thread [201].

**Decision: Withdrawn.**

**R4-2402157 (TEI16) CR on requirements for R16 NFG R18**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7304 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Session Chair: Treat this under email thread [201].

**Decision: Withdrawn.**

4.8 Moderator summary and conclusions (for Agenda 4)

Topic: [110][201] Maintenance\_up\_to\_R16

**R4-2400737 Topic summary for [110][201] Maintenance\_up\_to\_R16**

*Type: other For: Information  
 Source: Moderator(Huawei)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403315**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403315.zip) **Ad-hoc minutes for Maintenance\_up\_to\_R16**

*Type: other For: Approval  
 Source: Huawei*

**Decision: Approved.**

[**R4-2403341**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403341.zip) **Coffee-break ad-hoc minutes on Rel-16 measurements without gaps**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

[**R4-2403342**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403342.zip) **WF on Interruption requirements for Rel-16 measurements without gaps**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403557 (from R4-2403342).**

[**R4-2403557**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403557.zip) **WF on Interruption requirements for Rel-16 measurements without gaps**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403559 (from R4-2403557).**

[**R4-2403559**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403559.zip) **WF on Interruption requirements for Rel-16 measurements without gaps**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Approved.**

**Agreement:**

**Issue 1-1-1: Scenario 1, LTE – NR inter-RAT measurement**

1. interRAT-NeedForGaps-r16=FALSE means that the UE support measurement without gaps
   * 1. The UE may or may not cause interruption.
2. if UE causes interruptions when performing measurements without gaps:
   * 1. Support early implementation of Rel-18 NeedForGaps:
        1. Optional since R17
     2. [FFS mandatory report of the UE capability R18 interRAT-NeedForIntrNR-r18 from Rel-18 UE if the UE reports interRAT-NeedForGaps-r16=FALSE]
     3. FFS the UE behavior if the **Rel-18** UE does not support interRAT-NeedForIntrNR-r18

**Issue 1-1-2: Scenario 2, NR measurements without gaps**

1. “no-gap” as part of NeedForGapsInfoNR-r16=FALSE means that the UE support measurement without gaps
   * 1. The UE may or may not cause interruption.
2. if UE causes interruptions when performing measurements without gaps:
   * 1. Support early implementation of Rel-18 NeedForGaps:
        1. Optional since R17
        2. **~~[FFS mandatory support of NeedForInterruptionNR-r18 from Rel-18 UE if the UE supports NeedForGapsInfoNR-r16]~~**
     2. FFS the UE behavior if the **Rel-18** UE does not support NeedForInterruptionNR-r18

**Issue 1-1-1: Scenario 1, LTE – NR inter-RAT measurement**

**An updated vesion after online discussion (not agreed)**

1. interRAT-NeedForGaps-r16=FALSE means that the UE support measurement without gaps
   * 1. **UE may or may not cause interruption. ~~RAN4 does not define different meanings of interRAT-NeedForGaps-r16=FALSE with and without interruption.~~**
2. if UE causes interruptions when performing measurements without gaps:
   * 1. Support **early** implementation **~~(and in specification)~~** of Rel-18 NeedForGaps:
        1. ~~Optional in R16 and R17 or~~ Optional since R17
     2. [**FFS** mandatory report of UE capability Rel-18 NeedForInterruptions from R18 if UE report interRAT-NeedForGaps-r16=FALSE]
     3. **FFS the UE behaviour if UE does not support Rel-18 NeedForGaps.**

[**R4-2403343**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403343.zip) **LS measurements without gap**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

5 Rel-17 maintenance for LTE and NR

**Guidance for maintenance agendas (AI 4, AI 5 and AI 6)**

The following guidance are provided for AI 4, AI5 and AI6:

- For maintenance agenda AI 4 (up to Rel-16), AI 5 (Rel-17) and AI 6 (Rel-18), formal CRs are expected and multiple formal CRs per company in the lowest agenda are allowed. For tracking the changes easily, it expected that one batch of CRs (Cat-F/A/…) will just cover a single topic/WI rather than multiple topics/WIs and Cat-F CR with corresponding Cat-A CRs needs be submitted under the same agenda.

- When submitting contributions to AI 4, AI 5 and AI 6.1.15/AI 6.2.8, please add (WI\_code) in the beginning of titles for both discussion files and CRs to facilitate moderators and session chairs handling.

- When reserving the tdoc number, please use the correct WI code rather than simply using TEI and fill the column of “Related WIs” in your reservation spreadsheet. If you submit a CR with TEI as WI code, please inform session chair.

- The contributions corresponding to incoming LS for Rel-17 and Rel-18 are expected to be submitted in AI 12, if there is a dedicated agenda in AI 12.

5.2 Rel-17 non-spectrum related WI maintenance

5.2.3 RRM requirements

NR\_pos\_enh

**R4-2400110 (NR\_pos\_enh-Perf) CR on R17 positioning test cases in inactive mode**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4254 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2403365 (from R4-2400110).**

[**R4-2403365**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403365.zip) **(NR\_pos\_enh-Perf) CR on R17 positioning test cases in inactive mode**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4254 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2400111 (NR\_pos\_enh-Perf) CR on R17 positioning test cases in inactive mode- Cat A**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4255 rev Cat: A (Rel-18)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2400116 (NR\_pos\_enh-Core) CR on positioning core requirements in RRC\_INACTIVE state in R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4256 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

[**R4-2403366**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403366.zip) **(NR\_pos\_enh-Core) CR on positioning core requirements in RRC\_INACTIVE state in R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4256 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Withdrawn.**

**R4-2400126 (NR\_pos\_enh-Core) CR on positioning core requirements in RRC\_INACTIVE state in R18 - Cat A**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4257 rev Cat: A (Rel-18)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2400131 (NR\_pos\_enh-Perf) CR on R17 positioning test cases in connected mode**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3968 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

[**R4-2403367**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403367.zip) **(NR\_pos\_enh-Perf) CR on R17 positioning test cases in connected mode**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3968 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Withdrawn.**

**R4-2400132 (NR\_pos\_enh-Perf) CR on R17 positioning test cases in connected mode - Cat A**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3969 rev Cat: A (Rel-18)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2402674 (NR\_pos\_enh-Perf) CR to 38.133 Corrections to PRS-RSRPP accuracy requirement**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4245 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR proposes corrections to PRS-RSRPP measurement accuracy requirement in Rel. 17 spec.

**Decision: Agreed.**

**R4-2402675 (NR\_pos\_enh-Perf) CR to 38.133 Corrections to PRS-RSRPP accuracy requirement**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4246 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR proposes to mirror corrections to PRS-RSRPP measurement accuracy requirement from rel. 17.

**Decision: Agreed.**

NR\_MG\_enh

**R4-2400273 [NR\_MG\_enh-Core] CR 38.133 Correction of normative text in requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3972 rev Cat: F (Rel-18)  
  
 Source: BeammWave*

**Abstract:**

A side condition that was introduced in the Rel-18 version of the specification by Cat A CR 3674 for the WI NR\_MG\_enh-Core is incorrect, and violates the guidelines in the Foreword section of TS 38.133 on the usage of modal verbs in normative text. The co

**Decision: Agreed.**

**R4-2400398 (NR\_MG\_enh-Core) CR on Rel-17 MGE requirements**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4000 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2403424 (from R4-2400398).**

[**R4-2403424**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403424.zip) **(NR\_MG\_enh-Core) CR on Rel-17 MGE requirements**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4000 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400399 (NR\_MG\_enh-Core) CR on Rel-17 MGE requirements - R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4001 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2401584 [NR\_MG\_enh-Perf] Maintenance CR for MGE perf part R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4147 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc., Anritsu*

**Decision: Revised to R4-2403425 (from R4-2401584).**

[**R4-2403425**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403425.zip) **[NR\_MG\_enh-Perf] Maintenance CR for MGE perf part R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4147 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc., Anritsu*

**Decision: Agreed.**

**R4-2401585 (NR\_MG\_enh-Perf) Maintenance CR for MGE perf part R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4148 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc., Anritsu*

**Decision: Agreed.**

**R4-2402397 [NR\_MG\_enh-Core] CR on the scheduling restriction of R17 NCSG**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4227 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Revised to R4-2403426 (from R4-2402397).**

[**R4-2403426**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403426.zip) **[NR\_MG\_enh-Core] CR on the scheduling restriction of R17 NCSG**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4227 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Agreed.**

**R4-2401658 [NR\_MG\_enh-Core] CR on scheduling restriction of R17 NCSG**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4163 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2401862 [NR\_MG\_enh-Core] Discussion on remaining issues for NSCG**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402002 (NR\_MG\_enh) Measurements without gaps when Pre-MG is deactivated**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4213 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2402003 (NR\_MG\_enh) Measurements without gaps when Pre-MG is deactivated**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4214 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

NR\_redcap

**R4-2400301 [NR\_redcap-Perf] CR to A.16.4.1.2 UE transmit timing test and A.16.5.2.2 BFD and LR for RedCap**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3994 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Addition of missing configuration 4 in tables.

**Decision:** The document was **withdrawn**.

**R4-2400934 (NR\_redcap-Perf) CR to A.16.4.1.2 UE transmit timing test and A.16.5.2.2 BFD and LR for RedCap**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4062 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Addition of missing configuration 4 in tables.

Title of R4-2400301 was corrected to describe WI code with ().

Associated Cat-A Rel-18 CR: R4-2400302.

**Decision: Agreed.**

**R4-2400302 (NR\_redcap-Perf) CR to A.16.4.1.2 UE transmit timing test and A.16.5.2.2 BFD and LR for RedCap**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3995 rev Cat: A (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

Addition of missing configuration 4 in tables.

Associated Rel-15 CR: R4-2400934

**Decision: Agreed.**

**R4-2400303 [NR\_redcap-Perf] CR to A.16.6.2.9, A.16.6.2.10 SMTC Config and GapOffset**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3996 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Correction of Gap offset for FDD

**Decision:** The document was **withdrawn**.

**R4-2400935 (NR\_redcap-Perf) CR to A.16.6.2.9, A.16.6.2.10 SMTC Config and GapOffset**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4063 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Correction of Gap offset for FDD.

Title of R4-2400303 was corrected to describe WI code with ().

Associated Cat-A Rel-18 CR: R4-2400304.

**Decision: Merged.**

**R4-2400304 (NR\_redcap-Perf) CR to A.16.6.2.9, A.16.6.2.10 SMTC Config and GapOffset**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3997 rev Cat: A (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

Correction of Gap offset for FDD

Associated Rel-17 CR: R4-2400935

**Decision: Withdrawn.**

**R4-2400305 [NR\_redcap-Perf] CR to A.16.6.2.11, A.16.6.2.12 SSB Config**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3998 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Align SSB config for cell 2 with cell 1.

**Decision:** The document was **withdrawn**.

**R4-2400936 (NR\_redcap-Perf) CR to A.16.6.2.11, A.16.6.2.12 SSB Config**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4064 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Align SSB config for cell 2 with cell 1.

Title of R4-2400305 was corrected to describe WI code with ().

Associated Cat-A Rel-18 CR: R4-2400306.

**Decision: Merged.**

**R4-2400306 (NR\_redcap-Perf) CR to A.16.6.2.11, A.16.6.2.12 SSB Config**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3999 rev Cat: A (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

Align SSB config for cell 2 with cell 1.

Associated Rel-17 CR: R4-2400936

**Decision: Withdrawn.**

**R4-2400499 (NR\_redcap-Core) CR on PRACH transmission periodicity for RedCap UE-Rel17**

*Type: CR For: Agreement  
 36.133 v17.12.0 CR-7279 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2403427 (from R4-2400499).**

[**R4-2403427**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403427.zip) **(NR\_redcap-Core) CR on PRACH transmission periodicity for RedCap UE-Rel17**

*Type: CR For: Agreement  
 36.133 v17.12.0 CR-7279 rev Cat: F (Rel-17)  
E/// to check  
 Source: Apple*

**Decision: Agreed.**

**R4-2400500 (NR\_redcap-Core) CR on PRACH transmission periodicity for RedCap UE-Rel18**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7280 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Decision: Revised to R4-2403536 (from R4-2400500).**

[**R4-2403536**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403536.zip) **(NR\_redcap-Core) CR on PRACH transmission periodicity for RedCap UE-Rel18**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7280 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400659 (NR\_redcap-Perf) CR to TS 38.133: Corrections to RedCap test cases (Rel 17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4040 rev Cat: F (Rel-17)  
  
 Source: Rohde & Schwarz*

**Decision: Agreed.**

**R4-2400660 (NR\_redcap-Perf) CR to TS 38.133: Corrections to RedCap test cases (Rel 18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4041 rev Cat: A (Rel-18)  
  
 Source: Rohde & Schwarz*

**Decision: Agreed.**

**R4-2400673 [NR\_redcap-Perf ] Corrections to NR SA FR1 RedCap Event Trigger test parameters in A.16.6.2.9, A.16.6.2.10**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4044 rev Cat: F (Rel-17)  
  
 Source: Keysight Technologies UK Ltd*

**Decision: Merged.**

**R4-2400692 [NR\_redcap-Perf ] Corrections to NR SA FR1 RedCap Event Trigger test parameters in A.16.6.2.9, A.16.6.2.10 (Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4045 rev Cat: A (Rel-18)  
  
 Source: Keysight Technologies UK Ltd*

**Decision: Withdrawn.**

**R4-2400726 (NR\_redcap-Perf) Correction CR for RRC re-establishment TCs for RedCap (R17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4047 rev Cat: F (Rel-17)  
  
 Source: Qualcomm*

QC: we checked offline and E/// is ok with the original version.

**Decision: Agreed.**

[**R4-2403428**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403428.zip) **(NR\_redcap-Perf) Correction CR for RRC re-establishment TCs for RedCap (R17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4047 rev Cat: F (Rel-17)  
  
 Source: Qualcomm*

**Decision: Withdrawn.**

**R4-2402921 (NR\_redcap-Perf) Correction CR for RRC re-establishment TCs for RedCap (R18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4276 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2401121 (NR\_redcap-Core) CR on eDRX INACTIVE requirements for non-Redcap UEs (Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4074 rev Cat: F (Rel-17)  
  
 Source: Mediatek*

**Decision: Withdrawn.**

[**R4-2403356**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403356.zip) **(NR\_redcap-Core) CR on eDRX INACTIVE requirements for non-Redcap UEs (Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4074 rev Cat: F (Rel-17)  
  
 Source: Mediatek*

**Decision: Withdrawn.**

**R4-2401122 (NR\_redcap-Core) CR on eDRX INACTIVE requirements for non-Redcap UEs (Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4075 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2401302 (NR\_redcap-Core) Correction to RedCap core requirements\_R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4101 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403400 (from R4-2401302).**

[**R4-2403400**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403400.zip) **(NR\_redcap-Core) Correction to RedCap core requirements\_R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4101 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401303 (NR\_redcap-Core) Correction to RedCap core requirements\_R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4102 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401304 (NR\_redcap-Perf) Correction to RedCap measurement test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4103 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Revised to R4-2403401 (from R4-2401304).**

[**R4-2403401**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403401.zip) **(NR\_redcap-Perf) Correction to RedCap measurement test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4103 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Agreed.**

**R4-2401305 (NR\_redcap-Perf) Correction to RedCap measurement test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4104 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Agreed.**

**R4-2401306 (NR\_redcap-Perf) Correction to RedCap inactive and connected state test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4105 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Revised to R4-2403402 (from R4-2401306).**

[**R4-2403402**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403402.zip) **(NR\_redcap-Perf) Correction to RedCap inactive and connected state test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4105 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Agreed.**

**R4-2401307 (NR\_redcap-Perf) Correction to RedCap inactive and connected state test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4106 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Agreed.**

**R4-2401355 (NR\_redcap-Core) Correction on relaxation measurement requirements for RedCap inactive UE with idle eDRX>10.24s**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4112 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403403 (from R4-2401355).**

[**R4-2403403**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403403.zip) **(NR\_redcap-Core) Correction on relaxation measurement requirements for RedCap inactive UE with idle eDRX>10.24s**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4112 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401356 (NR\_redcap-Core) Correction on relaxation measurement requirements for RedCap inactive UE with idle eDRX>10.24s**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4113 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401628 (NR\_redcap-Core) CR on handover requirements for RedCap**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4155 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Abstract:**

Parsing Failure: Change request number wrong on CR cover for TDoc R4-2401628. Database value : 4155. CR cover value : DraftCR. A revision will be required.

**Decision:** The document was **revised to R4-2402938**.

**R4-2402938 (NR\_redcap-Core) CR on handover requirements for RedCap**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4155 rev 1 Cat: F (Rel-17)  
  
 Source: Vivo*

(Replaces R4-2401628)

**Decision: Revised to R4-2403429 (from R4-2402938).**

[**R4-2403429**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403429.zip) **(NR\_redcap-Core) CR on handover requirements for RedCap**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4155 rev 1 Cat: F (Rel-17)  
  
 Source: Vivo*

(Replaces R4-2401628)

**Decision: Agreed.**

**R4-2401629 (NR\_redcap-Core) CR on handover requirements for RedCap**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4156 rev Cat: A (Rel-18)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2401855 [NR\_redcap-Core] Discussion on NCD-SSB time offset**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401856 [NR\_redcap-Core] CR 38.133 Corrections in RRC\_INACTIVE for RedCap**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4181 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403550 (from R4-2401856).**

[**R4-2403550**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403550.zip) **[NR\_redcap-Core] CR 38.133 Corrections in RRC\_INACTIVE for RedCap**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4181 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2401857 [NR\_redcap-Core] CR 38.133 Corrections in RRC\_INACTIVE for RedCap**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4182 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2401858 [NR\_redcap-Perf] CR 38.133 Corrections of SDT Test Case Parameters for RedCap**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4183 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2401859 [NR\_redcap-Perf] CR 38.133 Corrections of SDT Test Case Parameters for RedCap**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4184 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2401942 (NR\_redcap-Perf) Correction of requirements and parameters for RedCap testing**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4196 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

There are FFS in the test cases.

**Decision: Revised to R4-2403337 (from R4-2401942).**

[**R4-2403337**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403337.zip) **(NR\_redcap-Perf) Correction of requirements and parameters for RedCap testing**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4196 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

There are FFS in the test cases.

**Decision: Agreed.**

**R4-2401943 (NR\_redcap-Perf) Correction of requirements and parameters for RedCap testing**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4197 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

There are FFS in the test cases.

**Decision: Agreed.**

**R4-2401944 (NR\_redcap-Core) eDRX requirements for CG-SDT for non-RedCap UE**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4198 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

eDRX requiremens for non-RedCap UE in RRC INACTIVE state were introduced in R4-2321628. In this CR the CG-SDT requirements in INACTIVE mode are updated to take into account the eDRX support.

**Decision: Postponed.**

[**R4-2403430**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403430.zip) **(NR\_redcap-Core) eDRX requirements for CG-SDT for non-RedCap UE**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4198 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

eDRX requiremens for non-RedCap UE in RRC INACTIVE state were introduced in R4-2321628. In this CR the CG-SDT requirements in INACTIVE mode are updated to take into account the eDRX support.

**Decision: Withdrawn.**

**R4-2401945 (NR\_redcap-Core) eDRX requirements for CG-SDT for non-RedCap UE**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4199 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

eDRX requiremens for non-RedCap UE in RRC INACTIVE state were introduced in R4-2321628. In this CR the CG-SDT requirements in INACTIVE mode are updated to take into account the eDRX support.

**Decision: Withdrawn.**

**R4-2401946 (NR\_redcap-Core) Editorial correction to CG-SDT requirements for RedCap UE**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4200 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Typo in Table 5.2B.3-3 where T is used which is undefined. The correct parameter shoudl be TeDRX-RAN as as in the second row of the table.

**Decision: Postponed.**

[**R4-2403338**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403338.zip) **(NR\_redcap-Core) Editorial correction to CG-SDT requirements for RedCap UE**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4200 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Typo in Table 5.2B.3-3 where T is used which is undefined. The correct parameter shoudl be TeDRX-RAN as as in the second row of the table.

**Decision: Withdrawn.**

**R4-2401947 (NR\_redcap-Core) eDRX requirements for CG-SDT for RedCap UE**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4201 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Typo in Table 5.2B.3-3 where T is used which is undefined. The correct parameter shoudl be TeDRX-RAN as as in the second row of the table.

**Decision: Withdrawn.**

**R4-2402728 (NR\_redcap-Core) Corrections to Measurements on Higher Priority Carriers in RRC\_IDLE state**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4251 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2402893 (NR\_redcap-Perf) Discussion on number of ACK NACK for CGI reporting**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2402894 (NR\_redcap-Perf) Formal CR to Rel-17 TS 38.133: on RedCap Perf maintenance in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4264 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2403357 (from R4-2402894).**

[**R4-2403357**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403357.zip) **(NR\_redcap-Perf) Formal CR to Rel-17 TS 38.133: on RedCap Perf maintenance in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4264 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2402895 (NR\_redcap-Perf) Formal CR to Rel-18 TS 38.133: on RedCap Perf maintenance in TS 38.133**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4265 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2402922 (NR\_redcap-Core) CR on high priority search with eDRX (R17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4277 rev Cat: F (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Postponed.**

**R4-2402932 (NR\_redcap-Core) CR on high priority search with eDRX (R17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4277 rev 1 Cat: F (Rel-17)  
  
 Source: Qualcomm*

(Replaces R4-2402922)

**Decision: Postponed.**

**R4-2402923 (NR\_redcap-Core) CR on high priority search with eDRX (R18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4278 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Withdrawn.**

LTE\_NR\_DC\_enh2

**R4-2400400 (LTE\_NR\_DC\_enh2) CR for missing test case of E-UTRAN – NR FR2 interruptions during measurements on deactivated NR PSCell - R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4002 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2403431 (from R4-2400400).**

[**R4-2403431**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403431.zip) **(LTE\_NR\_DC\_enh2) CR for missing test case of E-UTRAN – NR FR2 interruptions during measurements on deactivated NR PSCell - R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4002 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400401 (LTE\_NR\_DC\_enh2) CR for missing test case of E-UTRAN – NR FR2 interruptions during measurements on deactivated NR PSCell - R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4003 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400402 (LTE\_NR\_DC\_enh2) Maintenance CR for test caes - A.4.5.2.10 - R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4004 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2403432 (from R4-2400402).**

[**R4-2403432**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403432.zip) **(LTE\_NR\_DC\_enh2) Maintenance CR for test caes - A.4.5.2.10 - R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4004 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2400403 (LTE\_NR\_DC\_enh2) Maintenance CR for test caes - A.4.5.2.10 - R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4005 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Decision: Revised to R4-2403433 (from R4-2400403).**

[**R4-2403433**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403433.zip) **(LTE\_NR\_DC\_enh2) Maintenance CR for test caes - A.4.5.2.10 - R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4005 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2401412 (LTE\_NR\_DC\_enh2) ((NR\_MG\_enh-Core) )Discussion on Rel-17 maintainence issue.**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provide our view on Rel-17 maintainence issues

**Decision: Noted.**

**R4-2401413 CR to TS 38.133 on SCG activation and deactivation test case**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4123 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR proposal a solution to resolve the unclear UE behavior

**Decision: Postponed.**

**R4-2401414 CR to TS 38.133 on SCG activation and deactivation test case**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4124 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR proposal a solution to resolve the unclear UE behavior

**Decision: Withdrawn.**

**R4-2401726 (LTE\_NR\_DC\_enh2-Core) Discussion on correcting TCI state activation command at SCell activation**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401727 ( LTE\_NR\_DC\_enh2-Core) CR correcting TCI state activation command at SCell activation**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4172 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Alignment of RAN4 requirements with RAN2 procedures

**Decision: Postponed.**

[**R4-2403434**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403434.zip) **( LTE\_NR\_DC\_enh2-Core) CR correcting TCI state activation command at SCell activation**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4172 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Alignment of RAN4 requirements with RAN2 procedures

**Decision: Withdrawn.**

**R4-2401728 (LTE\_NR\_DC\_enh2-Core) CR correcting TCI state activation command at SCell activation**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4173 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2401729 (LTE\_NR\_DC\_enh2-Core) Discussion concerning SCG Activation and Deactivation Delay**

*Type: other For: Agreement  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401730 ( LTE\_NR\_DC\_enh2-Core) CR corrections for SCG Activation and Deactivation Delay**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4174 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Corrections to requirements related to PSCell activation and de-activation delay mechanism for one SCG

**Decision: Revised to R4-2403537 (from R4-2401730).**

[**R4-2403537**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403537.zip) **( LTE\_NR\_DC\_enh2-Core) CR corrections for SCG Activation and Deactivation Delay**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4174 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Corrections to requirements related to PSCell activation and de-activation delay mechanism for one SCG

**Decision: Revised to R4-2403552 (from R4-2403537).**

[**R4-2403552**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403552.zip) **( LTE\_NR\_DC\_enh2-Core) CR corrections for SCG Activation and Deactivation Delay**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4174 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Corrections to requirements related to PSCell activation and de-activation delay mechanism for one SCG

**Decision: Agreed.**

**R4-2401731 (LTE\_NR\_DC\_enh2-Core) CR corrections for SCG Activation and Deactivation Delay**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4175 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

NR\_feMIMO

**R4-2400450 Discussion on Active TCI state switch delay for Unified TCI**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400451 (NR\_feMIMO-Core) CR for active state list switching delay requirements for UTCI state -R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4014 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

[**R4-2403435**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403435.zip) **(NR\_feMIMO-Core) CR for active state list switching delay requirements for UTCI state -R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4014 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2400452 (NR\_feMIMO-Core) CR for active state list switching delay requirements for UTCI state -R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4015 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2401137 (NR\_feMIMO-Core) Correction on MAC-CE based uplink TCI state switch (Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4090 rev Cat: F (Rel-17)  
  
 Source: Mediatek*

**Decision: Postponed.**

[**R4-2403436**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403436.zip) **(NR\_feMIMO-Core) Correction on MAC-CE based uplink TCI state switch (Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4090 rev Cat: F (Rel-17)  
  
 Source: Mediatek*

**Decision: Withdrawn.**

**R4-2401138 (NR\_feMIMO-Core) Correction on MAC-CE based uplink TCI state switch (Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4091 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2401998 (NR\_FeMIMO) CR correcting unified TCI state switching requirements**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4209 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2401999 (NR\_FeMIMO) CR correcting unified TCI state switching requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4210 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

NR\_NTN\_solutions

**R4-2400493 (NR\_NTN\_solutions-Core) CR on RSRP/RSRQ/SINR Requirements for NR-NTN- Rel17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4027 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Abstract:**

Parsing Failure: Specification version number wrong on CR cover for TDoc R4-2400493. Database value : 17.12.0. CR cover value : 17.11.0. A revision will be required.

**Decision: Revised to R4-2402941**

**R4-2402941 (NR\_NTN\_solutions-Core) CR on RSRP/RSRQ/SINR Requirements for NR-NTN- Rel17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4027 rev 1 Cat: F (Rel-17)  
  
 Source: Apple*

(Replaces R4-2400493)

**Decision: Agreed.**

**R4-2400494 (NR\_NTN\_solutions-Core) CR on RSRP/RSRQ/SINR Requirements for NR-NTN-Rel18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4028 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Abstract:**

Parsing Failure: Specification version number wrong on CR cover for TDoc R4-2400494. Database value : 18.4.0. CR cover value : 18.3.0. A revision is required.

**Decision: Revised to R4-2402942**

**R4-2402942 (NR\_NTN\_solutions-Core) CR on RSRP/RSRQ/SINR Requirements for NR-NTN-Rel18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4028 rev 1 Cat: A (Rel-18)  
  
 Source: Apple*

(Replaces R4-2400494)-

**Decision: Agreed.**

**R4-2400495 (NR\_NTN\_solutions-Core) CR to 38.133 for UE capability in NTN requirement**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4029 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Not pursued.**

**R4-2400496 (NR\_NTN\_solutions-Core) CR to 38.133 for UE capability in NTN requirement-Rel18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4030 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Abstract:**

Parsing Failure: Specification version number wrong on CR cover for TDoc R4-2400496. Database value : 18.4.0. CR cover value : 18.3.0. A revision will be required.

**Decision:** The document was **revised to R4-2402943**.

**R4-2402943 (NR\_NTN\_solutions-Core) CR to 38.133 for UE capability in NTN requirement-Rel18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4030 rev 1 Cat: A (Rel-18)  
  
 Source: Apple*

(Replaces R4-2400496)

**Decision: Withdrawn.**

**R4-2400497 (NR\_NTN\_solutions-Core) CR to 38.133 UE NTN Capability For Measurement Requirement-Rel17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4031 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Not pursued.**

**R4-2400498 (NR\_NTN\_solutions-Core) CR to 38.133 on UE NTN Capability For Measurement Requirement-Rel18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4032 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Abstract:**

Parsing Failure: Specification version number wrong on CR cover for TDoc R4-2400498. Database value : 18.4.0. CR cover value : 18.3.0. A revision will be required.

**Decision: Revised to R4-2402944.**

**R4-2402944 (NR\_NTN\_solutions-Core) CR to 38.133 on UE NTN Capability For Measurement Requirement-Rel18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4032 rev 1 Cat: A (Rel-18)  
  
 Source: Apple*

(Replaces R4-2400498)

**Decision: Withdrawn.**

**R4-2400661 (NR\_NTN\_solutions-Perf) CR to TS 38.133: Corrections to NR NTN test cases (Rel 17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4042 rev Cat: F (Rel-17)  
  
 Source: Rohde & Schwarz.*

CAICT: with the value of 8, not aligned with the core requirement. Can agree if no other comment.

**Decision: Agreed.**

**R4-2400662 (NR\_NTN\_solutions-Perf) CR to TS 38.133: Corrections to NR NTN test cases (Rel 18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4043 rev Cat: A (Rel-18)  
  
 Source: Rohde & Schwarz*

**Decision: Agreed.**

**R4-2401454 (NR\_NTN\_solutions-Perf) Discussion on GNSS margin removed from the test requirement due to the usage of AT commands for UE location in NTN timing accuracy test**

*Type: discussion For: Endorsement  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: CAICT*

**Abstract:**

Corresponding CRs: From R4-2401455 to R4-2401457.

**Decision: Noted.**

**R4-2401455 (NR\_NTN\_solutions-Perf) CR to 38.133 Rel-17 Cat-F for GNSS margin removed from the test requirement**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4142 rev Cat: F (Rel-17)  
  
 Source: CAICT*

**Abstract:**

Discussion in R4-2401454.

**Decision: Not pursued.**

**R4-2401456 (NR\_NTN\_solutions-Perf) CR to 38.133 Rel-18 Cat-A for GNSS margin removed from the test requirement**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4143 rev Cat: A (Rel-18)  
  
 Source: CAICT*

**Abstract:**

Discussion in R4-2401454.

**Decision: Withdrawn.**

**R4-2401592 (NR\_NTN\_solutions-Core) CR on handover for NTN**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4149 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Corrections to the missing requirements which were agreed and added in other places. Parsing Failure: Change request number wrong on CR cover for TDoc R4-2401592. Database value : 4149. CR cover value : -. A revision will be required.

**Decision:** The document was **withdrawn**.

**R4-2401594 (NR\_NTN\_solutions-Core) CR on measurement for NTN**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4151 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Corrections to some wrong statements and updates on the names of signaling. Parsing Failure: • Change request number wrong on CR cover for TDoc R4-2401594. Database value : 4151. CR cover value : -. A revision will be rquired.

**Decision:** The document was **withdrawn**.

**R4-2401595 (NR\_NTN\_solutions-Core) CR on measurement for NTN**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4152 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Corrections to some wrong statements and updates on the names of signaling

**Decision: Withdrawn.**

**R4-2401826 (NR\_NTN\_solutions –Core) Modify the condition for NTN measurements of collision between multiple SMTCs on a SAN carrier**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4177 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Abstract:**

The CR number is missing on the CR coversheet and WI code is wrong on the CR Coversheet. Parsing Failure: Change request number wrong on CR cover for TDoc R4-2401826. Database value : 4177. CR cover value : xxx. Change request Work Item wrong on CR cove

**Decision:** The document was **withdrawn**.

**R4-2401827 (NR\_NTN\_solutions –Core) Modify the condition for NTN measurements of collision between multiple SMTCs on a SAN carrier**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4178 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2401828 (NR\_NTN\_solutions –Core) Modify the S criteria for NTN measurements of intra-frequency NR cell in RRC IDLEINACTIVE state**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4179 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Abstract:**

The CR number is missing on the CR coversheet and WI code is wrong on the CR Coversheet. Parsing Failure: Change request number wrong on CR cover for TDoc R4-2401828. Database value : 4179. CR cover value : xxx. Change request Work Item wrong on CR cover

**Decision:** The document was **withdrawn**.

**R4-2401965 (NR\_NTN\_solutions –Core) Modify the S criteria for NTN measurements of intra-frequency NR cell in RRC IDLEINACTIVE state**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4205 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2401829 (NR\_NTN\_solutions –Core) Modify the S criteria for NTN measurements of intra-frequency NR cell in RRC IDLEINACTIVE state**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4180 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2401964 (NR\_NTN\_solutions –Core) Modify the condition for NTN measurements of collision between multiple SMTCs on a SAN carrier**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4204 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2402161 (NR\_NTN\_solutions-Core) CR on Rel-17 NTN RRM requirements**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4224 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2402162 (NR\_NTN\_solutions-Core) CR on Rel-17 NTN RRM requirements R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4225 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2402447 (NR\_NTN\_solutions-Core) CR on condtional handover delay for NTN**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4234 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Corrections to the missing requirements which were agreed and added in other places

**Decision: Revised to R4-2403437 (from R4-2402447).**

[**R4-2403437**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403437.zip) **(NR\_NTN\_solutions-Core) CR on condtional handover delay for NTN**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4234 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Corrections to the missing requirements which were agreed and added in other places

**Decision: Agreed.**

**R4-2401593 (NR\_NTN\_solutions-Core) CR on handover for NTN**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4150 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Corrections to the missing requirements which were agreed and added in other places

**Decision: Agreed.**

**R4-2402448 (NR\_NTN\_solutions-Core) CR on measurement delay for NTN**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4235 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Corrections to some wrong statements and updates on the names of signaling

**Decision: Postponed.**

**R4-2402703 (NR\_NTN\_Solutions) Discussion on cell reselection requirements in NTN for Rel. 17**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402704 (NTN\_Solutions) CR on 38.133 for applicability of time-based measurement initiation in Idle Mode (Rel. 17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4247 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403438 (from R4-2402704).**

[**R4-2403438**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403438.zip) **(NTN\_Solutions) CR on 38.133 for applicability of time-based measurement initiation in Idle Mode (Rel. 17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4247 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2402705 (NTN\_Solutions) CR on 38.133 for applicability of time-based measurement initiation in Idle Mode (Rel. 18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4248 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2402706 (NR\_NTN\_Solutions) CR on 38133 on the applicability of the requirements for GSO (Rel.17)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4249 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2402707 (NR\_NTN\_Solutions) CR on 38133 on the applicability of the requirements for GSO (Rel.18)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4250 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

NR\_HST\_FR1\_enh

**R4-2400563 (NR\_HST\_FR1\_enh) Inter-frequency measurement for NR FR1 HST**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4037 rev Cat: F (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Merged.**

**R4-2400564 (NR\_HST\_FR1\_enh) R17 HST inter-f maintenance R18 mirror**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4038 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Withdrawn.**

**R4-2401420 (NR\_HST\_FR1\_enh-Core) Maintenance CR on IDLE mode HST UE mobility R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4126 rev Cat: F (Rel-17)  
  
 Source: Intel Corporation*

**Decision: Agreed.**

**R4-2401421 (NR\_HST\_FR1\_enh-Core) Maintenance CR on IDLE mode HST UE mobility R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4127 rev Cat: A (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Agreed.**

**R4-2401918 (NR\_HST\_FR1\_enh-Perf) CR on Test cases for NR FR1 HST R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4188 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2403439 (from R4-2401918).**

[**R4-2403439**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403439.zip) **(NR\_HST\_FR1\_enh-Perf) CR on Test cases for NR FR1 HST R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4188 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

Session Chair: The changes in the CR are agreeable. There is cover sheet error in the Rel-18 Cat A CR, and the CRs are postponed.

**Decision: Postponed.**

**R4-2401919 (NR\_HST\_FR1\_enh-Perf) CR on Test cases for NR FR1 HST R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4189 rev Cat: A (Rel-18)  
  
 Source: MediaTek Inc.*

Session Chair: The changes in the CR are agreeable. There is cover sheet error in the Rel-18 Cat A CR, and the CRs are postponed.

**Decision: Postponed.**

NR\_HST\_FR2\_enh

**R4-2402396 [NR\_HST\_FR2\_enh-Core] CR on the scheduling restriction of R17 FR2 HST**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4226 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Revised to R4-2403440 (from R4-2402396).**

[**R4-2403440**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403440.zip) **[NR\_HST\_FR2\_enh-Core] CR on the scheduling restriction of R17 FR2 HST**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4226 rev 1 Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2401657 [NR\_HST\_FR2\_enh-Core] CR on the scheduling restriction of R17 FR2 HST**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4162 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

NR\_SmallData\_INACTIVE

**R4-2401300 (NR\_SmallData\_INACTIVE-Perf) Correction to SDT test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4099 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

**R4-2401301 (NR\_SmallData\_INACTIVE-Perf) Correction to SDT test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4100 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2402004 (NR\_SmallData/NR\_RedCap) Discussion on SDT test cases parameters**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402005 (NR\_SmallData\_INACTIVE) CR correcting SDT test cases**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4215 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2402006 (NR\_SmallData\_INACTIVE) CR correcting SDT test cases**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4216 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2402905 (NR\_SmallData\_INACTIVE-Perf) Formal CR to Rel-17 TS 38.133 on SDT test cases**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4266 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2403525 (from R4-2402905).**

[**R4-2403525**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403525.zip) **(NR\_SmallData\_INACTIVE-Perf) Formal CR to Rel-17 TS 38.133 on SDT test cases**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4266 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2402906 (NR\_SmallData\_INACTIVE-Perf) Formal CR to Rel-18 TS 38.133 on SDT test cases (Mirror)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4267 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

NR\_RRM\_enh2

**R4-2401308 (NR\_RRM\_enh2-Core) Discussion on maintenance for R17 RRM enhancement**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401309 (NR\_RRM\_enh2-Core) CR on PUCCH SCell activation with multiple SCells R17 (Cat F)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4107 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403441 (from R4-2401309).**

[**R4-2403441**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403441.zip) **(NR\_RRM\_enh2-Core) CR on PUCCH SCell activation with multiple SCells R17 (Cat F)**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4107 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

**R4-2401310 (NR\_RRM\_enh2-Core) CR on PUCCH SCell activation with multiple SCells R18 (Cat A)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4108 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401311 (NR\_RRM\_enh2-Perf) CR on location of SCell activation test cases R18 (Cat F)**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4109 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401448 (NR\_RRM\_enh2-Core) CR to correct HO with PSCell delay requirements**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4136 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Fixing a conflicting requirement for Tprocessing and some editorial corrections.

**Decision: Agreed.**

**R4-2401449 (NR\_RRM\_enh2-Core) CR to correct HO with PSCell delay requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4137 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2401463 (NR\_RRM\_enh2-Core) Multiple SCell activation with FR2 unknown PUCCH SCell**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402398 [NR\_RRM\_enh2-Core] CR on R17 SRS antenna port switching**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4228 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Merged.**

**R4-2401659 [NR\_RRM\_enh2-Core] CR on R17 SRS antenna port switching**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4164 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2402399 [NR\_RRM\_enh2-Perf] CR on Test case of PUCCH SCell and fast SCell activation of R17 enhancement**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4229 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Revised to R4-2403442 (from R4-2402399).**

[**R4-2403442**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403442.zip) **[NR\_RRM\_enh2-Perf] CR on Test case of PUCCH SCell and fast SCell activation of R17 enhancement**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4229 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Agreed.**

**R4-2401660 [NR\_RRM\_enh2-Perf] CR on Test case of PUCCH SCell and fast SCell activation of R17 enhancement**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4165 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2401925 (NR\_RRM\_enh2-Core)CR on SRS antenna switching interruption requirements in R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4194 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Postponed.**

[**R4-2403443**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403443.zip) **(NR\_RRM\_enh2-Core)CR on SRS antenna switching interruption requirements in R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4194 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Withdrawn.**

**R4-2401926 (NR\_RRM\_enh2-Core)CR on SRS antenna switching interruption requirements in R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4195 rev Cat: A (Rel-18)  
  
 Source: vivo*

**Decision: Withdrawn.**

NB\_IOTenh4\_LTE\_eMTC6

**R4-2401312 (NB\_IOTenh4\_LTE\_eMTC6-Core) CR on maintenance for Rel-17 NB-IoT (Cat F)**

*Type: CR For: Agreement  
 36.133 v17.12.0 CR-7294 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401313 (NB\_IOTenh4\_LTE\_eMTC6-Core) CR on maintenance for Rel-18 NB-IoT (Cat F)**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7295 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

NR\_newRAT

**R4-2401443 (NR\_newRAT-Core) CR to correct PSCell addition delay requirements**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4131 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Starting from Rel-17, there is an editorial error in the PSCell addition requirements. This CR fixes the error.

**Decision: Agreed.**

**R4-2401444 (NR\_newRAT-Core) CR to correct PSCell addition delay requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4132 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

NR\_ext\_to\_71GHz

**R4-2402000 (NR\_ext\_to\_71GHz) CR corrections RRM core requirements**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4211 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2402001 (NR\_ext\_to\_71GHz) CR corrections RRM core requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4212 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

TEI17

**R4-2400274 [TEI17] CR 38.133 Correction of CR implementation on normative text**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3973 rev Cat: F (Rel-17)  
  
 Source: BeammWave*

**Abstract:**

A mistake was made when implementing the Rel-17 Cat F CR 3513r1 for TEI17. The corresponding Rel-18 Cat A CR 3514r1 was however correctly implemented, leaving a discrepancy between Rel-17 and Rel-18 that needs to be addressed.

The Rel-17 side condition i

Session Chair: no cat A CR needed.

**Decision: Agreed.**

**R4-2400275 [TEI17] CR 38.133 Correction of normative text in requirements**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3974 rev Cat: F (Rel-17)  
  
 Source: BeammWave*

**Abstract:**

One side condition is phrased in a way that violates the guidelines in the Foreword section of TS 38.133 on the usage of modal verbs in normative text. This leads to that the side condition is phrased as a recommendation rather than as a necessity for the

**Decision: Agreed.**

**R4-2400276 [TEI17] CR 38.133 Correction of normative text in requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3975 rev Cat: A (Rel-18)  
  
 Source: BeammWave*

**Abstract:**

Mirror CR

**Decision: Agreed.**

**R4-2401958 (TEI17) CR 36.133: Correction to normative text in requirements – Rel-17**

*Type: CR For: Agreement  
 36.133 v17.12.0 CR-7298 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Corrections to normative text in requirements in TS 38.133 were agreed in R4-2314393 (Rel-17) and R4-2314394 (Rel-18). This CR contains similar corrections to TS 36.133.

**Decision:** The document was **withdrawn**.

**R4-2402403 (TEI17) CR 36.133: Correction to normative text in requirements – Rel-17**

*Type: CR For: Agreement  
 36.133 v17.12.0 CR-7305 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Corrections to normative text in requirements in TS 38.133 were agreed in R4-2314393 (Rel-17) and R4-2314394 (Rel-18). This CR contains similar corrections to TS 36.133.

**Decision: Revised to R4-2403444 (from R4-2402403).**

[**R4-2403444**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403444.zip) **(TEI17) CR 36.133: Correction to normative text in requirements – Rel-17**

*Type: CR For: Agreement  
 36.133 v17.12.0 CR-7305 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Corrections to normative text in requirements in TS 38.133 were agreed in R4-2314393 (Rel-17) and R4-2314394 (Rel-18). This CR contains similar corrections to TS 36.133.

**Decision: Agreed.**

**R4-2401959 (TEI17) CR 36.133: Correction to normative text in requirements – Rel-18**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7299 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Corrections to normative text in requirements in TS 38.133 were agreed in R4-2314393 (Rel-17) and R4-2314394 (Rel-18). This CR contains similar corrections to TS 36.133.

**Decision: Agreed.**

Other

**R4-2400139 Discussion on GNSS margin removed from the test reiquirement due to the usage of AT commands for UE location in NTN timing accuracy test**

*Type: discussion For: Endorsement  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: CAICT*

**Abstract:**

Corresponding CRs: From R4-2400140 to R4-2400142.

**Decision:** The document was **withdrawn**.

**R4-2400140 CR to 38.133 for GNSS margin removed from the test reiquirement R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-3970 rev Cat: F (Rel-17)  
  
 Source: CAICT*

**Abstract:**

Discussion in R4-2400139.

**Decision:** The document was **withdrawn**.

**R4-2400141 CR to 38.133 for GNSS margin removed from the test reiquirement R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3971 rev Cat: A (Rel-18)  
  
 Source: CAICT*

**Abstract:**

Discussion in R4-2400139.

**Decision:** The document was **withdrawn**.

**R4-2400981 (NR\_NTN\_solutions-Perf) Discussion on GNSS margin removed from the test reiquirement due to the usage of AT commands for UE location in NTN timing accuracy test**

*Type: discussion For: Endorsement  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: CAICT*

**Abstract:**

Corresponding CRs: From R4-2400982 to R4-2400984.

**Decision:** The document was **withdrawn**.

**R4-2400982 (NR\_NTN\_solutions-Perf) CR to 38.133 Rel-17 Cat-F for GNSS margin removed from the test reiquirement**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4066 rev Cat: F (Rel-17)  
  
 Source: CAICT*

**Abstract:**

Discussion in R4-2400981.

**Decision:** The document was **withdrawn**.

**R4-2400983 (NR\_NTN\_solutions-Perf) CR to 38.133 Rel-18 Cat-A for GNSS margin removed from the test reiquirement**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4067 rev Cat: A (Rel-18)  
  
 Source: CAICT*

**Abstract:**

Discussion in R4-2400981.

**Decision:** The document was **withdrawn**.

**R4-2401652 [NR\_HST\_FR2\_enh-Core] CR on the scheduling restriction of R17 FR2 HST**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4157 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Abstract:**

Parsing Failure: Change request number wrong on CR cover for TDoc R4-2401652. Database value : 4157. CR cover value : . A revision will be required.

**Decision:** The document was **withdrawn**.

**R4-2401653 [NR\_MG\_enh-Core] CR on scheduling restriction of R17 NCSG**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4158 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Abstract:**

Parsing Failure: Change request number wrong on CR cover for TDoc R4-2401653. Database value : 4158. CR cover value : . A revision will be required.

**Decision:** The document was **withdrawn**.

**R4-2401654 [NR\_RRM\_enh2-Core] CR on R17 SRS antenna port switching**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4159 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Abstract:**

Parsing Failure: Change request number wrong on CR cover for TDoc R4-2401654. Database value : 4159. CR cover value : . A revision will be required.

**Decision:** The document was **withdrawn**.

**R4-2401655 [NR\_RRM\_enh2-Perf] CR on Test case of PUCCH SCell and fast SCell activation of R17 enhancement**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4160 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Abstract:**

Parsing Failure: Change request number wrong on CR cover for TDoc R4-2401655. Database value : 4160. CR cover value : . A revision will be required.

**Decision:** The document was **withdrawn**.

5.4 Moderator summary and conclusions (for Agenda 5)

Topic: [110][202] Maintenance\_R17\_R18

**R4-2400738 Topic summary for [110][202] Maintenance\_R17\_R18**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

Topic summary in RRM session. Session Chair: Treat Rel-17 maintenance issue of deactivated SCell measurement via NCSG in email thread [202].

**Decision: Revised to R4-2403253 (from R4-2400738).**

[**R4-2403253**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403253.zip) **Topic summary for [110][202] Maintenance\_R17\_R18**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

Topic summary in RRM session. Session Chair: Treat Rel-17 maintenance issue of deactivated SCell measurement via NCSG in email thread [202].

**Decision: Noted.**

[**R4-2403316**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403316.zip) **Ad-hoc minutes for R17 and R18 Maintenance**

*Type: other For: Approval  
 Source: Apple*

**Decision: Approved.**

[**R4-2403491**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403491.zip) **Ad-hoc minutes #2 for R17 and R18 Maintenance**

*Type: other For: Approval  
 Source: Apple*

**Decision: Approved.**

6 Rel-18 maintenance for LTE and NR

**Guidance for maintenance agendas (AI 4, AI 5 and AI 6)**

The following guidance are provided for AI 4, AI5 and AI6:

- For maintenance agenda AI 4 (up to Rel-16), AI 5 (Rel-17) and AI 6 (Rel-18), formal CRs are expected and multiple formal CRs per company in the lowest agenda are allowed. For tracking the changes easily, it expected that one batch of CRs (Cat-F/A/…) will just cover a single topic/WI rather than multiple topics/WIs and Cat-F CR with corresponding Cat-A CRs needs be submitted under the same agenda.

- When submitting contributions to AI 4, AI 5 and AI 6.1.15/AI 6.2.8, please add (WI\_code) in the beginning of titles for both discussion files and CRs to facilitate moderators and session chairs handling.

- When reserving the tdoc number, please use the correct WI code rather than simply using TEI and fill the column of “Related WIs” in your reservation spreadsheet. If you submit a CR with TEI as WI code, please inform session chair.

- The contributions corresponding to incoming LS for Rel-17 and Rel-18 are expected to be submitted in AI 12, if there is a dedicated agenda in AI 12.

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

6.2.2.3 RRM requirement

**R4-2400142 CR to 36.133 for GNSS margin removed from the test reiquirement R18**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7277 rev Cat: F (Rel-18)  
  
 Source: CAICT*

**Abstract:**

Discussion in R4-2400139.

**Decision:** The document was **withdrawn**.

**R4-2400646 Correction to UE timCorrection to UE timing advance for satellite access test parameter in A.13.4.2.1ing advance for satellite access test parameter in A.13.4.2.1**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7284 rev Cat: F (Rel-18)  
  
 Source: Keysight Technologies UK Ltd*

**Decision:** The document was **withdrawn**.

**R4-2400663 (LTE\_NBIoT\_eMTC\_NTN\_req-Perf) CR to TS 36.133: Corrections to satellite configurations (Rel 18)**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7285 rev Cat: F (Rel-18)  
  
 Source: Rohde & Schwarz*

**Decision: Postponed.**

[**R4-2403447**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403447.zip) **(LTE\_NBIoT\_eMTC\_NTN\_req-Perf) CR to TS 36.133: Corrections to satellite configurations (Rel 18)**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7285 rev Cat: F (Rel-18)  
  
 Source: Rohde & Schwarz*

**Decision: Withdrawn.**

**R4-2400664 (LTE\_NBIoT\_eMTC\_NTN\_req-Perf) CR to TS 36.133: Corrections to NPRACH configuration (Rel 18)**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7286 rev Cat: F (Rel-18)  
  
 Source: Rohde & Schwarz*

**Decision: Agreed.**

**R4-2400665 (LTE\_NBIoT\_eMTC\_NTN\_req-Perf) CR to TS 36.133: Corrections to IE configurations (Rel 18)**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7287 rev Cat: F (Rel-18)  
  
 Source: Rohde & Schwarz*

**Decision: Agreed.**

**R4-2400666 (LTE\_NBIoT\_eMTC\_NTN\_req-Perf) CR to TS 36.133: Corrections to GNSS relaxation (Rel 18)**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7288 rev Cat: F (Rel-18)  
  
 Source: Rohde & Schwarz*

Moderator: CAICT flagged this CR. Based on the discussion in [202], this CR can be agreeable.

**Decision: Agreed.**

**R4-2400671 Correction to UE timing advance for satellite access test parameter in A.13.4.2.1**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7289 rev Cat: F (Rel-18)  
  
 Source: Keysight Technologies*

**Decision: Revised to R4-2403453 (from R4-2400671).**

[**R4-2403453**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403453.zip) **Correction to UE timing advance for satellite access test parameter in A.13.4.2.1**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7289 rev Cat: F (Rel-18)  
  
 Source: Keysight Technologies*

**Decision: Agreed.**

**R4-2400984 (LTE\_NBIoT\_eMTC\_NTN\_req-Perf) CR to 36.133 for GNSS margin removed from the test reiquirement R18**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7291 rev Cat: F (Rel-18)  
  
 Source: CAICT*

**Abstract:**

Discussion in R4-2400981.

**Decision:** The document was **withdrawn**.

**R4-2401021 CR on abbreviation for LTE NB-IoT/eMTC over NTN**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7292 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2401022 CR on UE transmit timing requirements for LTE NB-IoT/eMTC over NTN**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7293 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2401314 (LTE\_NBIOT\_eMTC\_NTN\_req-Core) CR on maintenance of NB-IoT for IoT NTN**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7296 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

[**R4-2403448**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403448.zip) **(LTE\_NBIOT\_eMTC\_NTN\_req-Core) CR on maintenance of NB-IoT for IoT NTN**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7296 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401315 (LTE\_NBIOT\_eMTC\_NTN\_req-Core) Discussion on RRM requirements for IoT NTN**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401457 (LTE\_NBIoT\_eMTC\_NTN\_req-Perf) CR to 36.133 for GNSS margin removed from the test requirement R18**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7297 rev Cat: F (Rel-18)  
  
 Source: CAICT*

**Abstract:**

Discussion in R4-2401454.

**Decision: Not pursued.**

**R4-2401960 (LTE\_NBIOT\_eMTC\_NTN\_req-Core) Discussions on open issues of IoT NTN core and performance requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

The IoT NTN WI was completed but there are still some unresolved issues in the specification that need to be resolved. In this paper we discuss those open issues of core and performance part and provide our view.

**Decision: Noted.**

**R4-2401961 (LTE\_NBIOT\_eMTC\_NTN\_req-Perf) PHR reporting requirements for NB-IoT over NTN**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7300 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR to finalize the PHR reporting requirements.

**Decision:** The document was **withdrawn**.

**R4-2401962 (LTE\_NBIOT\_eMTC\_NTN\_req-Core) Correction to IDLE mode Rel-18 IoT NTN requirements**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7301 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR related to the open issues in current specification.

**Decision:** The document was **withdrawn**.

**R4-2402404 (LTE\_NBIOT\_eMTC\_NTN\_req-Perf) PHR reporting requirements for NB-IoT over NTN**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7306 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR to finalize the PHR reporting requirements.

**Decision: Postponed.**

[**R4-2403450**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403450.zip) **(LTE\_NBIOT\_eMTC\_NTN\_req-Perf) PHR reporting requirements for NB-IoT over NTN**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7306 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR to finalize the PHR reporting requirements.

**Decision: Withdrawn.**

**R4-2402405 (LTE\_NBIOT\_eMTC\_NTN\_req-Core) Correction to IDLE mode Rel-18 IoT NTN requirements**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7307 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR related to the open issues in current specification.

**Decision: Revised to R4-2403449 (from R4-2402405).**

[**R4-2403449**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403449.zip) **(LTE\_NBIOT\_eMTC\_NTN\_req-Core) Correction to IDLE mode Rel-18 IoT NTN requirements**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7307 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR related to the open issues in current specification.

**Decision: Revised to R4-2403539 (from R4-2403449).**

[**R4-2403539**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403539.zip) **(LTE\_NBIOT\_eMTC\_NTN\_req-Core) Correction to IDLE mode Rel-18 IoT NTN requirements**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7307 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR related to the open issues in current specification.

**Decision: Agreed.**

**R4-2402697 Maintenance on Discontinuous Coverage for NB-IoT/eMTC in NTN**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402698 CR on 36.133 on Clarification of Discontinuous Coverage Aspects**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7311 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403451 (from R4-2402698).**

[**R4-2403451**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403451.zip) **CR on 36.133 on Clarification of Discontinuous Coverage Aspects**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7311 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2402910 Annex A.3 update**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7314 rev Cat: F (Rel-18)  
  
 Source: Keysight Technologies UK Ltd*

**Decision: Revised to R4-2403452 (from R4-2402910).**

**[R4-2403452](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403452.zip) Annex A.3 update**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7314 rev Cat: F (Rel-18)  
  
 Source: Keysight Technologies UK Ltd*

**Decision: Agreed.**

6.2.8 Other dedicated Rel-18 WIs

6.2.8.3 RRM requirements

6.4 Moderator summary and conclusions (for Agenda 6)

Topic: [110][203] LTE\_NBIOT\_eMTC\_NTN\_req

**R4-2400739 Topic summary for [110][203] LTE\_NBIOT\_eMTC\_NTN\_req**

*Type: other For: Information  
 Source: Moderator (MediaTek)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

8 Rel-18 on-going non-spectrum related work items for NR

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

8.1.2 RRM performance requirements

8.1.2.1 RLM test cases to support 8Rx

**R4-2401367 CR on introducing antenna connections for 8Rx capable UEs**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4122 rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **Agreed**.

8.1.4 Moderator summary and conclusions

Topic: [110][204] NR\_ENDC\_ RF\_FR1\_enh2

**R4-2400740 Topic summary for [110][204] NR\_ENDC\_ RF\_FR1\_enh2**

*Type: other For: Information  
 Source: Moderator (NTT DoCoMo)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Monday Feb 26, 2024)**

**Issue 1-1: Check R4-2401367**

Moderator comment: The change from draft CR (R4-2312865) is cover sheet only.

* Recommended WF
  + Agree on R4-2401367

8.3 Requirement for NR FR2 multi-Rx chain DL reception

8.3.2 RRM core requirements maintenance for simultaneous DL reception from different directions

**R4-2401621 Big CR to TS 38.133 for RRM requirements for NR FR2 multi-Rx chain DL reception**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4154 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Agreed.**

8.3.2.1 General aspects

**R4-2400087 Discussion on general aspects of NR FR2 DL multiRx**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400088 (NR\_FR2\_multiRx\_DL-Core) CR for general aspects of NR FR2 multiRx**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3958 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Noted.**

[**R4-2403506**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403506.zip) **(NR\_FR2\_multiRx\_DL-Core) CR for general aspects of NR FR2 multiRx**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3958 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Withdrawn.**

**R4-2400429 On general aspects for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400430 Draft LS on associated UE capabilities for UE indication of FR2 multi-RX operation**

*Type: LS out For: Approval  
 to RAN2, RAN1  
 Source: Apple*

**Decision: Noted.**

**R4-2400992 On general aspects for FR2\_mulitRx\_DL**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2400993 Maintenance CR for BFD and CBD related requirements of R18 multi-Rx DL**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: OPPO*

**Decision: Revised to R4-2403507 (from R4-2400993).**

[**R4-2403507**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403507.zip) **Maintenance CR for BFD and CBD related requirements of R18 multi-Rx DL**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: OPPO*

**Decision: Postponed.**

**R4-2401176 Discussion on general aspects for Multi-RX**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: ()  
  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401322 Discussion on general aspects for NR FR2 multi-Rx**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401586 Discussion on UE feature list for multi-Rx UEs**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401622 Remaining issues on general aspects for FR2 multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401630 Discussion on general aspects on RRM requirements for simultaneous DL reception from different directions**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402007 On remaining multi-Rx core part requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402008 Draft CR general aspects for muti Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403508 (from R4-2402008).**

[**R4-2403508**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403508.zip) **Draft CR general aspects for muti Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2402780 (NR\_FR2\_multiRX\_DL-Core) Applicability of the UE capability to other serving cells than PCell**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This contribution discusses the applicability of the UE capability to other serving cells than PCell. RAN4 is asked to discuss whether/how to extend the applicability of the feature to other serving cells than PCell.

**Decision: Noted.**

8.3.2.2 L1-RSRP measurement delay

**R4-2400431 On L1 measurements for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400432 Draft CR on L1 measurement**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Postponed.**

[**R4-2403509**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403509.zip) **Draft CR on L1 measurement**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2401177 Discussion on L1-RSRP measurement for Multi-RX**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: ()  
  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401368 Discussion on maintaining L1 measurement requirements for FR2 multi-Rx reception**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401369 DraftCR on maintaining L1-RSRP measurement requirements for FR2 multi-Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403340 (from R4-2401369).**

[**R4-2403340**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403340.zip) **DraftCR on maintaining L1-RSRP measurement requirements for FR2 multi-Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2401433 On multi-Rx L1-RSRP measurement requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401587 Discussion on L1-RSRP measurement for multi-Rx UEs**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401623 Remaining issues on L1-RSRP measurement delay for FR2 multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401631 Discussion on L1-RSRP measurement requirements for simultaneous DL reception from different directions**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402010 Draft CR on multiRx L1 SINR**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

[**R4-2403522**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403522.zip) **Draft CR on multiRx L1 SINR**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2402781 (NR\_FR2\_multiRX\_DL-Core) Correction on fast beam sweeping based L1-RSRP measurement requirement**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

8.3.2.3 RLM and BFD/CBD requirements

**R4-2400433 On RLM and BFD/CBD for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2401370 DraftCR on maintaining RLM/BFD measurement requirements for FR2 multi-Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

[**R4-2403523**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403523.zip) **DraftCR on maintaining RLM/BFD measurement requirements for FR2 multi-Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401434 On multi-Rx TRP specific BFD requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401435 Draft CR on multi-Rx TRP-specific BFD requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

M-Rx TRP specific link recovery Ptrp conditions, scheduling restrictions and measurement restrictions.

**Decision: Postponed.**

[**R4-2403510**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403510.zip) **Draft CR on multi-Rx TRP-specific BFD requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

M-Rx TRP specific link recovery Ptrp conditions, scheduling restrictions and measurement restrictions.

**Decision: Withdrawn.**

**R4-2401624 Remaining issues on RLM and BFD/CBD requirements for FR2 multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401632 Discussion on RLM, BFD and CBD for simultaneous DL reception from different directions**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401650 [NR\_FR2\_multiRX\_DL-Core] Draft CR on TRP specific link recovery for R18 multi-Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Postponed.**

[**R4-2403511**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403511.zip) **[NR\_FR2\_multiRX\_DL-Core] Draft CR on TRP specific link recovery for R18 multi-Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2402782 (NR\_FR2\_multiRX\_DL-Core) Applicability of fast beam sweeping capability**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2402804 On RLM and beam management for multi-rx**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On RLM and beam management for multi-rx

**Decision: Noted.**

**R4-2402805 Draft CR to 38.133 RLM requirements for UE with multi-rx chain in FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to 38.133 RLM requirements for UE with multi-rx chain in FR2

**Decision: Revised to R4-2403512 (from R4-2402805).**

**[R4-2403512](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403512.zip) Draft CR to 38.133 RLM requirements for UE with multi-rx chain in FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to 38.133 RLM requirements for UE with multi-rx chain in FR2

**Decision: Postponed.**

[**R4-2403558**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403558.zip) **Draft CR to 38.133 RLM requirements for UE with multi-rx chain in FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to 38.133 RLM requirements for UE with multi-rx chain in FR2

**Decision: Withdrawn.**

8.3.2.4 Scheduling/measurement restrictions

**R4-2400482 On scheduling/measurement restrictions for multiple Rx chains**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2400483 (NR\_FR2\_multiRX\_DL-Core) CR on scheduling and measurement restrictions for multiple Rx chains**

*Type: CR For: Endorsement  
 38.133 v18.4.0 CR-4026 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Abstract:**

Parsing Failure: Change request Work Item wrong on CR cover for TDoc R4-2400483. Database value : NR\_FR2\_multiRX\_DL-Core. CR cover value : NR\_RRM\_enh3-Core. This is a formal CR that is for endorsement due to CR coversheet misalignment.

**Decision: Postponed.**

[**R4-2403513**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403513.zip) **(NR\_FR2\_multiRX\_DL-Core) CR on scheduling and measurement restrictions for multiple Rx chains**

*Type: CR For: Endorsement  
 38.133 v18.4.0 CR-4026 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Abstract:**

Parsing Failure: Change request Work Item wrong on CR cover for TDoc R4-2400483. Database value : NR\_FR2\_multiRX\_DL-Core. CR cover value : NR\_RRM\_enh3-Core. This is a formal CR that is for endorsement due to CR coversheet misalignment.

**Decision: Withdrawn.**

**R4-2401588 Discussion on measurement restriction for multi-Rx UEs**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401625 Remaining issues on scheduling and measurement restrictions for FR2 multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401902 Discussion on Scheduling/measurement restrictions for multi-Rx**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2402009 Discussion on multiRx scheduling/measurement restrictions**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402783 (NR\_FR2\_multiRX\_DL-Core) Relaxation of measurement restrictions on CBD resources**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2402841 On scheduling and measurement restrictions for UE with multi-rx chain in FR2**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On dual TCI state switch requirements

**Decision: Noted.**

**R4-2402842 draft CR to 38.133 on scheduling and measurement restrictions for UE with multi-rx chain in FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

MAC-CE based dual TCI state switch

**Decision: Postponed.**

**[R4-2403514](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403514.zip) draft CR to 38.133 on scheduling and measurement restrictions for UE with multi-rx chain in FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

MAC-CE based dual TCI state switch

**Decision: Withdrawn.**

8.3.2.5 TCI state switching delay with dual TCI

**R4-2400434 On TCI state switching for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400435 Draft CR on dual TCI state switch**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Postponed.**

[**R4-2403515**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403515.zip) **Draft CR on dual TCI state switch**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2401178 Discussion on TCI activation for Multi-RX**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: ()  
  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401323 DraftCR on TCI state switching requirements for FR2 multi-Rx chain DL reception**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403516 (from R4-2401323).**

[**R4-2403516**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403516.zip) **DraftCR on TCI state switching requirements for FR2 multi-Rx chain DL reception**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

**R4-2401436 On remaining multi-Rx TCI state switching requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401437 Draft CR on multi-Rx TCI state switching requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Nokia proposals on updates to m-Rx TCI state switching requirements

**Decision: Postponed.**

[**R4-2403517**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403517.zip) **Draft CR on multi-Rx TCI state switching requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Nokia proposals on updates to m-Rx TCI state switching requirements

**Decision: Withdrawn.**

**R4-2401626 Remaining issues on TCI state switch delay for FR2 multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401633 Discussion on dual TCI state switching for simultaneous DL reception**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402784 (NR\_FR2\_multiRX\_DL-Core) Applicability of RRC based dual DL TCI state switch delay**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2402843 On dual TCI state switch requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On dual TCI state switch requirements

**Decision: Noted.**

**R4-2402844 draft CR to 38.133 on TCI state swithcing requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

MAC-CE based dual TCI state switch

**Decision: Merged.**

**[R4-2403518](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403518.zip) draft CR to 38.133 on TCI state swithcing requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

MAC-CE based dual TCI state switch

**Decision: Withdrawn.**

8.3.2.6 Receive timing difference between different directions

**R4-2400436 On Receive timing difference between different directions for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400437 Draft CR on capturing RTD < CP as a condition for multi-RX RRM requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Not pursued.**

[**R4-2403519**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403519.zip) **Draft CR on capturing RTD < CP as a condition for multi-RX RRM requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2402011 Discussion on RTD requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402012 Draft CR RTD requirements for muti Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

[**R4-2403520**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403520.zip) **Draft CR RTD requirements for muti Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2402845 On capturing RTD side condition in the spec**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On dual TCI state switch requirements

**Decision: Noted.**

**R4-2402846 draft CR to 38.133 on capturing RTD side condition in the spec**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On dual TCI state switch requirements

**Decision: Revised to R4-2403521 (from R4-2402846).**

**[R4-2403521](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403521.zip) draft CR to 38.133 on capturing RTD side condition in the spec**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson, Nokia*

**Abstract:**

In this contribution we discuss On dual TCI state switch requirements

**Decision: Endorsed.**

8.3.3 RRM performance requirements

**R4-2400089 Discussion on RRM performance requirements of FR2 DL multiRx**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400438 On RRM performance requirements for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400994 Discussion on test cases for FR2 multi-Rx**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401040 (NR\_FR2\_multiRX\_DL-Perf) Discussion on performance requirements for FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401324 Discussion on performance requirements for FR2 multi-RX**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401438 On multi-Rx performance requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401589 Discussion on test cases list for multi-Rx UEs**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401627 Further discussion on performance requirements for FR2 multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401634 Discussion on performance part for multi-Rx**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401901 Discussion on the performance requirement for multi-Rx**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2402785 (NR\_FR2\_multiRX\_DL-Perf) RRM performance requirements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2402806 On RRM performance aspects for multi-rx**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On RRM performance aspects for multi-rx

**Decision: Noted.**

8.3.5 Moderator summary and conclusions

Topic: [110][205] FR2\_multiRx\_part1

**R4-2400741 Topic summary for [110][205] FR2\_multiRx\_part1**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403469**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403469.zip) **WF on core maintenance and performance part for multi-Rx**

*Type: other For: Approval  
 Source: vivo, Ericsson*

Remove section 4, and the WF is agreed.

**Decision: Revised to R4-2403540 (from R4-2403469).**

[**R4-2403540**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403540.zip) **WF on core maintenance and performance part for multi-Rx**

*Type: other For: Approval  
 Source: vivo, Ericsson*

Agreement: Remove Issue 1-3 from WF. Other parts are agreeable.

Issue 1-3: Power class for multi-Rx UE capability

* Power class 3 only

**Decision: Revised to R4-2403560 (from R4-2403540).**

[**R4-2403560**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403560.zip) **WF on core maintenance and performance part for multi-Rx**

*Type: other For: Approval  
 Source: vivo, Ericsson*

**Decision: Approved.**

[**R4-2403257**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403257.zip) **Ad-hoc minutes on RRM requirements for FR2\_multiRx WI**

*Type: other For: Approval  
 Source: vivo*

**Decision: Approved.**

Issue 1-2: UE capability for multiRx-FR2-Preference-r18

* Proposals
  + Option 1: (MTK)
    - Add a feature group (30-3) to indicate whether the UE supports providing multi-Rx operation preference for FR2, as already captured in RAN2.
* Recommended WF
  + If option 1 is agreeable?

Moderator: RAN4 agreed to define this UAI in previous meeting. Just propose to add it in RAN4 UE feature list.

Issue 1-3: Power class for multi-Rx UE capability

* Proposals
  + Option 1: (Agreement in the last meeting)
    - All power classes except PC6
  + Option 2: (Huawei)
    - Only power class 3
* Recommended WF
  + Further discuss.

Moderator: I checked, option 2 is the current understanding.

E///: need to check the RF agreement.

Issue 1-4: Prerequisite features for FG 30-1

* Proposals
  + Option 1: (vivo, QC)
    - 16-2c, 23-5-1
  + ~~Option 2: (ZTE)~~
    - ~~16-2c, 23-5-1, 16-2a or 16-2b-1~~
  + Option 3: (previous agreement, ZTE, Samsung, QC, E///, MTK, Nokia)
    - 16-2c, 23-5-1, at least one of 16-2a, 16-2b-1, 16-2b-2 and 16-2b-3
* Recommended WF
  + If option 1 is agreeable?

Apple: Option 1 and 3 are the same, and option 3 is more clear.

Agreement:

Prerequisite features for FG 30-1: 16-2c, 23-5-1, at least one of 16-2a, 16-2b-1, 16-2b-2 and 16-2b-3.

**Online session (Monday Feb 26, 2024)**

**Topic #1: Core part maintenance**

**Issue 1-1: UE capability for fast beam sweeping**

* Proposals
  + Option 1: (vivo, QC, OPPO, ZTE, )
    - UE capability for fast beam sweeping is introduced in multi-Rx WI regardless of UE implementation.
  + Option 2: (Xiaomi)
    - Fast beam sweeping is related to multi-panel.
* Recommended WF
  + Further discuss.

Discussion:

Moderator: Different UE implementations with one or two panels.

OPPO: Discuss the UE capability and requirement separately. For the requirement, fast beam sweeping is applicable to UE with multi-panel capability .

ZTE: UE with multi-Rx capability and in multi-Rx mode.

**Issue 1-1a: Conditions for fast beam sweeping**

* Proposals
  + Option 1: (Apple, Huawei, Xiaomi, Samsung)
    - Fast beam sweeping is activated only when the UE is in multi-RX operation.
  + Option 2: (Nokia, QC, ZTE, OPPO - option 2a, MTK - option 2a, CMCC)
    - Fast beam sweeping ~~due to multi-Rx~~ is always activated if UE support the fast beam sweeping capability.
      * Optio 2a: For the Rel-18 requriements, the fast beam sweeping requirements are applicable to UEs with multi-panel.
  + Option 3: (ZTE)
    - The following two conditions are needed when applying faster beam sweeping:
      * UE supports the multi-Rx capability
      * FFS UE does not report the preference indication on one panel via UAI
  + Option 4: (E///, MTK)
    - Two capabilities: fast beam sweeping with multi-panel, fast beam sweeping with single-panel (existing capability)
* Recommended WF
  + Further discuss.

QC: fast beam sweeping is possible for some UE with one panel.

E///: options from Part II.

* + Proposal 1: Always enable if UE supports the capability
    - Proposal 1a: Remove the condition of ‘activated with multi-Rx operation’ for UE supporting the FG ‘Fast beam sweeping for layer 1 measurement’ from SSB based L1-RSRP measurement requirements
  + Proposal 2: UE indicates preference for multi-rx operation
    - Proposal 2a:
      * UE has most recently indicated to the network its preference of multi-RX operation while in RRC\_CONNECTED mode, or
      * UE has not indicated it prefers single-RX operation while in RRC\_CONNECTED mode
    - Proposal 2b:
      * UE is activated with dual TCI states and dual TCI states are known case
      * multiRx-PreferenceFR2-r18 in UEAssistanceInformation is not equal to “single”
      * each panel satisfies legacy L1-RSRP measurement accuracy requirement
    - Proposal 2c:
      * UE indicates the UE assistance information to network to show the UE preference on multi-Rx operation

**Issue 1-2: UE capability for *multiRx-FR2-Preference-r18***

* Proposals
  + Option 1: (MTK)
    - Add a feature group (30-3) to indicate whether the UE supports providing multi-Rx operation preference for FR2, as already captured in RAN2.
* Recommended WF
  + Further discuss.

**Issue 1-9: Whether and how to capture multi-Rx operation is activated**

* Proposals
  + Option 1: (Nokia)
    - No need to capture in RAN4 RRM requirements whether Multi Rx is activated.
  + Option 2: (CATT)
    - The UE is activated with multi-Rx operation when the following conditions are met:
      * The *simultaneousReceptionDiffTypeD-r16* is configured as ‘supported’ if separate PDSCHs are transmitted from different TRPs, or
      * UE is requested by gNB to report its preference for multi-Rx operation in FR2 via RRC signalling and the multiRx-*PreferenceFR2* is NOT included in the *UEAssistanceInformation*, and
      * The CSI-RS/SSB resources are partially or fully overlapped with the PDSCH or other CSI-RS/SSB resources in time domain for simultaneous reception, and
      * The TCI states for CSI-RS/SSB resources or PDSCH reception are configured with different QCL Type-D.
    - The requirements that UE is activated with multi-Rx operation can be captured in Clause 3.6 in TS 38.133 as applicability requirements for multi-Rx requirements.
  + Option 3: (Apple)
    - A UE is in multi-RX operation or activated with multi-RX operation if the following conditions are met:
      * The UE reports it support capabilities 16-2c(*simultaneousReceptionDiffTypeD-r16*) and 23-5-1 (*mTRP-GroupBasedL1-RSRP-r17*), and
      * UE has most recently indicated to the network its preference of multi-RX operation while in RRC\_CONNECTED mode, or
      * UE has not indicated it prefers single-RX operation while in RRC\_CONNECTED mode.
* Recommended WF
  + Further discuss.

**Topic #2: RRM performance requirements**

**Issue 2-3: Number of probes in RRM test cases**

* Proposals
  + Option 1a: (vivo)
    - RRM tests for verifying dual TCI states switch delay requirements are defined with **at most 3 probes**.
  + Option 1b: (CATT)
    - **At least 3 probes** are needed in the tests.
  + Option 1c: (Huawei)
    - RAN4 don't define test cases for dual TCI state from dual TCI to dual TCI ( [RS1, RS2] to [RS3, RS4]) where 4 active probes are needed, since the performance can be verified by **Single TCI to dual TCI( [RS1] to [RS2, RS3])**.
  + Option 1d: (Apple)
    - The baseline to verify UE performance of dual TCI state switching is from **one TCI state to two TCI states**.
  + Option 1e: (Ericsson)
    - For dual active TCI state switching, RAN4 will specify test cases at least for the switching from single to dual TCI state.
    - **Deprioritize** test cases for **dual-to-dual active TCI state switching**.
  + Option 2: (Nokia)
    - Four probes should be used for L1-RSRP group-based beam reporting test cases and well as for TCI state switch delay test cases.
    - Define a test case for group-based beam reporting using **4 probes**, where the UE has to report two beam pairs from two different RS sets.
  + Option 3: (Qualcomm)
    - Do not discuss the number of probes to be used in RRM test cases
* Recommended WF
  + Further discuss.

Nokia: discuss will we test dual-to-dual active TCI state switching?

QC: dual-to-dual active TCI state switching, with one as the same.

HW: This cannot be tested with 3 probes. We need two pairs of beams.

HW: The purpose to test UE have two beams after TCI state switching, i.e., two TCI states after switching.

Nokia: one probe with two TCI states before TCI switching, two probes with two TCI states after TCI switching,

Dual TCI to dual TCI: [RS1, RS2] with one probe to [RS3, RS4] with two probes. 3 probes in total.

HW: the test constraint is the number of beam pair for each test point, but not only the number of probes. Regarding to how to test mDCI?

T1: Two TCI [RS1, RS3], with non-overlapping PDSCH

T2: Two TCI [RS1, RS2], with RS1 and RS2 are a beam pair

R&S: two constraints: number of probes, and number of offset communication. The option 2 is not feasible from testability perspective.

Agreement:

* For TCI state switching test, further discuss and down-select from the following options:
  + Define test at least for Single TCI to dual TCI ([RS1] to [RS2, RS3])
  + Further discuss dual-to-dual active TCI state switching if the testability is confirmed.
    - Option a:

T1: Two TCI [RS1, RS3], with non-overlapping PDSCH

T2: Two TCI [RS1, RS2], with RS1 and RS2 are a beam pair

* + - FFS Option b (feasibility to be further confirmed):

T1: Two TCI [RS1, RS3] (source), with RS1 and RS3 are a beam pair

T2: Two TCI [RS2, RS4] (target), with RS2 and RS4 are a beam pair

The offset of beam pair in T2 is not the same of the offset in T1.

**Issue 2-4: Test case(s) for fast beam sweeping**

* Proposals
  + Option 1a: (MTK)
    - Test case 1: Group-based beam reporting (GBBR) and fast beam sweeping
  + Option 1b: (CATT)
    - SSB based L1-RSRP measurements with GBBR can be considered to verify the enhancements of fast beam sweeping on L1 measurements.
  + Option 2a: (vivo)
    - SSB-based RLM measurement delay
    - SSB-based BFD measurement delay
    - SSB-based TRP specific CBD measurement delay
    - L1-RSRP with GBBR measurement delay
  + Option 2b: (OPPO)
    - TC1: SSB based RLM Out-of-sync Test with faster beam sweeping for FR2 PCell in non-DRX mode
    - TC2: SSB based BFD and LR Test with faster beam sweeping for FR2 PCell in non-DRX mode
    - TC3: SSB based L1-RSRP measurement with faster beam sweeping when DRX is not used
  + Option 2c: (ZTE)
    - Introduce test cases to verify the fast beam sweeping, the candidate test case including the SSB based GBBR L1-RSRP measurement, non-GBBR L1-RSRP measurement, RLM, BFD and CBD.
  + Option 2d: (Huawei)
    - RLM: Radio Link Monitoring Out-of-sync Test for FR2 PCell configured with SSB-based RLM RS in non-DRX mode for UE capable of fast beam sweeping
    - BFD and Link Recovery: Beam Failure Detection and Link Recovery Test for FR2 PCell configured with SSB-based BFD and LR in non-DRX mode for UE capable of fast beam sweeping
    - TRP specific BFD and Link Recovery: TRP specific Beam Failure Detection and Link Recovery Test for FR2 PCell configured with SSB-based BFD and LR in DRX mode for UE capable of fast beam sweeping
    - Non-GBBR L1-RSRP: SSB based L1-RSRP measurement when DRX is not used for UE capable of fast beam sweeping
  + Option 2e: (Samsung)
    - RAN4 to introduce one test case to verify the enhancement of faster beam sweeping for RLM and BFD.
    - RAN4 to introduce a new test case for SSB based L1 measurement requirements for FR2 multi-Rx UE supported [faster beam switching capability] with groupBasedBeamReporting-r17 configured in Rel-18.
  + Option 2f: (Nokia)
    - For R18 multi-Rx reception, introduce one test case to verify the enhancement of faster beam sweeping on each type of SSB based L1 measurements.
  + Option 2g: (QC)
    - Define test cases for a fast Rx beam sweeping capable UE such that the test cases do not require any side conditions defined for multi-Rx based mTRP support. If the test cases are defined based on the framework of RLM/BFD, the RLM/BFD resources shouldn’t be configured as group-based L1-RSRP measurement resources.
  + Option 3: (CMCC, Ericsson)
    - Define test case(s) for fast beam sweeping.
  + Option 4: (Apple)
    - FFS test cases for fast beam sweeping
* Recommended WF
  + Company to discuss if option 1x is agreeable firstly.
  + If not, then discuss how to select TCs from option 2x.

**Online session (Thursday, 29 February 2024)**

Apple delegeate is not in the room. Tentative agreements can be comfired based on Apple feedback later.

Tentative agreement:

Issue 2-1: Whether to consider 4-layer MIMO in RRM test cases

* 4-layer MIMO is not verified in RRM test cases.

Issue 1-8: Applicable scenarios of Rel-18 multi-Rx feature

Tentative agreement:

* RAN4 Rel-18 multi-Rx related requirements are applicable to PCell, PSCell, or SCell as long as the cell is the only serving cell in the single FR2 band and UE is configured with one FR2 band.

**Sub-topic 1-3: Scheduling/measurement restrictions**

**Issue 1-13: Overlapping condition for scheduling restriction**

* FFS following options
  + Option 1:
    - The CSI-RS and both of the PDSCHs are on the same OFDM symbol(s).
  + Option 2:
    - The CSI-RS and both of the PDSCHs are on the same OFDM symbol(s), or the CSI-RS and one of the PDSCHs with different QCL typeD are on the same OFDM symbol(s) when partially overlapping PDSCHs are scheduled.
  + Option 3:
    - Additionally, consider the case of one PDSCH + CSI-RS.
  + Option 4:
    - For sDCI, the CSI-RS and both sets of the same PDSCH are on the same OFDM symbol(s)
    - For mDCI, the CSI-RS and only one of the PDSCHs with different QCLed typeD are on the same OFDM symbol(s)
  + Option 5:
    - For sDCI, The CSI-RS and both of the PDSCHs are on the same OFDM symbol(s).
    - For mDCI, The CSI-RS and any one of the PDSCHs with different QCLed typeD are on the same OFDM symbol(s)

Moderator: Whether to differentiate sDCI and mDCI case?

Agreement: Agree the following and no further discussion on other proposals.

* The CSI-RS and both of the PDSCHs are on the same OFDM symbol(s), or the CSI-RS and one of the PDSCHs with different QCL typeD are on the same OFDM symbol(s) when partially overlapping PDSCHs are scheduled.
* Further check for mDCI case.
* Work offline on the wording.

Topic: [110][206] FR2\_multiRx\_part2

**R4-2400742 Topic summary for [110][206] FR2\_multiRx\_part2**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Monday Feb 26, 2024)**

**Topic #1: Core part maintenance for L1-RSRP measurements**

**Issue 1-2-2: measurement period for CSI-RS based L1-RSRP**

* Proposals
  + Option 1: For CSI-RS based L1-RSRP measurements in FR2, it is suggested to use the same Table for defining the measurement period requirements, i.e., to remove the newly added table.
* Recommended WF
  + Further discussion is needed

**Agreement:**

* + For CSI-RS based L1-RSRP measurements in FR2, it is suggested to use the same Table for defining the measurement period requirements, i.e., to remove the newly added table.

**Issue 1-1-4: UE behaviour at transitions between single-RX and multi-RX operation modes**

* Proposals:
  + Proposal 1: If faster beam sweeping always applies, there is no need to define UE behavior at transitions between single-Rx and multi-Rx
* Recommended WF
  + Further discussion is needed.

**Topic #2: Core part maintenance for TCI state switch**

**Issue 2-3-1: Definition of known condition**

There is proposal to change the definition of know condition.

* Proposals
  + Proposal 1: No additional conditions are needed for known TCI dual TCI states and legacy known conditions is reused for m-DCI.
  + Proposal 2: Clarify the Dual TCI states are following.
    - Two TCI states in single MAC CE based TCI activation command for sDCI, or
    - Two TCI states in two separate MAC CE based TCI activation commands for mDCI
  + Proposal 3: Update the known dual TCI state conditions with: In m-DCI, when the UE receives a TCI state switch command for one CORESETPoolIndex while the TCI state for the other CORESETPoolIndex is not switched, the target TCI state shall be QCL-ed with type D to a RS of a resource pair within one group of which the other RS has a QCL type D relation to the TCI state not being switched
* Recommended WF
  + Further discussion needed.

Moderator: clarification can be added.

Nokia:

* + - Two TCI states in single MAC CE based TCI activation command for sDCI, or
    - Two TCI states in two separate MAC CE based TCI activation commands for mDCI
      * Update the known dual TCI state conditions with: In m-DCI, when the UE receives a TCI state switch command for one CORESETPoolIndex while the TCI state for the other CORESETPoolIndex is not switched, the target TCI state shall be QCL-ed with type D to a RS of a resource pair within one group of which the other RS has a QCL type D relation to the TCI state not being switched

MTK: the key is the target TCI state.

vivo: We support option 1, and agree with MTK.

Apple: Some conditions are already defined, and no further clarification is needed.

Xiaomi: only clarification in P2.

HW: two MAC CEs needed in some cases even in sDCI. Support P1.

**Topic #3: Core part maintenance for Receive time difference**

**Issue 3-1-1: How to capture RTD applicability conditions in multi-RX WI**

* Proposals
  + Proposal 1:
    - RTD < CP should be captured in 38.133 as a condition for the relevant multi-RX RRM requirements to apply.
    - It is proposed to state in clause 3.6 “Applicability of requirements in this specification version.” that RTD < CP is the condition for the relevant multi-RX RRM requirements to apply
  + Proposal 2: Capture MRTD requirements as a new clause in 38.133, 7.6
  + Proposal 3: Capture RTD requirements for multi-rx in section 7.6.8
  + Proposal 4: Clarify in multi-Rx specific requirements (i.e. measurement/scheduling restriction relaxation, beam sweeping factor reduction, TCI state switching) that the requirements apply when RTD is within CP.
* Recommended WF
  + Further discussion is needed.

Moderator: in MIMO WI, the P3 approach is used, and we already had a new sub-section.

Apple: we thought 7.6 is for CA/DC, and fine if MIMO is already here.

Samsung: one CC for MIMO. The applicability for MIMO is in section 7.6.8.

MTK: inter-cell scenario is covered in MIMO. We need to consider intra-cells scenario in the description for multi-Rx.

Samsung: some Rel-18 capability is referred in 7.6.8.

Agreement:

As baseline, capture RTD requirements for multi-rx in section 7.6.8.

**Sub-topic 2-1: DCI based TCI state switch**

*A diagram of a computer program

Description automatically generated with medium confidence*

**Issue 2-1-1: DCI based dual TCI state switch delay for mDCI:**

* Proposals:
  + Proposal 1: Update the DCI based dual TCI state switch for m-DCI with “UE shall be able to receive PDSCHs with target TCI states simultaneously after slot max(n1, n2) + timeDurationForQCL
  + Proposal 2: Between point C and D, UE to receive on TCI state 0 alone, if new TCI state 0 and old TCI state 1 are not in a beam pair.
  + Proposal 2a: If TCI 1 and TCI 2 are in a beam pair, UE to receive on TCI 1 and TCI 2 between C and D. After D, to receive on TCI 2 and TCI 4. Between C and D, UE capable of multi-Rx can receive overlapping PDSCH 0 and PDSCH 1 simultaneously. Otherwise, UE to receive on TCI 2 alone till D. After D, UE can receive on TCI 2 and TCI 4
* Recommended WF:
  + For DCI based TCI state switch, switching happens within CP and UE can receive entire timeDurationForQCL. Based on this assumption, please discuss following.
* Please further discuss whether following is agreeable
  + If TCI 1 and TCI 2 are a beam pair.
    - * UE to receive on TCI 1 and TCI 2 between C and D. After D, to receive on TCI 2 and TCI 4
  + If TCI 1 and TCI 2 are not a beam pair.
    - * No requirements till point D. i.e., UE is not expected to receive on TCI 2 till point D.

8.4 Even Further RRM enhancement for NR and MR-DC

**R4-2402621 Big CR to TS 38.133 on R18 SCell activation enhancement maintenance**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4243 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

[**R4-2403564**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403564.zip) **Draft Big CR to TS 38.133 on performance requirements for Even Further RRM enhancement for NR and MR-DC**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)   
 Source: Apple*

**Decision: Endorsed.**

8.4.1 RRM core requirements maintenance for FR2 SCell activation delay reduction

**R4-2400477 (NR\_RRM\_enh3-Core) CR to TS 38.133 on R18 SCell activation enhancement capability**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4025 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Revised to R4-2403458 (from R4-2400477).**

[**R4-2403458**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403458.zip) **(NR\_RRM\_enh3-Core) CR to TS 38.133 on R18 SCell activation enhancement capability**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4025 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2400807 Open issues on FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2400808 38.133 draftCR on enhancement for PUCCH SCell activation**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4048 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403459 (from R4-2400808).**

[**R4-2403459**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403459.zip) **38.133 draftCR on enhancement for PUCCH SCell activation**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4048 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2401042 (NR\_RRM\_enh3-Core) draft CR on SCell activation enhancement**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Merged.**

[**R4-2403460**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403460.zip) **(NR\_RRM\_enh3-Core) draft CR on SCell activation enhancement**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Withdrawn.**

**R4-2401318 Discussion on FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401319 DraftCR on maintenance for R18 eFeRRM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

[**R4-2403461**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403461.zip) **DraftCR on maintenance for R18 eFeRRM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401651 [NR\_RRM\_enh3-Core] Draft CR on R18 L3 report based SCell activation enhancement**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2403462 (from R4-2401651).**

[**R4-2403462**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403462.zip) **[NR\_RRM\_enh3-Core] Draft CR on R18 L3 report based SCell activation enhancement**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2403551 (from R4-2403462).**

[**R4-2403551**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403551.zip) **[NR\_RRM\_enh3-Core] Draft CR on R18 L3 report based SCell activation enhancement**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2401927 draft CR on R18 FR2 SCell activation delay reduction**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2403463 (from R4-2401927).**

[**R4-2403463**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403463.zip) **draft CR on R18 FR2 SCell activation delay reduction**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2402896 Draft CR on correction for Rel-18 SCell activation enhancement using L3 reporting**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2403464 (from R4-2402896).**

[**R4-2403464**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403464.zip) **Draft CR on correction for Rel-18 SCell activation enhancement using L3 reporting**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

**R4-2402934 FR2 Scell delay reduction maintenance CR**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss RRM performance requirements for FR2 SCell activation delay reduction

**Decision: Merged.**

**[R4-2403465](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403465.zip) FR2 Scell delay reduction maintenance CR**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss RRM performance requirements for FR2 SCell activation delay reduction

**Decision: Withdrawn.**

8.4.2 RRM core requirements maintenance for FR1-FR1 NR-DC

**R4-2401415 Discussion on eFeRRM core requirement for FR1-FR1 NR-DC**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provide our view on the Rel-18 SCG activation side condition issue

**Decision: Noted.**

**R4-2401732 Discussion on SCG activation delay in FR1+FR1 NR-DC**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401733 DraftCR on SCG activation delay for FR1+FR1 NR-DC**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Correction on requirements related to SCG activation delay for FR1+FR1 NR-DC

**Decision: Postponed.**

8.4.3 RRM performance requirements for FR2 SCell activation delay reduction

**R4-2400478 On FR2 SCell activation performance part**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2400540 View on RRM performance requirements for FR2 Scell activation delay reduction**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2400809 Performance aspects for FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2400810 draftCR on performance requirements for L1-RSRP reporting**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Not pursued.**

**R4-2400811 draftCR on TCs for SCell activation with beam sweeping factor reduction**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2401041 (NR\_RRM\_enh3-Perf) Discussion on performance requirements for FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401236 Discussion on RRM performance requirements for FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2401320 Discussion on performance requirements for FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401636 Discussion on the performance requirements for FR2 SCell activation enhancements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401928 Discussion on test cases of FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401929 draft CR on test case for R18 FR2 SCell activation delay reduction**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: vivo*

**Decision: Postponed.**

**R4-2402847 RRM performance requirements for FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss RRM performance requirements for FR2 SCell activation delay reduction

**Decision: Noted.**

**R4-2402897 Discussion on the performance requirements for FR2 SCell activation enhancement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

8.4.4 RRM performance requirements for FR1-FR1 NR DC

**R4-2400479 On RACH-less PSCell activation testing for FR1-FR1 NR-DC**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2400541 View on RRM performance requirements for FR1+FR1 NR-DC**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2400995 DraftCR on TC for HO with PSCell from FR1-FR2 NR-DC to FR1-FR1 NR-DC**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: OPPO*

**Decision: Revised to R4-2403483 (from R4-2400995).**

[**R4-2403483**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403483.zip) **DraftCR on TC for HO with PSCell from FR1-FR2 NR-DC to FR1-FR1 NR-DC**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: OPPO*

**Decision: Endorsed.**

**R4-2400996 On RRM test case design and work splitting for FR1+FR1 NR-DC**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401321 DraftCR on TC2 for HO with PSCell from FR1-FR1 NR-DC to FR1-FR2 NR-DC**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

[**R4-2403484**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403484.zip) **DraftCR on TC2 for HO with PSCell from FR1-FR1 NR-DC to FR1-FR2 NR-DC**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401416 Draft CR to TS38.133 performance test case for SCG activation for FR1-FR1 NR DC**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This draftCR is based on CR spilit to add test case for Rel-18 SCG activaiton

**Decision: Revised to R4-2403485 (from R4-2401416).**

[**R4-2403485**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403485.zip) **Draft CR to TS38.133 performance test case for SCG activation for FR1-FR1 NR DC**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This draftCR is based on CR spilit to add test case for Rel-18 SCG activaiton

**Decision: Endorsed.**

**R4-2401506 Draft CR for test case on Conditional PSCell addition and release delay of NR PSCell in FR1**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2401738 DraftCR on PSCell addition and release delay of unknown FR1 PSCell for FR1+FR1 NR-DC**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

8.4.5 Moderator summary and conclusions

Topic: [110][207] NR\_RRM\_enh3\_part1

**R4-2400743 Topic summary for [110][207] NR\_RRM\_enh3\_part1**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403466**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403466.zip) **WF for [110][207] NR\_RRM\_enh3\_part1**

*Type: other For: Approval  
 Source: Apple*

**Decision: Approved.**

**Online session (Wednesday Feb 28, 2024)**

**Topic #1: Core part maintenance (8.4.1)**

**Issue 1-1: known condition for PL-RS of unknown PUCCH SCell during activation with L3 reporting?**

* Proposal (Nokia): The PL-RS is known for unknown PUCCH SCell during activation with L3 reporting if
  + The target pathloss reference signal determination is based on the L3 reporting after SCell activation command, if UE only reports L3 report before receiving TCI activation command, or
  + The target pathloss reference signal determination is based on either the latest L1 measurement reporting or the L3 report after SCell activation command, if UE reports both before receiving TCI activation command.
* Recommended WF:
  + FFS on the above option.

Moderator: To update the PL-RS condition based on the new feature agreed in Rel-18.

MTK: this is only applied when UE is configured with L3 reporting during Scell activation?

Moderator: yes, this is the common understanding.

* Agreement: The PL-RS is known for unknown PUCCH SCell during activation with L3 reporting if
  + The target pathloss reference signal determination is based on the L3 reporting after SCell activation command, if UE only reports L3 report before receiving TCI activation command, or
  + The target pathloss reference signal determination is based on either the latest L1 measurement reporting or the L3 report after SCell activation command, if UE reports both before receiving TCI activation command.

**Topic #2: RRM performance requirements for FR2 SCell activation delay reduction (8.4.3)**

**Sub-topic 2-1 performance requirement**

**Issue 2-1-1: Performance requirement design**

* Proposal (Nokia):
  + The SSB-based L1-RSRP report shall fulfil the existing accuracy requirements in TS38.133 clause 10.1.20 irrespective of the sweeping factor as indicated in reduceForSSB-L1-RSRP-Meas.
* Recommended WF
  + [Moderator]: Nokia’s proposal to add corresponding description in TS38.133 clause 10.1.20.

Moderator: this will be reflected in the test case, but no dedicated test case for accuracy.

Nokia: we want to clarify this.

Apple: the accuracy can be the same, but the side condition can be different based on the core requirement. We cannot directly refer to the existing table which including both accuracy and side condition.

Agreement:

In the test case, RAN4 specify that the existing L1-RSRP accuracy requirements (not include the corresponding side condition) shall be fulfilled irrespective of the sweeping factor as indicated in reduceForSSB-L1-RSRP-Meas. No new accuracy requirement to be defined in TS 38.133 clause 10.

**Sub-topic 2-2 General part for test case design**

**Issue 2-2-1: Generic configuration for all TCs of FG31-1/2/3**

* Proposal 1 (Apple, CMCC, CTC):
  + To define test cases for both FR1 and FR2 SCell activation delay reduction.
* Proposal 2 (Apple):
  + In general, to use *measCycleSCell* = 640ms for target FR1 SCell and *measCycleSCell* =160ms for target FR2 SCell in SCell activation enhancement testing.

QC, MTK: why different *measCycleSCell* for FR1 and FR2?

Nokia: *measCycleSCell* impact how long UE wait to trigger the activation. Support different values.

Apple: In all the existing test cases, we have both numbers. No scaling factor for FR1, so a bigger number is used.

ZTE: Proposal 2 is to reduce the test case number. We are ok.

vivo: 1 or 2 test cases for 640ms.

HW: This configuration of test case will also impact UE/network implementation. 160 ms for FR2 is ok with CSSF = 2. No strong view for FR1.

Nokia: don’t complicate the test case with CSSF = 2. Use CSSF = 1.

QC: CSSF = 1. This is applicable before receiving the Scell activation command. 160ms for both FR1 and FR2.

* Proposal 3 (vivo):
  + For both FR1 and FR2, it is suggested to introduce test cases with more than 1 SCCs but only one unknown SCC being activated with valid L3 results.

vivo: can discussed in the test case list.

* Recommended WF
  + To check which of above proposals are agreeable.
* Agreement:
  + To define test cases for both FR1 and FR2 SCell activation delay reduction if RAN4 has defined the corresponding core requirements.
  + Use CSSF =2 with 160ms in one FR2 test for L3 report during Scell activation, and use CSSF=1 with 160ms for FR1 and FR2 for all other tests as baseline.

**Sub-topic 2-3 FG31-1 TC configuration**

**Issue 2-3-1: How to configure to have valid L3 report for FG31-1 TC**

* Option 1 (Apple, Nokia (with different values of *MeasCycleSCell*)):
  + UL grant of L3 measurement is scheduled before n+3ms + THARQ+ M ms, and the M is as specified in clause 8.3.17 of TS38.133
  + Configure the following conditions in TC to make UE report valid L3 result:
    - Max{MeasCycleScell, 1.5\*DRX} ≤160ms for FR2 and 640ms for FR1; and
    - CSSF = 1, i.e., only single MO is configured on target SCC; and
    - The SSB measured remains detectable according to the cell identification conditions specified in clause 9.2; and
    - the SCell has been configured for a time period longer than Tidentify\_intra\_with\_index in clause 9.2.5.1, provided the SCell is newly configured in deactivated state and the side condition Ês/Iot ≥ -2dB is fulfilled.
* Option 2 (QC):
  + Configure event-triggered reporting associated with target SCell MO such as A2-event for dummy reporting configuration along with new reporting type for L3 report-based unknown SCell activation.
  + RAN4 consider periodic/pre-configured UL resources for reporting occasions.
    - FFS : whether and how to define test case with SR based UL resource acquisition.
* Option 3 (HW):
  + For L3 measurement reporting triggered by SCell activation command, only define test case when L3 measurement is reported before TCI configuration (i.e. TCI configured after L3 report).
  + Regarding the conditions that UE shall report valid L3 result for SCell activation, following two approaches are suggested:
    - Alt1: Define the maximum measurement period.
      * The overall measurement period shall be less than 7680/12800 ms for different PCs accordingly.
    - Alt2: Define typical test setups to be covered in corresponding test cases (take NR SA as example).
      * Test setup 1 FR1+FR2 CA (FR1 PCell):
        + measCycleSCell = 160ms;
        + Non-DRX or DRX cycle is no larger than 128ms;
        + CSSF = 1 (Cell 1: FR1 PCell, Cell 2: FR2 to-be-activated SCell/PUCCH SCell)
      * Test setup 2 FR1+FR2 CA (FR1 PCell):
        + measCycleSCell = 160ms;
        + Non-DRX or DRX cycle is no larger than 128ms;
        + CSSF = 2(Cell 1: FR1 PCell, Cell2: FR1 SCell, Cell 3: FR2 to-be-activated SCell/PUCCH SCell)
      * Test setup 3 FR1+FR2 CA (FR1 PCell):
        + measCycleSCell = 320ms;
        + No n-DRX or DRX cycle is no larger than 128ms;
        + CSSF = 1 (Cell 1: FR1 PCell, Cell 2: FR2 to-be-activated SCell/PUCCH SCell)
      * Test setup 4 FR2 inter-band CA;
        + measCycleSCell = 160ms;
        + Non-DRX or DRX cycle is no larger than 128ms;
        + CSSF = 1(Cell 1: FR2 PCell, 2: FR2 to-be-activated SCell/PUCCH SCell)
  + It should be guaranteed that time period between the time point when SCell is configured and the time point when the SCell is activated shall be larger than Tidentify\_intra\_with\_index.(HW, Apple, Nokia)
* Option 4 (ZTE):
  + During the test of verifying the valid L3 reporting, the condition of “valid L3 measurement result” should be guaranteed.
* Option 5 (vivo):
  + To ensure that UE has not report anything before receiving SCell activation command but has performed measurement on the corresponding SCell, UE shall be configured as:
    - At least one servingcellMO on the SCC SSB frequency, that is not associated to any MeasId; and
    - For the SpCell, either no ServingCellMO is configured, or the ServingCellMO for SpCell is associated with an event that never triggers L3 reporting, e.g. A2 event with sufficient low thresholds; and
    - The SSB measured remains detectable according to the cell identification conditions specified in clause 9.2; and
    - the SCell has been configured for a time period longer than the measurement period for intra-frequency measurement on deactivated SCell in Table 9.2.5.2-3 and 9.2.5.2-4, provided the SCell is detected and the side condition Ês/Iot ≥ -2dB is fulfilled.
* Option 6 (Ericsson):
  + Test configuration for L3 measurement result available but not reported.
    - NW configure MO for the deactivated SCell with short MeascycleScell
    - NW configures event A2 in the reporting configuration of the MO and maintain the SNR above threshold so that event is not met.
    - Time gap between receiving SCell deactivation and SCell activation command is larger than 4s.
    - Under the above conditions, UE will have report but not have reported
    - Test whether UE transmits L3 report after receiving SCell activation command
* Option 7 (MTK):
  + In TC for “L3 measurement reporting after SCell activation command”, the time duration between receiving SCell configuration (RRC) and SCell activation (MAC-CE) should be long enough to ensure valid L3 measurement, and short enough to maintain the freshness of the measurement.
  + In TC for “L3 measurement reporting after SCell activation command”, configure intra-frequency measurement on deactivated SCell (in Table 9.2.5.2-3 and 9.2.5.2-4) using non-DRX, measCycleSCell=160ms, Kp=1 and CSSF=1.
  + In TC for “L3 measurement reporting after SCell activation command”, after SCell activation command, the delay requirement M for L3 report shall be defined using M = 8\*TSMTC +8\*TSSB for FR2 and M= TSMTC +TSSB for FR1 (i.e., based on UE supporting FG 31-1 capability only).
* Recommended WF
  + Moderator suggestion: to accommodate the options as much as possible, the following option 8 for compromise can be discussed:

**Issue 2-3-1: How to configure to have valid L3 report for FG31-1 TC**

MTK: M can be different for different UEs. M = 8\*TSMTC +8\*TSSB for FR2 and M= TSMTC +TSSB for FR1 is this test.

Apple: We cannot prevent UE supporting fast beam sweeping to perform this case.

Vivo: TE can continue sending DCI, UE can response when it is ready.

QC, E///, ZTE: consider the worst case in the test.

OPPO: UE can receive the DCI after the time.

Agreement:

* Configure event-triggered reporting associated with target SCell MO such as A2-event along with new reporting type for L3 report-based unknown SCell activation, and maintain the SNR above threshold so that A2 event is not met.
* TE use DCI to schedule DG- PUSCH for L3 measurement report, and the M is as specified in clause 8.3.17/18 of TS38.133.
  + Further discuss the exact M values for the test.
* Configure the following conditions in TC to make UE report valid L3 result (apply to FR1+FR1 2CC CA, FR1+FR2 2CC CA, FR2+FR2 inter-band CA as examples):
  + Non-DRX is configured; and;
  + CSSF = 1, i.e., only single MO is configured on target SCC; and;
  + The SSB measured remains detectable according to the cell identification conditions specified in clause 9.2; and
  + the SCell has been configured for a time period longer than Tidentify\_intra\_with\_index in clause 9.2.5.1, provided the SCell is newly configured in deactivated state and the side condition Ês/Iot ≥ -2dB is fulfilled.

**Test case list:**

QC, MTK: Define test cases for #1, 2, 3 in RAN4 spec, and UE is required to test one of the three tests.

CMCC: The same number for FR1 and FR2.

Agreement:

For FG 31-1, Define test cases for #1, 2, 5, 7 in RAN4. Define test applicability and UE is required to perform one test for each FR.

Define test case #9 to verify UE supporting FG 31-2 and/or FG 31-3 for FR2, depending the capabilities supported by the UE.

Define test case #17 to verify UE supporting FG 31-3 for FR1.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Feature | Index | Test case | This TC is needed | This TC is NOT needed | FR1 or FR2 | Volunteer Company to lead CR |
| FG31-1:  L3 report based enhancement | 1 | FR2 unknown SCell activation with L3 report | Apple, Nokia, CTC, HW, ZTE, Ericsson |  | For FR2 | QC (NR-CA) |
| 2 | FR2 PUCCH SCell activation delay with L3 report | Nokia, HW, ZTE | Apple | For FR2 | Huawei |
| 3 | Multiple SCell activation delay with FR2 unknown SCell with L3 report | Nokia, HW, ZTE, Ericsson | Apple | For FR2 |  |
| 4 | FR2 PUCCH SCell activation delay with L3 report with Multiple SCells | HW, ZTE | Apple | For FR2 |  |
| 5 | FR1 unknown SCell activation with L3 report | Apple, Nokia, CTC, ZTE |  | For FR1 | vivo |
| 6 | FR1 PUCCH SCell activation delay with L3 report | Ericsson | Apple | For FR1 |  |
| 7 | Multiple SCell activation delay with FR1 unknown SCell with L3 report | Nokia | Apple | For FR1 |  |
| 8 | FR1 PUCCH SCell activation delay with L3 report with Multiple Scells |  | Apple | For FR1 |  |
| FG31-2:  Beam sweeping factors reduction | 9 | FR2 unknown SCell activation with FG31-2 and FG31-3 | Apple, Nokia, CTC |  | For FR2 (FG31-3 in this TC is up to issue 3-2-4) | Nokia |
| 10 | Multiple SCell activation delay with FR2 unknown SCell with FG31-2 and FG31-3 |  | Apple | For FR2(FG31-3 in this TC is up to issue 3-2-4) |  |
| 11 | FR2 PUCCH SCell activation delay with FG31-2 and FG31-3 | Ericsson | Apple | For FR2(FG31-3 in this TC is up to issue 3-2-4) |  |
| 12 | FR2 PUCCH SCell activation delay with FG31-2 and FG31-3 with Multiple SCells |  | Apple | For FR2(FG31-3 in this TC is up to issue 3-2-4) |  |
| 13 | FR2 Direct SCell activation delay with FG31-2 and FG31-3 at SCell addition | Ericsson | Apple | For FR2(FG31-3 in this TC is up to issue 3-2-4) |  |
| 14 | FR2 Direct SCell activation delay with FG31-2 and FG31-3 at Handover |  | Apple | For FR2(FG31-3 in this TC is up to issue 3-2-4) |  |
| 15 | FR2 Direct SCell activation delay of Multiple Downlink SCells with FG31-2 and FG31-3 at SCell addition |  | Apple | For FR2(FG31-3 in this TC is up to issue 3-2-4) |  |
| 16 | FR2 Direct SCell activation delay of Multiple Downlink SCells with FG31-2 and FG31-3 at Handover |  | Apple | For FR2(FG31-3 in this TC is up to issue 3-2-4) |  |
| FG31-3:  (1)Use SSB periodicity instead of SMTC periodicity”  (2)“Performing L1-RSRP measurement in non-DRX mode even DRX is configured” | 17 | FR1 unknown SCell activation with FG31-3 | Apple, CTC, Ericsson |  | For FR1 |  |
| 18 | Multiple SCell activation delay with FR1 unknown SCell with FG31-3 |  | Apple | For FR1 |  |
| 19 | FR1 PUCCH SCell activation delay with FG31-3 |  | Apple | For FR1 |  |
| 20 | FR1 PUCCH SCell activation delay with FG31-3 with Multiple SCells |  | Apple | For FR1 |  |
| 21 | FR1 Direct SCell activation delay with FG31-3 at Scell addition |  | Apple | For FR1 |  |
| 22 | FR1 Direct SCell activation delay with FG31-3 at Handover |  | Apple | For FR1 |  |
| 23 | FR1 Direct SCell activation delay of Multiple Downlink Scells with FG31-3 at Scell addition |  | Apple | For FR1 |  |
| 24 | Direct FR2 SCell activation delay of Multiple Downlink Scells with FG31-3 at Handover |  | Apple | For FR1 |  |
| 25 | FR2 unknown SCell activation with FG31-3 | Nokia | Apple | For FR2(need this TC or not is up to issue 2-5-1) |  |
| 26 | Multiple SCell activation delay with FR2 unknown Scell with FG31-3 |  | Apple | For FR2(need this TC or not is up to issue 2-5-1) |  |
| 27 | FR2 PUCCH SCell activation delay with FG31-3 |  | Apple | For FR2(need this TC or not is up to issue 2-5-1) |  |
| 28 | FR2 PUCCH SCell activation delay with FG31-3 with Multiple Scells |  | Apple | For FR2(need this TC or not is up to issue 2-5-1) |  |
| 29 | FR2 Direct SCell activation delay with FG31-3 at Scell addition |  | Apple | For FR2(need this TC or not is up to issue 2-5-1) |  |
| 30 | FR2 Direct SCell activation delay with FG31-3 at Handover |  | Apple | For FR2(need this TC or not is up to issue 2-5-1) |  |
| 31 | FR2 Direct SCell activation delay of Multiple Downlink Scells with FG31-3 at Scell addition |  | Apple | For FR2(need this TC or not is up to issue 2-5-1) |  |
| 32 | Direct FR2 SCell activation delay of Multiple Downlink Scells with FG31-3 at Handover |  | Apple | For FR2(need this TC or not is up to issue 2-5-1) |  |

Topic: [110][208] NR\_RRM\_enh3\_part2

**R4-2400744 Topic summary for [110][208] NR\_RRM\_enh3\_part2**

*Type: other For: Information  
 Source: Moderator (OPPO)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403482**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403482.zip) **WF for NR\_RRM\_enh3\_part2**

*Type: other For: Approval  
 Source: OPPO*

**Decision: Approved.**

**Online session (Wednesday Feb 28, 2024)**

**Sub-topic 2: test case design for PSCell (de)activation for FR1+FR1 NR-DC**

**Issue 2-1: Test case for PSCell activation and deactivation for FR1+FR1 NR-DC**

|  |
| --- |
| **Issue 1-2: Tsearch requirement for RACH-less PSCell activation** **Way Forward:**   * For performance part in R18   + Option 1: Further discuss the test case to verify the procedure to RACH-based and RACH-less SCG activation in RRM performance part.     - Option 1a: Instead of changing the core requirement, verify UE behavior in certain test environment to avoid UE to fallback to RACH based activation.     - Option 1b: Update the current FR1-FR2 NR-DC SCG activation test case A.7.5.15 to guarantee the UE performance of RACH-less PSCell activation.   + Others solutions are not precluded. |

Proposals:

* Option 1 (OPPO): Agree to introduce one TC to cover both RACH-based and RACH-less based PSCell activation/deactivation.
* Option 2 (Ericsson): Verify both RACH and RACH-less activation.
  + [*Spilit the T2 into the seperate steps to be able to distingushi between the 1st activation (RACH based) and the 2nd time activation (RACH-less based)*](#_Toc158279374)
  + [*The newly introduced parameter deactivated* ***measCyclePscell*** *shall be configured to guarantee the measurement as well as the detectability of the target cell SSB in the transition between RACH activation and RACH-less activation.*](#_Toc158279375)
  + [*Both event triggered measurement report & periodical L3 measurement report shall be configured.*](#_Toc158279376)
* Option 3 (Apple): Verify UE behavior in certain test environment to avoid UE to fallback to RACH based activation.

*the following configurations can be used in the test to verify UE behavior for RACH-less SCG activation:*

* + *In the test TE shall configure* ***measCyclePSCell*** *to the UE no later than T1 if PSCell is configured with bfd-and-RLM with value true.*
  + *Configure event triggered report (e.g., event A2) to the UE for PSCell measurement report but the event is not triggered during the T1 (no report from UE to TE)*
  + *An RRC message for activation of PSCell is sent by the TE Xsec after T1. X shall be greater than the measurement time greater than in Table 9.2.5.2-8.*
  + *At T1 the PSCell is deactivated. The point in time at which the RRC message for activation of PSCell is received at the UE defines the start of time period T2.*

Discussion:

* + FFS: whether to configure event triggered **report** (e.g., event A2) to the UE for PSCell measurement report but the event is not triggered during the T1 (no report from UE to TE), or [**both** event triggered measurement report & periodical L3 measurement report shall be configured.](#_Toc158279376)

Apple: event triggered report is more feasible.

OPPO, Apple: for core part, it is in maintenance stage for both Rel-17 and Rel-18.

Nokia: we cannot fix all the aspects in the performance part.

Apple: we don’t have unknown RACH-less core requirement. We compromised to cover this in the performance part.

MTK: we cannot define test case without the core requirement.

Agreement:

* Complete the Rel-18 WI performance part by June.
* If any update on the Rel-18 core requirement will be made in the future, the corresponding change will also be discussed for the Rel-18 performance test case.
* Postpone the discussion on Rel-17 performance part till June.

Agreement:

* For the Rel-18 test case:
* RAN4 agree that one TC is introduced to cover both RACH-based and RACH-less basedSCG activation/deactivation procedure with known PSCell.

**Sub-topic 3: test case design for HO with PSCell**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Backgroud:***   |  |  |  |  | | --- | --- | --- | --- | | **TC#** | **The RRM requirement for test case** | **Detailed Scope** | **Volunteer Company** | | TC1 | HO with PSCell from FR1-FR1 NR-DC to FR1-FR1 NR-DC | FFS: Only consider one of parallel processing and sequential processing for test cases of HO with PSCell to reduce the number of test cases.  FFS: for TC2, considering the testability issue discussed in maintenance part, this test case may not be tested | Qualcomm | | TC2 | HO with PSCell from FR1-FR1 NR-DC to FR1-FR2 NR-DC | Huawei | | TC3 | HO with PSCell from FR1-FR2 NR-DC to FR1-FR1 NR-DC | OPPO | |

**Agreement:**

Agree to introduce the three TCs. TC1 & 3 for parallel processing and TC2 for sequential processing.

**Issue 3-1: General test configuration for HO with PSCell test cases**

Proposal

* Option 1(QC):
* To reduce test duration and number of test cases, RAN4 introduce
  + HO with PSCell test cases only for parallel processing scenario.
  + Target cell status: known target PCell and target PSCell.
* RAN4 introduce FR2 test case and the test case is not tested until the testability issue is resolved.

Recommended WF

* Need discussion on the detailed scenarios of the tests.
  + FFS: only for parallel processing scenario.
  + FFS: only for known target PCell and target PSCell.
  + FFS: introduce applicability rule for FR2 test case with testability issue

8.5 Further enhancements on NR and MR-DC measurement gaps and measurements without gaps

**R4-2401427 Feature list proposals for measurement gap enhancements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

8.5.1 RRM core requirements maintenance for pre-configured MGs, multiple concurrent MGs and NCSG

**R4-2402880 Big CR to TS 38.133 on Further enhancements on NR and MR-DC measurement gaps and measurements without gaps**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4263 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc., Intel Corporation*

**Decision: Agreed.**

**R4-2402881 Big CR to TS 36.133 on inter-RAT NR measurement without gap**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7313 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc., Intel Corporation*

**Decision: Agreed.**

**R4-2401202 Rel-18 RAN4 UE feature list for enhancements on NR and MR-DC measurement gaps and measurements without gaps**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401867 Discussion on UE feature list for NR\_MG\_enh2 WI**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402879 Discussion on feature list for MGE-2 part 1**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2402882 Draft CR to Rel-18 TS 38.133: on MGE maintenance in TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2403358 (from R4-2402882).**

**[R4-2403358](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403358.zip) Draft CR to Rel-18 TS 38.133: on MGE maintenance in TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

8.5.1.1 Case 1 requirements (Pre-configured MG and concurrent MG)

**R4-2400374 Discussion on case 1 requirements of R18 gap enhancement**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400375 Draft CR for case 1 requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Merged.**

**R4-2400872 On maintenance issues for Pre-MG and concurrent MGs requirements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2400967 Remaining issues on PreMG and ConMGs**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the requirement for Pre-MG and ConMGs

**Decision: Noted.**

**R4-2400998 Discussion on case 1 requirements for Pre-MG and conMG**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401025 (NR\_MG\_enh2-Core) Discussion on Pre-MG MG and concurrent MG (case 1)**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401028 (NR\_MG\_enh2-Core) draft CR on concurrent gap with Pre-MG and concurrent gap with NCSG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Revised to R4-2403359 (from R4-2401028).**

[**R4-2403359**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403359.zip) **(NR\_MG\_enh2-Core) draft CR on concurrent gap with Pre-MG and concurrent gap with NCSG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Endorsed.**

**R4-2401195 Discussion on RRM requirements for combinations of pre-configured MGs and multiple concurrent MGs**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401200 Draft CR on activation deactivation delay for Pre-MG within the concurrent MGs**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: xiaomi*

**Decision: Merged.**

**R4-2401237 Discussion on UE capabilities for Case 1 Pre-MG and concurrent MG**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2401637 Discussion on Case 1 RRM requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401863 Discussion on Case 1 requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401864 CR 38.133 Corrections to Case 1 core requirements for NR\_MG\_enh2**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4185 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403360 (from R4-2401864).**

[**R4-2403360**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403360.zip) **CR 38.133 Corrections to Case 1 core requirements for NR\_MG\_enh2**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4185 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403541 (from R4-2403360).**

[**R4-2403541**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403541.zip) **CR 38.133 Corrections to Case 1 core requirements for NR\_MG\_enh2**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4185 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2402163 Discussion on remaining issues for Case 1**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402164 draftCR on RRM requirements for con-MG + pre-MG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

8.5.1.2 Case 2 requirements (NCSG and concurrent MG)

**R4-2400108 Discussion on maintenance issue for case 2 requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400376 Discussion on case 2 requirements of R18 gap enhancement**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400377 Draft CR for case 2 requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Postponed.**

[**R4-2403361**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403361.zip) **Draft CR for case 2 requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2400873 On maintenance issues for NCSG and concurrent MGs requirements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2400968 Remaining issues on NCSG and ConMGs**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the requirement for NCSG and ConMGs

**Decision: Noted.**

**R4-2400999 CR on NCSG collision**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: OPPO*

**Decision: Revised to R4-2403362 (from R4-2400999).**

[**R4-2403362**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403362.zip) **CR on NCSG collision**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: OPPO*

OPPO: use Gap dropping rule or gap collision rule

**Decision: Endorsed.**

**R4-2401000 Discussion on case 2 requirements NCSG and conMG**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401024 (NR\_MG\_enh2-Core) Discussion on NCSG and concurrent MG (case 2)**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401197 Discussion on RRM requirements for combinations of NCSG and multiple concurrent MGs**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401238 Discussion on UE capabilities for Case 2 NCSG and concurrent MG**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2401638 Discussion on Case 2 RRM requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401865 Discussion on Case 2 requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401866 CR 38.133 Corrections to Case 2 core requirements for NR\_MG\_enh2**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4186 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

**R4-2402165 Discussion on remaining issues for Case 2**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402883 Discussion on case 2 requirements (NCSG and concurrent MG)**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Noted.**

8.5.2 RRM core requirements maintenance for measurements without gaps

**R4-2402884 Discussion on feature list for MGE-2 part 2**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Noted.**

8.5.2.1 Measurement without gaps for UEs reporting NeedForGapsInfoNR

**R4-2400277 [NR\_MG\_enh2-Core] CR 38.133 Correction of normative text in requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3976 rev Cat: F (Rel-18)  
  
 Source: BeammWave*

**Abstract:**

A requirement that was added after RAN4#109 by Cat B CR 3907r1 for the Rel-18 WI NR\_MG\_enh2-Core is phrased in a way that violates the guidelines in the Foreword section of TS 38.133 on the usage of modal verbs in normative text. This leads to that the (i

**Decision: Merged.**

**R4-2400378 Discussion on measurement without gaps for UEs reporting NeedForGapsInfoNR**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400379 Draft CR for NeedForGaps requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Merged.**

**R4-2400542 Remaining issues on R18 NFG**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2400874 On maintenance issues for NFG requirements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2400969 Remaining issues on NeedForGaps measurement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the NeedForGaps measurement requirement

**Decision: Noted.**

**R4-2401001 CR on interruption requirements for NFG measurements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: OPPO*

**Decision: Merged.**

**R4-2401002 On interruption requirements for NFG measurements**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401026 (NR\_MG\_enh2-Core) Discussion on measurement without gaps for UEs reporting NeedForGapsInfoNR**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401027 (NR\_MG\_enh2-Core) DraftCR on intra-frequency measurement delay for NFG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Revised to R4-2403263 (from R4-2401027).**

[**R4-2403263**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403263.zip) **(NR\_MG\_enh2-Core) DraftCR on intra-frequency measurement delay for NFG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Endorsed.**

**R4-2402013 Discussion on measurements without gaps**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402014 Draft CR interruption requirements for measurements without gaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

**R4-2402166 Discussion on remaining issues for NeedForGaps**

*Type: LS out For: Approval  
 to RAN2  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402167 draftCR on measurement requirements for NeedForGaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

**R4-2402885 Discussion on measurement without gaps for UEs reporting NeedForGapsInfoNR**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Noted.**

8.5.2.2 Inter-RAT measurement without gap

**R4-2400109 Discussion on maintenance issues for inter-RAT measurement without gaps**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400380 Discussion on R18 inter-RAT measurement without gap**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400381 CR for measurement delay for nogap-noncsg**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Merged.**

**R4-2400492 (NR\_MG\_enh2-Core) CR on UE Scheduling availability for inter-RAT NR measurement without gap**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7278 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Postponed.**

**R4-2400875 On maintenance issues for inter-RAT measurement without gap requirements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2400970 Remaining issues on Inter-RAT measurement without gap**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the inter-RAT measurement requirement

**Decision: Noted.**

**R4-2401023 (NR\_MG\_enh2-Core) Discussion on UE capabilities for measurements without gap**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401187 draftCR on introduction of interruprion requirements for inter-RAT NR measurement without gap (case a-1)**

*Type: draftCR For: Endorsement  
 36.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: xiaomi*

**Decision: Revised to R4-2403265 (from R4-2401187).**

[**R4-2403265**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403265.zip) **draftCR on introduction of interruprion requirements for inter-RAT NR measurement without gap (case a-1)**

*Type: draftCR For: Endorsement  
 36.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: xiaomi*

Session Chair: New CRs are harder to request during the meeting. The draft CR is for endorsement, and will allocate formal big CR in post-meeting process.

**Decision: Endorsed.**

**R4-2401426 Maintenance CR on interruption requirements for measurements without gap**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4129 rev Cat: F (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Revised to R4-2403262 (from R4-2401426).**

[**R4-2403262**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403262.zip) **Maintenance CR on interruption requirements for measurements without gap**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4129 rev Cat: F (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Endorsed.**

**R4-2402015 Draft CR interruption requirements for interRAT measurements without gaps**

*Type: draftCR For: Endorsement  
 36.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

**R4-2402168 Discussion on remaining issues for inter-RAT MG-less measurement**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402169 draftCR on requirements for inter-RAT LTE measurement without gap**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403264 (from R4-2402169).**

[**R4-2403264**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403264.zip) **draftCR on requirements for inter-RAT LTE measurement without gap**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2402436 Discussion on interRAT measurements without gaps**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell, BT Plc., Vodafone, Charter Communications Inc., Deutsche Telekom, TELECOM ITALIA S.p.A., Verizon*

**Decision: Noted.**

**R4-2402886 Discussion on inter-RAT measurements**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Noted.**

8.5.3 RRM performance requirements for pre-configured MGs, multiple concurrent MGs and NCSG

**R4-2400382 Discussion on performance requirement for pre-configured MGs, multiple concurrent MGs and NCSG**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400876 Discussion on performance part for Pre-MG, NCSG and concurrent MGs**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2400971 Discussion on Pre-MG, Con-MGs and NCSG test cases**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the test case design for Pre-MG, NCSG and ConMGs

**Decision: Noted.**

**R4-2401003 Discussion on test case design for Pre-MG, conMG and NCSG**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401030 (NR\_MG\_enh2-Perf) Discussion on RRM performance requirements for pre-configured MGs, multiple concurrent MGs and NCSG**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401196 Discussion on test cases for pre-configured MGs within concurrent MGs**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401218 Scope of RRM performance requirements for pre-configured MGs, multiple concurrent MGs and NCSG**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401239 Discussion on RRM performance requirements for pre-configured MGs, multiple concurrent MGs and NCSG**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2401639 Discussion on the performance requirements for the joint MG considerations**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401868 Discussion on RRM performance requirements for Pre-MG, concurrent MG and NCSG**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402170 Discussion on test cases for Case 1 and Case 2**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402887 Discussion on RRM performance requirements for pre-configured MGs, multiple concurrent MGs and NCSG**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Noted.**

8.5.4 RRM performance requirements for measurements without gaps

**R4-2400543 View on RRM performance requirements for R18 NFG measurements without gaps**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2400972 Discussion on measurement without gap test cases**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the test case for measurement without gap

**Decision: Noted.**

**R4-2401004 Discussion on test case design for measurement without gaps**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401029 (NR\_MG\_enh2-Perf) Discussion on RRM performance requirements for measurements without gaps**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401428 Test cases discussions for measurements without gaps**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2402016 Discussion on performance requirements for measurements without gaps**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402171 Discussion on test cases for measurement without MG**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402888 Discussion on RRM performance requirements for measurements without gaps**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Noted.**

8.5.5 Moderator summary and conclusions

Topic: [110][209] NR\_MG\_enh2\_part1

**R4-2400745 Topic summary for [110][209] NR\_MG\_enh2\_part1**

*Type: other For: Information  
 Source: Moderator (MediaTek)*

**Abstract:**

Topic summary in RRM session. Session Chair: Treat Rel-17 maintenance issue of deactivated SCell measurement via NCSG in email thread [202].

**Decision: Noted.**

[**R4-2403542**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403542.zip) **WF on NR\_MG\_enh2\_part1**

*Type: other For: Approval  
 Source: MediaTek*

**Decision: Approved.**

[**R4-2403312**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403312.zip) **Ad-hoc minutes for NR\_MG\_enh2 WI**

*Type: other For: Approval  
 Source: MediaTek*

**Decision: Approved.**

|  |  |  |
| --- | --- | --- |
| **Index** | **Feature group** | **Components** |
| 32-1 | Concurrent gap with Pre-MG | Support of multiple per-UE (or per-FR) measurement gap patterns with at least one per-UE (or per-FR) Pre-MG. Detail in Table 9.1.x-1 of TS 38.133. |
| 32-2 | 2 Pre-MG configuration with simultaneous activation/deactivation | Support configurations of 2 Pre-MG with simultaneous activation/deactivation in the same FR. |
| [32-3] | Dynamic collision | Support the RRM requirements when the activation/deactivation delay of Pre-MG overlaps the other measurement gap or Pre-MG.  Revised wording: (Support configuration with a pre-MG colliding with another MG or pre-MG, while the first pre-MG has higher priority.) |

* Compromised WF
  + Introduce 2 UE capabilities for concurrent gap with Pre-MG. FG 32-1 is introduced as the baseline feature. Down selection between the other 2.
    - Option 1: 32-2
    - Option 2: 32-3
  + 2 for case 1, 1 for case 2, and 3 in total for MG part1. (E///, ZTE)
  + 1 for case 1, 2 for case 2, and 3 in total for MG part1. (Apple)

Session Chair: Moderator to lead offline discussion with the following direction:

Define in total 3 capabilities for MG\_enh part1 (including both case 1 and case 2), with the condition below. FFS Details.

For 32-5, the capability can be further discussed based on R17 progress. Before any agreement reached for Rel-17, 32-5 is not considered.

|  |  |  |
| --- | --- | --- |
| **Index** | **Feature group** | **Components** |
| 32-4 | Concurrent gap with NCSG | Support of multiple per-UE (or per-FR) measurement gap patterns with at least one per-UE (or per-FR) NCSG. Detail in Table 9.1.y-1 of TS 38.133. |
| [32-5] | 2 NCSG configuration | Support configurations of 2 NCSG in the same FR |

[32-6] will be further discussed based on Rel-17 progress.

|  |  |  |
| --- | --- | --- |
| **Index** | **Feature group** | **Components** |
| [32-6] | NCSG for deactivated SCell | Support of NCSG for deactivated SCell is needed in Rel-18 |

**Online session (Monday Feb 26, 2024)**

**Sub-topic 2-2: Feature list for NR UE – Pre-MG**

**Issue 2-2-1: [Case 1] R18 NR UE features (Concurrent gap with Pre-MG in a FR)**

|  |  |  |
| --- | --- | --- |
| **Index** | **Feature group** | **Components** |
| 32-1 | Concurrent gap with Pre-MG | Support of multiple per-UE (or per-FR) measurement gap patterns with at least one per-UE (or per-FR) Pre-MG. Detail in Table 9.1.x-1 of TS 38.133. |

* Proposals
  + Option 1: Apple, E///, [OPPO], CMCC, China Telecom, Huawei, Intel, Nokia, MediaTek, CATT, QC
    - Support this feature.
  + Option 1a: CMCC
    - Support this feature with the consideration that both 2 Pre-MG configuration with simultaneous activation / deactivation and Dynamic collision are covered by this feature
  + Option 2:
    - Don’t support this feature.
* Recommended WF
  + Support Option 1: support this feature.
  + Option 1: Support this feature.

|  |  |  |
| --- | --- | --- |
| **Index** | **Feature group** | **Components** |
| 32-1 | Concurrent gap with Pre-MG | Support of multiple per-UE (or per-FR) measurement gap patterns with at least one per-UE (or per-FR) Pre-MG. Detail in Table 9.1.x-1 of TS 38.133. |

**Issue 2-2-2: [Case 1] R18 NR UE features (2 Pre-MG configuration with simultaneous activation / deactivation):**

* Background:
  + Agreement from [R4-2303197]:
    - Whether to consider a new capability for Pre-MG + Pre-MG in an FR?
      * It is up to UE capability to support the simultaneous activation/deactivation of two Pre-MGs in the same FR.

|  |  |  |
| --- | --- | --- |
| **Index** | **Feature group** | **Components** |
| 32-2 | 2 Pre-MG configuration with simultaneous activation/deactivation | Support configurations of 2 Pre-MG with simultaneous activation/deactivation in the same FR. |

* Proposals
  + Option 1: vivo, OPPO, China Telecom, Huawei, MediaTek, CATT, QC, Xiaomi
    - Support this capability.
  + Option 2: Apple, E///, CMCC, Intel, Nokia, ZTE, CATT
    - Don’t support this capability.
* Recommended WF
  + Given that there is already an agreement to support this capability and there is no full consensus to change this, the moderator suggest defining this capability following the existing agreement.

Xiaomi: follow the previous agreement.

CMCC: One capability for all the cases for Pre-MG in Rel-18, we already have other capabilities in Rel-16/17.

Apple: Share the same view as CMCC. Pre-MG + Pre-MG is typical use case.

MTK: additional complexity is needed.

Nokia: Consider network complexity if too many different UE implementation.

HW: It means additional UE capability in the previous agreement, and it is the condition to introduce the requirements.

ZTE/Nokia: only one capability in the previous meeting. Additional delay is given for this scenario.

**Issue 2-2-3: [Case 1] R18 NR UE features (Dynamic collision):**

|  |  |  |
| --- | --- | --- |
| **Index** | **Feature group** | **Components** |
| [32-3] | Dynamic collision | Support the RRM requirements when the activation/deactivation delay of Pre-MG overlaps the other measurement gap or Pre-MG.  Revised wording: (Support configuration with a pre-MG colliding with another MG or pre-MG, while the first pre-MG has higher priority.) |

* Proposals
  + Option 1: Huawei, MediaTek, QC
    - Support this capability.
  + Option 2: E///, OPPO, CMCC, China Telecom, ZTE, Nokia, Intel, Nokia, CATT
    - Don’t support this capability.
* Recommended WF
  + Can companies compromise to support Option 2?

HW: We agreed to define separate UE capability for dynamic collision. The collision can be avoided by network if UE does not support it.

QC: impact UE implementation.

MTK: We already had agreement on separate UE capability.

Apple: different understanding on the previous agreement.

**Sub-topic 3-3: UE capabilities for Concurrent gaps with NCSG and NCSG + NCSG**

*Sub-topic description: This sub-topic covers UE capabilities issues related to concurrent gap with NCSG scenarios.*

*Open issues and candidate options before meeting:*

**Issue 3-3-1: [Case 2] R18 NR UE features (Concurrent gap with NCSG):**

* Background:
  + Issue 4-2-1: [Case 2] Whether to consider a new capability for Concurrent gaps with NCSG in an FR?
    - < **Agreement** >:
      * Yes, a Rel-18 UE capability.

|  |  |  |
| --- | --- | --- |
| **Index** | **Feature group** | **Components** |
| 32-4 | Concurrent gap with NCSG | Support of multiple per-UE (or per-FR) measurement gap patterns with at least one per-UE (or per-FR) NCSG. Detail in Table 9.1.y-1 of TS 38.133. |

* Proposals
  + Option 1: Apple, E///, OPPO, CMCC, China Telecom, Huawei, Intel, Nokia, MediaTek, CATT, QC
    - Support this feature.
  + Option 1a: CMCC
    - Support this feature with the consideration that 2 NCSG configuration is covered by this feature
  + Option 2:
    - Don’t support this feature.
* Recommended WF
  + Based on existing agreement and all support companies, this feature shall be added in Rel-18.

**Issue 3-3-2: [Case 2] R18 NR UE features (2 NCSG configuration):**

|  |  |  |
| --- | --- | --- |
| **Index** | **Feature group** | **Components** |
| [32-5] | 2 NCSG configuration | Support configurations of 2 NCSG in the same FR |

* Proposals
  + Option 1: Apple, OPPO, MediaTek, QC
    - Support this capability.
  + Option 2: CMCC, China Telecom, ZTE, Nokia, Huawei, E///, CATT
    - Don’t support this capability.
* Recommended WF
  + Can companies compromise to support Option 2?

Apple: support option 1.

Xiaomi: support option 1.

QC: This is also related to measurement on deactivated Scell. Suggest to keep open.

OPPO: we agree with the previous speakers.

Session Chair: suggest to decouple the discussion with measurement on deactivated Scell.

**Issue 3-3-3: [Case 2] R18 NR UE features (Support of NCSG for deactivated SCell):**

|  |  |  |
| --- | --- | --- |
| **Index** | **Feature group** | **Components** |
| [32-6] | NCSG for deactivated SCell | Support of NCSG for deactivated SCell is needed in Rel-18 |

* Proposals
  + Option 1:
    - Support this capability.
  + Option 2: CATT, vivo
    - Don’t support this capability.
* Recommended WF
  + There is no support for this feature, hence it shall be dropped.

**Sub-topic 4-1: Performance principles for Case 1 and Case 2**

*Sub-topic description: This sub-topic provides general principles for performance part.*

**Issue 4-1-1: Which general configuration shall be defined for the test cases?**

* Proposals
  + - Only define test case in NR SA in both FR1 and FR2:
      * Support [E///, Apple, vivo, HW, MTK, Nokia, OPPO, Xiaomi, QC, ZTE]
    - Do not introduce the test for L1 impact:
      * Support [E///, Apple, vivo, HW, MTK, Nokia, OPPO, QC]
    - Do not introduce test cases for intra-freq measurement without gap:
      * Support [ZTE, vivo]
      * Not support, both intra-frequency inter-frequency, and deactivated SCell measurement shall be introduced [HW, E///, Xiaomi, Nokia]
    - Define a minimum set of test cases for SSB-based measurement:
      * Support [E///, vivo, HW, MTK, Nokia, QC]
    - Only define test case under non-DRX:
      * Support [E///, Apple, vivo, HW, MTK, Nokia, OPPO, Xiaomi, QC, ZTE]
    - Define test case without SBI reporting:
      * Support [E///, Apple, vivo, HW, MTK, Nokia, OPPO, QC]
    - On SSB-only test cases, RAN4 does not consider simultaneous per-UE gap and per-FR gap configurations:
      * Support [E///, Apple, vivo, HW, MTK, Nokia, QC, ZTE]
    - Do not define test cases with simultaneously FR1 and FR2 gaps configured:
      * Support [E///, Apple, vivo, HW, MTK, Nokia, QC, ZTE]
    - Test cases are limited to single serving carrier:
      * Support [E///, Apple, QC, Nokia, HW, MTK]
    - Only use mandatory gap patterns to define test cases:
      * Support [E///, Apple, vivo, HW, MTK, Nokia, QC]
    - Focus on only fully non-overlap and partially partial overlap in the test case design:
      * Support [E///, vivo, HW, MTK, Nokia]
      * No, only partially overlap [Apple]
    - Verify gap dropping behaviour without introducing additional test cases:
      * Support [E///, vivo, HW, MTK, Nokia]
    - Only consider per-UE + per-UE GAP or per-FR + per-FR GAP:
      * Support [Apple, OPPO]
* Recommended WF
  + Based on majority of companies views, support the following principles for case 1 and case 2:
    - Only define test case in NR SA in both FR1 and FR2:
    - Do not introduce the test for L1 impact:
    - Define a minimum set of test cases for SSB-based measurement:
    - Only define test case under non-DRX:
    - Define test case without SBI reporting:
    - On SSB-only test cases, RAN4 does not consider simultaneous per-UE gap and per-FR gap configurations:
    - Do not define test cases with simultaneously FR1 and FR2 gaps configured:
    - Test cases are limited to single serving carrier:
    - Only use mandatory gap patterns to define test cases:
    - Verify gap dropping behaviour without introducing additional test cases:
  + Continue discussion for the following (FFS):
    - Do not introduce test cases for intra-freq measurement without gap:
      * Not support, both intra-frequency inter-frequency, and deactivated SCell measurement shall be introduced
    - Focus on only ~~fully~~ ~~non-overlap and~~ partially partial overlap in the test case design:

Agreement:

* + support the following principles for case 1 and case 2:
    - Only define test case in NR SA in both FR1 and FR2:
    - Do not introduce the test for L1 impact:
    - Define a minimum set of test cases for SSB-based measurement:
    - Only define test case under non-DRX:
    - Define test case without SBI reporting:
    - On SSB-only test cases, RAN4 does not consider simultaneous per-UE gap and per-FR gap configurations:
    - Do not define test cases with simultaneously FR1 and FR2 gaps configured:
    - Test cases are limited to single serving carrier:
    - Only use mandatory gap patterns to define test cases:
    - Verify gap dropping behaviour without introducing additional test cases:

E///:

* + - Define tests for fully non-overlap and partially partial overlap in the test case design, and add applicability that if UE pass test for partially partial overlap, UE can skip the tests for ~~f~~ully non-overlap.

MTK: already had test for both in Rel-17. Only test the additional feature on top of Rel-17.

* + - Focus on only partial overlap in the test case design
    - Define tests for fully non-overlap and partially partial overlap in the test case design, and add applicability that if UE pass test for partially partial overlap, UE can skip the tests for ~~f~~ully non-overlap.

Xiaomi: in some cases, no core requirements for partial overlap and will fallback fully non-overlap.

Apple: for both fully non-overlap and partially partial overlap, add applicability that if UE pass test for Rel-18 fully non-overlap, UE can skip the tests for Rel-17 fully non-overlap.

Agreement:

* + - For case 1 and case 2, Define test for partial overlap, and fully non-overlap is used if no core requirements for partial overlap in some cases.

**Sub-topic 4-2: Test cases for Case 1**

*Sub-topic description: This sub-topic covers test cases for Case 1.*

*Open issues and candidate options before meeting:*

**Issue 4-2-1: [Case 1] Which scenarios shall RAN4 RRM define test cases for concurrent MG with pre-MG**

* Proposals
  + Option 1: Apple, vivo, E///, OPPO, CMCC, QC, MTK, China Telecom, HW
    - Pre-MG + Type-2 MG.
  + Option 2: Apple, E///, OPPO, CMCC, QC, MTK, China Telecom, HW
    - Pre-MG + Pre-MG.
      * If introduced,
      * R4 to focus on simultaneous multiple activation only [Apple, MTK, HW, ZTE]
      * Prioritize test scenarios without dynamic collisions [QC, MTK]
  + Option 3: CMCC,
    - Pre-MG + Type-1 MG for non-colliding case.
  + Option 4: QC, HW, MTK, China Telecom, [ZTE]
    - Dynamic collision with Pre-MG + Type-2 MG.
      * Dynamic collision with scenario 1 [HW, MTK, China Telecom]
      * Dynamic collision with scenario 2 [HW, China Telecom]
  + Option 5: Nokia, MTK, E///, China Telecom, [Xiaomi]
    - Different test cases for UE autonomous and network-controlled Pre-MG (de)activation mechanisms separately.
* Recommended WF
  + Based on majority views: The following scenarios be considered in the test cases:
    - Pre-MG + Type-2 MG
    - Pre-MG + Pre-MG
      * FFS the following conditions:
        + Simultaneous multiple activation only
        + Without dynamic collision
    - Dynamic collision of scenario 1 with Pre-MG + Type-2 MG
      * FFS whether to consider dynamic collision scenario 2.
    - Pre-MG (de)activation: Different test cases for UE autonomous and network-controlled Pre-MG (de)activation mechanisms separately

CMCC: suggest to cover pre-MG + type-1 MG. To gurantee the UE behaivour. Ok to remove this test if the UE behavior can be guaranteed by pre-MG + type-2 MG.

Nokia: non-simultaneous multiple activation need to be considered.

MTK: non-simultaneous multiple activation & Pre-MG + Type-1 MG do not extend the test coverage, and just increase the number of test case.

Agreement:

* + The following scenarios be considered in the test cases:
    - Pre-MG + Type-2 MG
    - Pre-MG + Pre-MG
      * Under the following conditions:
        + Simultaneous multiple activation, FFS non-simultaneous multiple activation
        + Without dynamic collision
    - Dynamic collision with Pre-MG + Type-2 MG
    - FFS other scenarios, options for further discussion:
      * Pre-MG + Type-1 MG

**Sub-topic 4-3: Test cases for Case 2**

*Sub-topic description: This sub-topic covers test cases for Case 2.*

*Open issues and candidate options before meeting:*

**Issue 4-3-1: [Case 2] Which scenarios shall RAN4 RRM define test cases for NCSG and concurrent MG (Case 2)**

* Proposals
  + Option 1: Apple, vivo, E///, OPPO, CMCC, QC, MTK, China Telecom, HW
    - NCSG + Type-2 MG.
  + Option 2: Apple, E///, OPPO, CMCC, MTK, China Telecom, HW
    - NCSG + NCSG.
  + Option 3: CMCC,
    - NCSG + Type-1 MG for non-colliding case.
* Recommended WF
  + Based on majority views: The following scenarios be considered in the test cases:
    - NCSG + Type-2 MG
    - NCSG + NCSG

Topic: [110][210] NR\_MG\_enh2\_part2

**R4-2400746 Topic summary for [110][210] NR\_MG\_enh2\_part2**

*Type: other For: Information  
 Source: Moderator (Intel)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403543**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403543.zip) **WF on NR\_MG\_enh2\_part2**

*Type: other For: Approval  
 Source: Intel*

Agreement:

Modification of test caes list and configuration is possible based on RAN4 consensus.

**Decision: Approved.**

**Online session (Monday Feb 26, 2024)**

**Sub-topic 1-1 DRX**

**Issue 1-1-1: Misalignment between DRX-on duration and SMTC for NFG measurements**

* Proposals
  + Option 1: UE measures only within SMTC occasions once every DRX cycle and no interruption is allowed.
  + Option 2: UE measures within SMTC occasions when DRX cycle is larger than 320ms and no interruption is allowed; but when DRX cycle is equal or smaller than 320ms interruption is allowed once every DRX cycle according to Tcycle, i. (Nokia compromise, E///, CMCC, ZTE, OPPO)
  + Option 3: UE measurements can affect DRX-on duration. Interruption is allowed once every DRX cycle, and it is according to Tcycle,i. (QC, MTK, Apple, vivo, HW, Xiaomi)
  + Option 4: UE measurements can affect DRX-on duration under certain conditions (e.g., DRX-on is very short). Interruption is allowed once every DRX cycle, and it is according to Tcycle,i. (Nokia)
* Recommended WF
  + Discussion needed.

QC: support option 3. Why we are discussing the issue? Interruption is decided based on Tcycle,i.

Nokia: see the benefit of option 2.

MTK: UE is off regardless of data reception or measurement.

E///: old issue in Rel-15. Scaling factor of 1.5 is introduced.

Apple: support option 3. Perfect misalignment does not happen often in practical.

vivo: support option 3. DRX-on duration is not a fixed duration.

HW: support option 3. In Rel-15, UE is allowed to measure on DRX-off, but not mandated to do so.

ZTE: four timers to decide the DRX-on duration. “UE measurements can affect DRX-on duration. Interruption is allowed once every DRX cycle” is not clear.

CMCC: support option 2. For option 3, if SMTC and SSB always not aligned with DRX-on, UE will do measurement during DRX-off.

Apple: UE can aovid interruption as much as possible, but not guaranteed.

Nokia: option 4.

vivo: High workload with new capability if we go with option 4.

QC: We are defining the minimal requirement. Further optimization based different cases is not precluded.

**Issue 1-1-2: Aligned DRX-on duration and SMTC for NFG measurements and DRX cycle is larger than 320ms**

* Proposals
  + Option 1: UE does not measure within SMTC occasions and no interruption is expected.
  + Option 2: Interruption is always allowed, and it is according to Tcycle,i.
* Recommended WF
  + Discussion needed.

**Issue 1-1-3: Aligned DRX-on duration and SMTC for NFG measurements and DRX cycle is equal or shorter than 320ms**

* Proposals
  + Option 1: Interruption is always allowed, and it is according to Tcycle,i.
* Recommended WF
  + Agree on option 1.

**Sub-topic 1-2 Interruption requirements**

**Issue 1-2-1: Interruption requirements in 8.2.2.2.19 apply also for NR-DC, EN-DC, and NE-DC**

* Proposals
  + Option 1: Yes. Specify same requirements for NR-DC, EN-DC and NE-DC considering that operations in one cell group do not impact operations on another cell group.
* Recommended WF
  + Agree on option 1.

**Issue 1-2-2: Update total interruption D when no DRX is configured**

* ***Background***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 8.2.2.2.19-1: Tcycle,i length for inter/intra-frequency measurement target carrier i   |  |  | | --- | --- | | DRX cycle | TCycle,i | | No DRX | max (80ms, SMTC period) x CSSFoutside\_gap,i | | [DRX cycle ≤ 320ms] | [TBD] | | [DRX cycle>320ms] | [TBD] |   UE is allowed to cause interruption on a certain frequency layer i with the maximum interruption ratio that equals .  The total allowed maximum interruption ratio (D) on each of the active serving cells due to UE measurements without gap applied in this sub-clause is specified as    Where,  - N is the total number of configured SSB based frequency layers to be measured outside gap including intra-frequency and inter-frequency target carriers where UE indicates that interruption is needed through *[no-gap-with-interruption]*, and  - L is the maximum interruption length for each interruption occasion specified in the Table 8.2.2.2.19-2 and 8.2.2.2.19-3. |

* Proposals
  + Option 1: total interruption D shall be updated to:

where

* N is the total number of configured SSB based frequency layers to be measured outside gap including intra-frequency and inter-frequency target carriers where UE indicates that interruption is needed through *[no-gap-with-interruption]*,
* M is total number of carriers which are measured outside MG, including carriers that are measured with and without interruption,
* L is the maximum interruption length for each interruption occasion specified in the Table 8.2.2.2.19-2 and 8.2.2.2.19-3.
* Tcycle,i is the interruption cycle on a certain frequency layer i.
* Recommended WF
  + Discuss the candidate option.

**Topic #2: Inter-RAT measurement without gap**

**Sub-topic 2-3 UE capabilities**

**Issue 2-3-1: The issue with UE capability interRAT-NeedForIntrNR-r18**

* Proposals
  + Option 1: Interruptions due to interRAT NR measurements without gaps must be explicitly allowed by the network (via SIB or other means). Send LS to RAN2.
  + Option 2: Not to make reporting of interRAT-NeedForIntrNR-r18 based on NW control.
  + Option 3: interRAT-NeedForIntrNR-r18 capability is based on network request.
* Recommended WF
  + Discussion is needed.

**Issue 2-3-2: Introduction of new general UE capabilities (feature groups) for case b-1: [32-7 inter-RAT EUTRAN measurement without gap and outside active DL BWP]**

* Proposals
  + Option 1: Yes.
  + Option 2: No.
* Recommended WF
  + Agree on option 2.

**Issue 2-3-3: Introduction of new general UE capabilities (feature groups) for case b-2: [32-8 inter-RAT EUTRAN measurement without gap and within active DL BWP]**

* Proposals
  + Option 1: Yes.
  + Option 2: No.
* Recommended WF
  + Agree on option 1. No interruption is allowed.

**Issue 2-3-4: Introduction of new UE capabilities (feature groups) for EMW for case b-1 and b-2: [32-9 UE support of EMW patterns]**

* Proposals
  + Option 1: Yes. with both mandatory patterns and optional patterns.
  + Option 2: No and EMW is mandatory for UE to support.
    - Option 2a: 2ms EMW length is optional support.
* Recommended WF
  + Discussion is needed.

**Issue 2-3-5: Introduction of new UE capabilities (feature groups) for mixed numerology for case b-1 and b-2: [32-10 UE support concurrent inter-RAT measurement on EUTRAN and reception from NR serving cell with a different numerology than 15kHz]**

* Proposals
  + Option 1: Yes.
  + Option 2: No.
* Recommended WF
  + Agree on option 1.

**Issue 2-3-6: Introduction of new UE capabilities (feature groups) for EUTRAN feature: [general support of inter-RAT NR measurements without gap with or without interruption]**

* Proposals
  + Option 1: Yes.
  + Option 2: No.
* Recommended WF
  + Agree on option 1.

**Issue 2-3-7: Introduction of new UE capabilities (feature groups) for EUTRAN feature: [UE support concurrent inter-RAT NR measurement with a different numerology than 15kHz and reception from LTE serving cell]**

* Proposals
  + Option 1: Yes.
  + Option 2: No.
* Recommended WF
  + Discussion is needed.

**Topic #3: Performance part requirements for measurements without gap**

**Sub-topic 3-1 General test cases principles**

**Issue 3-1-2: whether to test both interruption and measurement delay in the same test**

* Proposals
  + Option 1: No. specify dedicated test cases for interruption requirements.
  + Option 2: Yes.
* Recommended WF
  + Discussion is needed.

**Issue 3-1-7: whether to consider measurement without gap without interruption cases**

* Proposals
  + Option 1: No not consider new tests for without-interruption cases.
  + Option 2: Specify new cases.
* Recommended WF
  + Agree on option 2.

**Sub-topic 3-2 NFG test cases**

**Issue 3-2-1: Whether intra-frequency cases are tested**

* Proposals
  + Option 1: No. Only inter-frequency cases are considered.
  + Option 2: Yes.
* Recommended WF
  + Discuss upon options.

**Issue 3-2-2: Whether to specify only test cases where no MG is configured**

* Proposals
  + Option 1: No. both no MG and MG configured are considered.
  + Option 2: No. only MG configured is considered.
  + Option 3: Yes.
* Recommended WF
  + Discuss the options.

**Issue 3-2-3: Whether to specify test cases for both SMTC smaller than 80ms and SMTC larger than 80ms**

* Proposals
  + Option 1: No.
  + Option 2: Yes.
    - Option 2a: test 20ms and 160ms.
* Recommended WF
  + Discuss the options.

**Sub-topic 3-3 inter-RAT test cases**

**Issue 3-3-1: Whether to introduce test cases for case a-1**

* Proposals
  + Option 1: Yes.
  + Option 2: No.
* Recommended WF
  + Discuss upon options

**Issue 3-3-2: Test interruptions in case b-1**

* Proposals
  + Option 1: Yes.
  + Option 2: No.
* Recommended WF
  + Discuss upon options.

**Issue 3-3-3: Whether to introduce test cases when there is scheduling restrictions for case b-1 and b-2**

* Proposals
  + Option 1: Yes.
  + Option 2: No.
* Recommended WF
  + Discuss upon options.

8.6 Completion of specification support for bandwidth part operation without restriction in NR

8.6.1 RRM core requirements maintenance

[**R4-2403565**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403565.zip) **Big CR to TS 38.133 on core maintenance for Completion of specification support for BWP without restriction in NR**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4280 rev Cat: F  
  
 Source: Vodafone, vivo*

**Decision: Agreed.**

**R4-2400112 Reply LS on BWP operation without restriction**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: CATT*

**Decision: Noted.**

**R4-2400383 Discussion on RRM core requirements for bandwidth part operation without restriction**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400384 CR for bandwidth part operation without restriction**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Postponed.**

**R4-2400385 Discussion on RAN2 LS on BWP operation without restriction**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400386 Reply LS on BWP operation without restriction**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: Apple*

**Decision: Noted.**

**R4-2400634 Maintenance of BWP Without Restriction**

*Type: discussion For: Decision  
 Source: Vodafone*

**Decision: Noted.**

**R4-2400975 Analysis of RAN2 LS on BWP operation without restriction**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the reply LS on BWP without restriction

**Decision: Noted.**

**R4-2401233 Requirements/behavior for UE supporting multiple options**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2401616 On remaining issues for BWP operation without restriction**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401617 Reply LS on BWP operation without restriction**

*Type: LS out For: Approval  
 to RAN2  
 Source: vivo*

**Decision: Noted.**

[**R4-2403527**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403527.zip) **Reply LS on BWP operation without restriction**

*Type: LS out For: Approval  
 to RAN2  
 Source: vivo*

**Decision: Withdrawn.**

**R4-2401619 Draft CR on intra frequency measurement requirements for option C for BWP operation without restriction**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2401620 Draft CR to TS 38.133 correction on BWP operation without restriction**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2401734 DraftCR clarifying the handover interruption time requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: D (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Clarification of the interruption time requirements

**Decision: Postponed.**

[**R4-2403528**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403528.zip) **DraftCR clarifying the handover interruption time requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: D (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Clarification of the interruption time requirements

**Decision: Withdrawn.**

**R4-2402199 Discussion on remaining issues for BWP without restriction**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402200 draftCR on requirements for BWP without restriction**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

**R4-2402779 (NR\_BWP\_wor-Core) Core requirements on Option C**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2402891 Discussion on multiple options and reply LS for BWP wor**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

8.6.2 RRM performance requirements

**R4-2400113 Discussion on the performance requirements for the support for bandwidth part operation without restriction**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision:** The document was **withdrawn**.

**R4-2400976 RRM test cases for BWP operation without restriction**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the test case list for BWP without restriction

**Decision: Noted.**

**R4-2401618 Discussion on test cases for BWP operation without restriction**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401740 Discussion on Test cases for BWP\_wor**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402201 Discussion on RRM test cases for BWP without restriction**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402892 Discussion on performance part for BWP wor Option C**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Noted.**

8.6.3 Moderator summary and conclusions

Topic: [110][211] NR\_BWP\_wor

**R4-2400747 Topic summary for [110][211] NR\_BWP\_wor**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403470**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403470.zip) **WF on core maintenance and performance part for BWP operation without restriction**

*Type: other For: Approval  
 Source: vivo, Vodafone*

**Decision: Revised to R4-2403544 (from R4-2403470).**

[**R4-2403544**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403544.zip) **WF on core maintenance and performance part for BWP operation without restriction**

*Type: other For: Approval  
 Source: vivo, Vodafone*

Agreement: For Issue 1-5, the following agreement override the content in the WF

Issue 1-5: Configuration of SSB resources within CSI-ResourceConfig settings for option B-1-1

* **FFS:** LS RAN2 to ask whether SSB resources outside a BWP can be configured within *CSI-ResourceConfig* settings for the BWP if UE supports option B-1-1.

**Decision: Approved.**

**Online session (Wednesday Feb 28, 2024)**

**Core part maintenance:**

**Issue 1-4: Applicability of NCD-SSB based L1 and L3 intra-frequency measurement requirements for PSCell**

* Proposals
  + Option 1a: (Ericsson, vivo)
    - For UE supporting option C and configured with dual connectivity, NCD-SSB based L1 and L3 intra-frequency measurement requirements are also **applicable** for PSCell.
  + Option 1b: (Huawei)
    - NCD-SSB related requirements also **apply** for PSCell when it is activated.
  + Option 2: (Vodafone)
    - Extending the applicability of L1 and L3 intra-frequency measurement requirements to PSCell for UEs supporting Option C and configured with DC can be **deprioritised**.
  + Option 3: (Apple, MTK, QC)
    - NCD-SSB based requirements for option C are only applicable for PCell and **NOT applicable** for PSCell.
* Recommended WF
  + Further discuss.

vivo: the specification impact is very small.

MTK: We already discussed this and agreed to apply for PCell. Are we trying to re-open the discussion?

QC: PScell can also be deactivated. Can only extend to UE not support SCG deactivation.

Vodafone: It was considered, and we had agreement. As an operator, it is not a priority use case.

HW: We support to define the requirements. This was discussed in the last Oct, but only discussed CA, EN-DC was not checked. Can consider activated PScell as mentioned by QC, but based on network control.

vivo: QC proposal is ok to us, with SCG deactivation not enabled. Spcell was our proposal. We did not consider DC carefully.

Apple: share the same view as MTK. Respect the previous agreement.

E///: We support to apply for PScell. Only ENDC but SA is supported by the network in some scenarios. The efforts to UE is limited.

QC: EN-DC use case is typical.

**Issue 1-5: Configuration of SSB resources within CSI-ResourceConfig settings for option B-1-1**

* Proposals
  + Option 1: (vivo)
    - LS RAN2 to ask whether SSB resources outside a BWP can be configured within *CSI-ResourceConfig* settings for the BWP if UE supports option B-1-1.
      * In current TS 38.331, there is no clarification on whether SSB resources outside the BWP can be configured within CSI-Resource*Config* settings if UE supports option B-1-1 or there is no restriction on SSB resources configuration at all.
* Recommended WF
  + Further discuss.

**Issue 1-1: Requirements/UE behaviour for UE supporting both option B-1-1 and A**

* Proposals
  + Option 1a: (Vodafone, CTC, Apple, MTK)
    - For UE supporting both option B-1-1 and option A, UE shall perform L1 measurement according to network configuration, there is no need to define additional requirements/ UE behaviour.
  + Option 1b: (Huawei)
    - For UE supporting both option B-1-1 and A, if configured by NW, UE should perform L1 measurement on both CD-SSB outside active BWP and CSI-RS within active BWP. No additional requirements will be defined for such scenario.
  + Option 2: (vivo)
    - For UE supporting both option B-1-1 and A, if CSI-RS is configured within the active BWP for L1 measurements, then UE is NOT expected to perform RLM/BFD/BM based on CD-SSB outside active BWP.
    - It is clarified in the SSB based L1 measurement requirements that if UE supports both option B-1-1 and option A then the UE is not required to measure the SSB if it is outside active BWP.
* Recommended WF
  + Further discuss.

**Issue 1-3: Requirements/UE behaviour for UE supporting both option C and B-1-1**

* Proposals
  + Option 1: (vivo)
    - For UE supporting both option B-1-1 and C, if both CD-SSB and NCD-SSB are configured outside active BWP, then UE is expected to perform RLM/BFD/BM following NW configuration based on TS 38.331. No additional requirements will be defined for such scenario.
  + Option 2: (Huawei)
    - For UE supporting both option B-1-1 and C, if the active BWP that does not contain CD- or NCD-SSB, UE should perform L1 measurement on CD-SSB. No additional requirements will be defined for such scenario.
* Recommended WF
  + Further discuss.

**Issue 1-6: Requirements for L3 intra-f measurement without gaps for option C**

* Proposals
  + Option 1: (QC)
    - Add one bullet in section 9.2.1 that the target measurement SSB is completely contained in the active downlink BWP of the UE provided the UE supports [FG53-3] and *servingCellMO* is present in the corresponding *BWP-DownlinkDedicated.*
* Recommended WF
  + Further discuss.

**Topic #2: Performance part**

**Issue 2-1: Test cases list for RLM/BFD/BM requirements for option B-1-1**

* Proposals
  + Option 1a: (vivo)

|  |  |  |  |
| --- | --- | --- | --- |
| **Test No.** | **Test cases** | **Test configuration** | **Section** |
| 1 | Radio Link Monitoring Out-of-sync Test for FR1 PCell configured with SSB-based RLM when CD-SSB is outside active BWP | Baseline: A.6.5.1.1 (FR1, No DRX) | A.6.5.1.Y1 |
| 2 | Radio Link Monitoring In-sync Test for FR2 PCell configured with SSB-based RLM when CD-SSB is outside active BWP | Baseline: A.7.5.1.1 (FR2, No DRX) | A.7.5.1.Y1 |
| 3 | Beam Failure Detection and Link Recovery Test for FR1 PCell configured with SSB-based BFD when CD-SSB is outside active BWP | Baseline: A.6.5.5.1 (FR1, No DRX) | A.6.5.5.Y1 |
| 4 | Beam Failure Detection and Link Recovery Test for FR2 PCell configured with SSB-based BFD when CD-SSB is outside active BWP | Baseline: A.7.5.5.1 (FR2, No DRX) | A.7.5.5.Y1 |
| 5 | SSB-based L1-RSRP measurement when CD-SSB is outside active BWP | Baseline: A.6.6.4.1 (FR1, No DRX) | A.6.6.4.Y1 |
| 6 | SSB-based L1-RSRP measurement when CD-SSB is outside active BWP | Baseline: A.7.6.3.1 (FR2, No DRX) | A.7.6.3.Y1 |
| 7 | L1-SINR measurement with SSB-based CMR and dedicated IMR configured when CD-SSB is outside active BWP | Baseline: A.6.6.8.2 (FR1, No DRX) | A.6.6.8.Y1 |
| 8 | L1-SINR measurement with SSB-based CMR and no dedicated IMR configured when CD-SSB is outside active BWP | Baseline: A.7.6.6.2 (FR2, No DRX) | A.7.6.6.Y1 |
| Note1: In all tests, CD-SSB is configured outside active BWP, but within UE CBW. | | | |

* + Option 1b: (Nokia)
    - Define test case for performing SSB based RLM on RLM RS allocated outside active BWP (but within UE channel BW).
    - Define test case for SSB based Link Recovery procedure (BFD and recovery) with the link recovery RS allocated outside active BWP (but within UE channel BW).
    - Define test case for SSB based L1 measurements using L1-RSRP RS outside the active BWP (but within UE channel BW).
  + Option 1c: (Huawei)
    - TC1: RLM OOS and IS based on SSB outside active BWP
    - TC2: BFR based on SSB outside active BWP
    - TC3: L1-RSRP delay and accuracy based on SSB outside active BWP
  + Option 2: (Ericsson, Apple, MTK )
    - Add the following normative NOTE in the existing test cases for RLM/BFD/L1-RSRP/L1-SINR measurements
      * NOTE: For testing the UE supporting FG 53-1, the starting PRB index of the SSB can be any possible PRB index of the RF channel BW occurring after the last PRB of the DL active BWP.
    - The UE supporting option B-1-1 (FG 53-1) is also required to pass other existing test cases based on its supported capabilities e.g. CA, EN-DC etc.
* Recommended WF
  + Further discuss.

vivo: For option 2, how to implement?

Apple: add the note under each of the test cases.

vivo: for UE supporting B-1-1, no need to perform the legacy RLM/BFD/L1-RSRP/L1-SINR test?

E///: Yes, by defining applicability rule.

Nokia: skipping all the legacy tests may not be ok.

Nokia: Option 2 in principle is fine. Will look into the details further.

QC: for the test, not change the SSB location, but change the active BWP.

Agreement: Take the following proposal as baseline, and further discuss the CR wording and applicability rule.

* + - Add the following NOTE in a selected set of test cases from the existing test cases for RLM/BFD/L1-RSRP/L1-SINR measurements
      * NOTE: For testing the UE supporting FG 53-1, the starting PRB index of the SSB can be any possible PRB index of the RF channel BW occurring after the last PRB of the DL active BWP.

**Issue 2-2: Test cases list for intra-frequency measurements without gaps for option B-1-1**

* Proposals
  + Option 1a: (vivo)

|  |  |  |  |
| --- | --- | --- | --- |
| **Test No.** | **Test cases** | **Test configuration** | **Section** |
| 9 | SA event triggered reporting tests without gap when CD-SSB is outside active BWP | Baseline: A.6.6.1.1 (FR1, No DRX) | A.6.6.1.Y1 |
| 10 | SA event triggered reporting tests without gap when CD-SSB is outside active BWP | Baseline: A.7.6.1.1 (FR2, No DRX) | A.7.6.1.Y1 |
| Note1: In all tests, CD-SSB is configured outside active BWP, but within UE CBW. | | | |

* + Option 1b: (Nokia)
    - Define test case for SSB based Intra-frequency measurement performed on SSB outside active BWP (but within UE channel BW).
  + Option 1c: (Huawei)
    - TC4: L3 intra-frequency measurement based on SSB outside active BWP (re-use the TC from R18 MG Enh WI)
  + Option 2: (Ericsson)
    - Add the following normative NOTE in the existing test cases for intra-frequency measurement
      * NOTE: For testing the UE supporting FG 53-1, the starting PRB index of the **SSB** can be any possible PRB index of the RF channel BW occurring after the last PRB of the **DL active BWP**.
    - The UE supporting option B-1-1 (FG 53-1) is also required to pass other existing test cases based on its supported capabilities e.g. CA, EN-DC etc.
* Recommended WF
  + Further discuss.

Test cases list for intra-frequency measurements without gaps for option B-1-1

Agreement: use the same approach for L1 measurement.

**Issue 2-3: Test cases list for RLM/BFD/BM requirements for option C**

* Proposals
  + Option 1a: (Nokia)
    - Define test case for SSB based RLM using NCD-SSB.
    - Define test case for SSB based Link Recovery procedure (BFD and recovery) using NCD-SSB.
    - Define test case for SSB based L1 measurements using NCD-SSB.
  + Option 1b: (Huawei)
    - TC1: RLM OOS and IS based on NCD-SSB in active BWP
    - TC2: BFR based on NCD-SSB in active BWP
    - TC3: L1-RSRP delay and accuracy based on NCD-SSB in active BWP
  + Option 1c: (Ericsson)
    - Define following RLM test cases for option C (FG 53-3) with NCD-SSB configuration:
      * Radio Link Monitoring Out-of-sync Test for FR1 PCell configured with SSB-based RLM RS in non-DRX mode
      * Radio Link Monitoring In-sync Test for FR1 PCell configured with SSB-based RLM RS in non-DRX mode
      * Radio Link Monitoring Out-of-sync Test for FR1 PCell configured with SSB-based RLM RS in DRX mode
      * Radio Link Monitoring In-sync Test for FR1 PCell configured with SSB-based RLM RS in DRX mode
      * Radio Link Monitoring Out-of-sync Test for FR2 PCell configured with SSB-based RLM RS in non-DRX mode
      * Radio Link Monitoring In-sync Test for FR2 PCell configured with SSB-based RLM RS in non-DRX mode
      * Radio Link Monitoring Out-of-sync Test for FR2 PCell configured with SSB-based RLM RS in DRX mode
      * Radio Link Monitoring In-sync Test for FR2 PCell configured with SSB-based RLM RS in DRX mode
    - Define following BFD and LR test cases for option C (FG 53-3) with NCD-SSB configuration:
      * Beam Failure Detection and Link Recovery Test for FR1 PCell configured with SSB-based BFD and LR in non-DRX mode
      * Beam Failure Detection and Link Recovery Test for FR1 PCell configured with SSB-based BFD and LR in DRX mode
      * Beam Failure Detection and Link Recovery Test for FR2 PCell configured with SSB-based BFD and LR in non-DRX mode
      * Beam Failure Detection and Link Recovery Test for FR2 PCell configured with SSB-based BFD and LR in DRX mode
    - Define following L1-RSRP reporting test cases for option C (FG 53-3) with NCD-SSB configuration:
      * SSB based L1-RSRP measurement when DRX is not used
      * SSB based L1-RSRP measurement when DRX is used
      * SSB based L1-RSRP measurement when DRX is not used
      * SSB based L1-RSRP measurement when DRX is used
    - Define following L1-SINR reporting test cases for option B-1-1 (FG 53-1):
      * L1-SINR measurement with SSB based CMR and dedicated IMR when DRX is not used
      * L1-SINR measurement with SSB based CMR and dedicated IMR when DRX is used
  + Option 2: (MTK)
    - * The test cases defined for NCD-SSB of 2Rx RedCap can be directly reused for Option C.
  + Option 3: (vivo)
    - * RAN4 to discuss whether to introduce new test cases to verify NCD-SSB based RLM/BFD/BM measurements for UE supporting option C.
* Recommended WF
  + Further discuss.

vivo: the same L1 measurement requirements for CD-SSB and NCD-SSB for non-Redcap UE. Take the Redcap NCD-SSB test case as baseline, and change the CBW.

Agreement:

Define new RLM/BFD/L1-RSRP/L1-SINR test cases for option C.

**Issue 2-4: Test cases list for intra-frequency measurements and handover for option C**

* Proposals
  + Option 1a: (vivo)

|  |  |  |  |
| --- | --- | --- | --- |
| **Test No.** | **Test cases** | **Test configuration** | **Section** |
| 1 | Intra-frequency handover from FR1 to FR1; known target cell configured with NCD-SSB | Baseline: A.16.3.1.2 (FR1) | A.6.3.1.Z1 |
| 2 | Inter-frequency handover from FR1 to FR1; known target cell configured with NCD-SSB | Baseline: A.16.3.1.6 (FR1, Measured SSB: CD-SSB,  Target SSB: NCD-SSB) | A.6.3.1.Z2 |
| 3 | Inter-frequency handover from FR1 to FR1; unknown target cell configured with NCD-SSB | Baseline: A.16.3.1.6 (FR1, Measured SSB: CD-SSB,  Target SSB: NCD-SSB) | A.6.3.1.Z3 |
| 4 | Intra-frequency handover from FR2 to FR2; known target cell configured with NCD-SSB | Baseline: A.16.3.1.2 (FR2) | A.7.3.1.Z1 |
| 5 | Inter-frequency handover from FR2 to FR2; known target cell configured with NCD-SSB | Baseline: A.17.3.1.2 (FR2, Measured SSB: CD-SSB,  Target SSB: NCD-SSB) | A.7.3.1.Z2 |
| 6 | Inter-frequency handover from FR2 to FR2; unknown target cell configured with NCD-SSB | Baseline: A.17.3.1.2 (FR2, Measured SSB: CD-SSB  Target SSB: NCD-SSB) | A.7.3.1.Z3 |
| 7 | SA event triggered reporting tests without gap configured with NCD-SSB | Baseline: A.6.6.1.1 (FR1, No DRX) | A.6.6.1.Z1 |
| 8 | SA event triggered reporting tests without gap configured with NCD-SSB | Baseline: A.7.6.1.1 (FR2, No DRX) | A.7.6.1.Z1 |
| Note1: In all tests, CD-SSB is configured outside active BWP, but within UE CBW, and NCD-SSB is configured within active BWP. | | | |

* + Option 1b: (Nokia)
    - Define test case for HO interruption requirements (as per section 6.1.1 requirements). Known inter-frequency HO in following scenarios:
      * CD-SSB -> NCD-SSB
      * NCD-SSB -> SB-SSB
      * NCD-SSB -> NCD-SSB
    - Define test case for SSB based Intra-frequency measurement using NCD-SSB.
  + Option 1c: (Huawei)
    - TC4: L3 intra-frequency measurement based on NCD-SSB in active BWP
    - TC5: HO involving NCD-SSB (down selection on the combinations is needed)
  + Option 1d: (Ericsson)
    - New handover test cases for option C (FG 53-3) using following RedCap tests as baseline:
      * A.16.3.1.4 Intra-frequency handover from FR1 to FR1; unknown target cell for 2 Rx UE
      * A.16.3.1.6 Inter-frequency handover from FR1 to FR1; unknown target cell for 2 Rx UE
      * A.17.3.1.2 Inter-frequency handover from FR2 to FR2; unknown target cell for 2 Rx
    - New intra-frequency measurement test cases for option C (FG 53-3) using following RedCap tests as baseline:
      * A.16.6.1.2 SA event triggered reporting tests without gap under non-DRX for 2 Rx UE
      * A.16.6.1.10 SA event triggered reporting tests without gap under non-DRX with SSB index reading for 2 Rx UE
      * A.17.6.1.3 SA event triggered reporting test with per-UE gaps under non-DRX
      * A.17.6.2.1 SA event triggered reporting tests For FR2 without SSB time index detection when DRX is not used (PCell in FR2)
  + Option 2: (MTK)
    - * The test cases defined for NCD-SSB of 2Rx RedCap can be directly reused for Option C.
* Recommended WF
  + Further discuss.

|  |  |  |  |
| --- | --- | --- | --- |
| **Test No.** | **Test cases** | **Test configuration** | **Section** |
| ~~1~~ | **~~Intra~~**~~-frequency handover from FR1 to FR1;~~ **~~known~~** ~~target cell configured with NCD-SSB~~ | ~~Baseline: A.16.3.1.2 (FR1)~~ | ~~A.6.3.1.Z1~~ |
| 2 | **Inter**-frequency handover from FR1 to FR1; **known** target cell configured with NCD-SSB | Baseline: A.16.3.1.6 (FR1, Measured SSB: CD-SSB,  Target SSB: NCD-SSB) | A.6.3.1.Z2 |
| 3 | **Inter**-frequency handover from FR1 to FR1; **unknown** target cell configured with NCD-SSB | Baseline: A.16.3.1.6 (FR1, Measured SSB: CD-SSB,  Target SSB: NCD-SSB) | A.6.3.1.Z3 |
| 4 | Intra-frequency handover from FR2 to FR2; known target cell configured with NCD-SSB | Baseline: A.16.3.1.2 (FR2) | A.7.3.1.Z1 |
| 5 | Inter-frequency handover from FR2 to FR2; known target cell configured with NCD-SSB | Baseline: A.17.3.1.2 (FR2, Measured SSB: CD-SSB,  Target SSB: NCD-SSB) | A.7.3.1.Z2 |
| 6 | Inter-frequency handover from FR2 to FR2; unknown target cell configured with NCD-SSB | Baseline: A.17.3.1.2 (FR2, Measured SSB: CD-SSB  Target SSB: NCD-SSB) | A.7.3.1.Z3 |
| 7 | SA event triggered reporting tests without gap configured with NCD-SSB | Baseline: A.6.6.1.1 (FR1, No DRX) | A.6.6.1.Z1 |
| 8 | SA event triggered reporting tests without gap configured with NCD-SSB | Baseline: A.7.6.1.1 (FR2, No DRX) | A.7.6.1.Z1 |
| Note1: In all tests, CD-SSB is configured outside active BWP, but within UE CBW, and NCD-SSB is configured within active BWP. | | | |

Agreement:

Define new intra-frequency measurements and handover test cases for option C.

As baseline, agree to introduce Test #2, 3, 5, 6, 7, 8. Further discuss whether Test #1 and 4 are needed.

|  |  |  |  |
| --- | --- | --- | --- |
| **Test No.** | **Test cases** | **Test configuration** | **Section** |
| [1 | **Intra**-frequency handover from FR1 to FR1; **known** target cell configured with NCD-SSB | Baseline: A.16.3.1.2 (FR1) | A.6.3.1.Z1] |
| 2 | **Inter**-frequency handover from FR1 to FR1; **known** target cell configured with NCD-SSB | Baseline: A.16.3.1.6 (FR1, Measured SSB: CD-SSB,  Target SSB: NCD-SSB) | A.6.3.1.Z2 |
| 3 | **Inter**-frequency handover from FR1 to FR1; **unknown** target cell configured with NCD-SSB | Baseline: A.16.3.1.6 (FR1, Measured SSB: CD-SSB,  Target SSB: NCD-SSB) | A.6.3.1.Z3 |
| [4 | Intra-frequency handover from FR2 to FR2; known target cell configured with NCD-SSB | Baseline: A.16.3.1.2 (FR2) | A.7.3.1.Z1] |
| 5 | Inter-frequency handover from FR2 to FR2; known target cell configured with NCD-SSB | Baseline: A.17.3.1.2 (FR2, Measured SSB: CD-SSB,  Target SSB: NCD-SSB) | A.7.3.1.Z2 |
| 6 | Inter-frequency handover from FR2 to FR2; unknown target cell configured with NCD-SSB | Baseline: A.17.3.1.2 (FR2, Measured SSB: CD-SSB  Target SSB: NCD-SSB) | A.7.3.1.Z3 |
| 7 | SA event triggered reporting tests without gap configured with NCD-SSB | Baseline: A.6.6.1.1 (FR1, No DRX) | A.6.6.1.Z1 |
| 8 | SA event triggered reporting tests without gap configured with NCD-SSB | Baseline: A.7.6.1.1 (FR2, No DRX) | A.7.6.1.Z1 |
| Note1: In all tests, CD-SSB is configured outside active BWP, but within UE CBW, and NCD-SSB is configured within active BWP. | | | |

**Issue 2-5: Whether to define test cases for option A**

* Proposals
  + Option 1: (vivo)
    - Introduce test cases to verify RLM/BFD/BM measurements for UE supporting option A.
* Recommended WF
  + Further discuss.

vivo: In legacy test, the CD-SSB is always in active BWP. How UE require the timing is different from the legacy. Can we define a timing requirement for option A? In some UE implementations, configure a measurement gap for UE to perform initial DL timing.

MTK: we have not discussed the measurement gap aspect before. Need further check.

Apple: TRS is always configured in the test.

**Issue 2-6: Test cases list for RLM/BFD/BM requirements for option A**

* Proposals
  + Option 1: (vivo)

|  |  |  |  |
| --- | --- | --- | --- |
| **Test No.** | **Test cases** | **Test configuration** | **Section** |
| 1 | Radio Link Monitoring Out-of-sync Test for FR1 PCell configured with CSI-RS-based RLM when CD-SSB is outside active BWP | Baseline: A.6.5.1.5 (FR1, No DRX) | A.6.5.1.X1 |
| 2 | Radio Link Monitoring In-sync Test for FR2 PCell configured with CSI-RS-based RLM when CD-SSB is outside active BWP | Baseline: A.7.5.1.6 (FR2, No DRX) | A.7.5.1.X1 |
| 3 | Beam Failure Detection and Link Recovery Test for FR1 PCell configured with CSI-RS-based BFD and LR when CD-SSB is outside active BWP | Baseline: A.6.5.5.5 (FR1, No DRX) | A.6.5.5.X1 |
| 4 | Beam Failure Detection and Link Recovery Test for FR2 PCell configured with CSI-RS-based BFD and LR when CD-SSB is outside active BWP | Baseline: A.7.5.5.3 (FR2, No DRX) | A.7.5.5.X1 |
| 5 | CSI-RS based L1-RSRP measurement when CD-SSB is outside active BWP | Baseline: A.6.6.4.3 (FR1, No DRX) | A.6.6.4.X1 |
| 6 | CSI-RS based L1-RSRP measurement when CD-SSB is outside active BWP | Baseline: A.7.6.3.3 (FR2, No DRX) | A.7.6.3.X1 |
| 7 | L1-SINR measurement with CSI-RS based CMR and dedicated IMR configured when CD-SSB is outside active BWP | Baseline: A.6.6.8.3 (FR1, No DRX) | A.6.6.8.X1 |
| 8 | L1-SINR measurement with CSI-RS based CMR and no dedicated IMR configured when CD-SSB is outside active BWP | Baseline: A.7.6.6.1 (FR2, No DRX) | A.7.6.6.X1 |
| Note1: In all tests, CD-SSB is configured outside active BWP, but within UE CBW. | | | |

* Recommended WF
  + Further discuss.

8.7 Support of intra-band non-collocated EN-DC/NR-CA deployment

8.7.2 RRM Core requirements maintenance

[**R4-2403566**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403566.zip) **Big CR for core maintenance on intra-band non-collocated EN-DC/NR-CA deployment**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4281 Cat: F  
  
 Source: Huawei*

**Decision: Agreed.**

**R4-2400280 [NonCol\_intraB\_ENDC\_NR\_CA-Core] CR 38.133 Correction of normative text in requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3979 rev Cat: F (Rel-18)  
  
 Source: BeammWave*

**Abstract:**

Some requirements that were added after RAN4#109 by Cat B CR 3951 for the Rel-18 WI NonCol\_intraB\_ENDC\_NR\_CA-Core are phrased in a way that violates the guidelines in the Foreword section of TS 38.133 on the usage of modal verbs in normative text. This le

**Decision: Endorsed.**

**R4-2401371 DraftCR on maintaining Type 1/2 RRM requirements for intra-band non-collocated EN-DC/NR-CA**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

8.7.3 RRM performance requirements

**R4-2400414 On test case for non-collocated intra-band NR CA**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400415 Interruption test case for intra-band non-collcoated NR CA**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4009 rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Revised to R4-2403255 (from R4-2400415).**

[**R4-2403255**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403255.zip) **Interruption test case for intra-band non-collcoated NR CA**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4009 rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2401372 Discussion on impacts on RRM test cases for supporting intra-band non-collocated NR-CA**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401373 DraftCR on updating interruption test cases for FR1 NR intra-band CA**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

**R4-2401739 DraftCR on test case of interruption during measurements on deactivated NR SCC in FR1 in A.6.5.2.1 for non-collocated FR1 intra-band NRCA**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

8.7.5 Moderator summary and conclusions

Topic: [110][212] NonCol\_intraB\_ENDC\_NR\_CA

**R4-2400748 Topic summary for [110][212] NonCol\_intraB\_ENDC\_NR\_CA**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Monday Feb 26, 2024)**

**Topic #1: RRM core part**

Moderator’s suggestion: there is no discussion paper and no open issue is observed. **Please discuss the CRs directly**.

**Topic #2: RRM performance part**

**Issue 2-1: Impacts on existing test for interruptions during measurements on deactivated NR SCC in FR1 (A.6.5.2.1)**

* Option 1a: (Apple)
  + clarify the test requirements in A.6.5.2.1.2 to cover testing for CA type 2 UE as below:

|  |
| --- |
| For UE indicating [*intraBandNRCA-NonCollocated-r18*]   * if [*nonCollocatedTypeNR-CA-r18*] is not provided, the UE is only allowed to cause interruption on NR PCell immediately before and immediately after a SMTC. Each interruption on NR PCell shall not exceed the value defined in Table A.6.5.2.1.2-1. * if [*nonCollocatedTypeNR-CA-r18*] is provided, the UE is only allowed to casue an interruption on PCell no earlier than 1 slot before an SMTC and no later than 1 slot after the SMTC. the interruption on NR PCell shall not exceed the value defined in Table A.6.5.2.1.2-2. |

* Option 1b: (Huawei)
  + In current test on interruptions during measurements on deactivated NR SCC in FR1, the following clarification needs to be added in test requirements for FR1 non-contiguous intra-band CA case.

|  |
| --- |
| A.6.5.2.1.2 Test Requirements  The UE shall be continuously scheduled on PCell during the entire length of T1. During the time duration T1 the UE shall transmit at least 99.5% of ACK/NACK on PCell.  If the NR PCell is not in the same band as the deactivated SCell, the UE is only allowed to cause interruptions on NR PCell immediately before and immediately after an SMTC. Each interruption on NR PCell shall not exceed the value defined in Table A.6.5.2.1.2-1.  If the NR PCell is non-contiguous to the deactivated SCell, and UE is capable of [*intraBandNRCA-NonCollocated-r18*] and not provided with [*nonCollocatedTypeNR-CA-r18*], the UE is only allowed to cause interruptions on NR PCell immediately before and immediately after an SMTC. Each interruption on NR PCell shall not exceed the value defined in Table A.6.5.2.1.2-1.  If the NR PCell is contiguous to the deactivated SCell in the same band, or if the NR PCell is in the same band as the deactivated SCell and UE is not capable of [*intraBandNRCA-NonCollocated-r18*] or UE is capable of [*intraBandNRCA-NonCollocated-r18*] and provided with [*nonCollocatedTypeNR-CA-r18*], the UE is only allowed to cause an interruption on PCell no earlier than 1 slot before an SMTC and no later than 1 slot after the SMTC. the interruption on NR PCell shall not exceed the value defined in Table A.6.5.2.1.2-2. |

* Option 1c: (Nokia)
  + Update test case of interruption during measurements on deactivated NR SCC in FR1 in A.6.5.2.1 for non-collocated FR1 intra-band NRCA

|  |
| --- |
| A.6.5.2.1.2 Test Requirements  The UE shall be continuously scheduled on PCell during the entire length of T1. During the time duration T1 the UE shall transmit at least 99.5% of ACK/NACK on PCell.  If the NR PCell is not in the same band as the deactivated SCell, the UE is only allowed to cause interruptions on NR PCell immediately before and immediately after an SMTC. Each interruption on NR PCell shall not exceed the value defined in Table A.6.5.2.1.2-1.  If the NR PCell is non-contiguous to the deactivated SCell in the same band and UE is capable of [*intraBandNRCA-NonCollocated-r18*] on this FR1 band and [*nonCollocatedTypeNR-CA-r18*] is not provided, the UE is only allowed to cause interruptions on NR PCell immediately before and immediately after an SMTC. Each interruption on NR PCell shall not exceed the value defined in Table A.6.5.2.1.2-1.  If the NR PCell is contiguous to the deactivated SCell in the same band, or ifthe NR PCell is in the same band as the deactivated SCell and UE is not capable of [*intraBandNRCA-NonCollocated-r18*] or UE is capable of [*intraBandNRCA-NonCollocated-r18*] and [nonCollocatedTypeNR-CA-r18] is provided, the UE is only allowed to cause an interruption on PCell no earlier than 1 slot before an SMTC and no later than 1 slot after the SMTC. the interruption on NR PCell shall not exceed the value defined in Table A.6.5.2.1.2-2. |

* Recommended WF
  + Companies agree that the test requirements for interruptions during measurements on deactivated NR SCC in FR1 in A.6.5.2.1.2 need to be revised to cover type 2 UE, but the modifications are different. RAN4 can further discuss on the wording.

Agreement:

* + The test requirements for interruptions during measurements on deactivated NR SCC in FR1 in A.6.5.2.1.2 need to be revised to cover type 2 UE. Further discuss on the wording based on the CR.

Work based on Apple CR.

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

**R4-2401423 Feature list proposals for HST FR2 enhancements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

8.8.1 RRM core requirement maintenance

**R4-2402556 bigCR to TS 38.133 on Enhanced HST FR2 Core Requirements Maintenance**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4237 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2401422 Maintenance CR on IDLE mode HST FR2 UE mobility**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4128 rev Cat: F (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Merged.**

**R4-2401896 Draft CR on FR2 HST inter-frequency measurement requirements in Idle mode**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Samsung*

**Decision: Revised to R4-2403354 (from R4-2401896).**

[**R4-2403354**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403354.zip) **Draft CR on FR2 HST inter-frequency measurement requirements in Idle mode**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Samsung*

**Decision: Endorsed.**

**R4-2401897 Discussion on feature list for Rel-18 FR2 HST**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Samsung*

**Decision: Noted.**

**R4-2402554 On HST FR2 Enhanced RRM Requirements Maintenance**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402555 draftCR to TS 38.133 on SCell Activation Requirement in HST FR2 Enhanced**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403355 (from R4-2402555).**

**[R4-2403355](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403355.zip) draftCR to TS 38.133 on SCell Activation Requirement in HST FR2 Enhanced**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

8.8.2 RRM performance requirements

[**R4-2403320**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403320.zip) **Big CR to TS 38.133 on Rel-18 HST FR2 RRM performance requirements**

*Type: CR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Samsung, Nokia*

**Decision: Endorsed.**

**R4-2401349 Discussion on FR2 HST RRM performance**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401350 Test case on SA event triggered reporting for Rel-18 FR2 HST inter-frequency measurement with SSB time index detection when DRX is not used (Pcell in FR2)**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403404 (from R4-2401350).**

[**R4-2403404**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403404.zip) **Test case on SA event triggered reporting for Rel-18 FR2 HST inter-frequency measurement with SSB time index detection when DRX is not used (Pcell in FR2)**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2401424 Test cases list for HST FR2 UE multi-panel simultaneous reception and CA**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2401425 Test case requirements for cell reselection to FR2 inter-frequency NR carrier for FR2 HST**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Revised to R4-2403405 (from R4-2401425).**

[**R4-2403405**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403405.zip) **Test case requirements for cell reselection to FR2 inter-frequency NR carrier for FR2 HST**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Endorsed.**

**R4-2401600 RRM performance requirements for train roof-mounted FR2 high power devices**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

RRM performance requirements for train roof-mounted FR2 high power devices

**Decision: Noted.**

**R4-2401601 draft CR to 38.133 on SA event triggered reporting tests for Rel-18 FR2 HST intra-band CA without SSB time index detection when DRX is not used**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Test case for inter-frequency measurement for HST FR2

**Decision: Revised to R4-2403406 (from R4-2401601).**

[**R4-2403406**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403406.zip) **draft CR to 38.133 on SA event triggered reporting tests for Rel-18 FR2 HST intra-band CA without SSB time index detection when DRX is not used**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Test case for inter-frequency measurement for HST FR2

**Decision: Endorsed.**

**R4-2401898 Discussion on test case for SSB-based L1-RSRP for PC6 UE with multi-Rx**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Samsung*

**Decision: Noted.**

**R4-2401900 Draft CR to 38.133 on test case for SSB based L1-RSRP for FR2 PC6 UE with multi-Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Samsung*

**Decision: Revised to R4-2403407 (from R4-2401900).**

[**R4-2403407**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403407.zip) **Draft CR to 38.133 on test case for SSB based L1-RSRP for FR2 PC6 UE with multi-Rx**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Samsung*

**Decision: Endorsed.**

**R4-2402557 On HST FR2 Enhanced RRM Performance Requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402558 draftCR to TS 38.133 on TCI State Switch, UL Timing and RTD Test Case for HST FR2 Enhanced**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403408 (from R4-2402558).**

[**R4-2403408**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403408.zip) **draftCR to TS 38.133 on TCI State Switch, UL Timing and RTD Test Case for HST FR2 Enhanced**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2402559 draftCR to TS 38.133 on Scell Activation Test Case for HST FR2 Enhanced**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Not pursued.**

[**R4-2403409**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403409.zip) **draftCR to TS 38.133 on Scell Activation Test Case for HST FR2 Enhanced**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2402808 RRM performance test cases for FR2 HST enhancements**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

8.8.4 Moderator summary and conclusions

Topic: [110][213] NR\_HST\_FR2\_enh\_part1

**R4-2400749 Topic summary for [110][213] NR\_HST\_FR2\_enh\_part1**

*Type: other For: Information  
 Source: Moderator (Nokia)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403317**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403317.zip) **Ad-hoc minutes on RRM requirements for NR\_HST\_FR2\_enh WI**

*Type: other For: Approval  
 Source: Samsung*

**Decision: Approved.**

**Online session (Tuesday Feb 27, 2024)**

**Issue 1-1-1: UE features for simultaneous two-panel reception**

Discusson:

On component:

HW: only test case in demod part, no need to add the demod aspect.

Samsung: demod part is needed for this feature.

Nokia: in Rel-17, we already had this for demod.

HW: We have demod test for almost all WIs.

QC: We don’t support the description for demod unless there are some demod tests for advanced demod features.

Intel: no dedicated feature for demod requirement. Consider whether to add the description.

On prerequisite:

Samsung: decoupled with 16-2c.

HW: 16-2c can be reported by PC6.

Intel: don’t have 16-2c as a prerequisite.

Nokia: we have not any requriement referring to 16-2c.

Samsung: can discuss 16-2c further if the component for demod will be added.

HW: 16-2c is the prerequisite for Rel-18 Multi-Rx.

E///: what’s the consequence if UE support this feature but not support 16-2c.

QC: GBBR is used in Mult-Rx.

Agreement:

Remove the description for demod for now, and further discuss whether the following component can be added taking into account the discussion in demod.

* 3) Support of enhanced demodulation processing to support FR2-1 PC6 UEs with simultaneous DL signals reception associated with two different QCL TypeD RSs

Further discuss whether 16-2c is the prerequisite UE feature if the component for demod will be added.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Features** | **Index** | **Feature group** | **Components** | **Prerequisite feature groups** | **Need for the gNB to know if the feature is supported** | **Applicable to the capability signalling exchange between UEs (V2X WI only)”.** | **Consequence if the feature is not supported by the UE** | **Type**  **(the ‘type’ definition from UE features should be based on the granularity of 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC)** | **Need of FDD/TDD differentiation** | **Need of FR1/FR2 differentiation** | **Capability interpretation for mixture of FDD/TDD and/or FR1/FR2** | **Note** | **Mandatory/Optional** |
| 34.NR\_HST\_FR2\_enh | 34-1 | Support of NR FR2 HST with simultaneous DL signals reception associated with two different QCL TypeD RSs | 1) Support of enhanced RF requirement to support FR2-1 PC6 UEs with simultaneous DL signals reception associated with two different QCL TypeD RSs.  2) Support of enhanced RRM requirement to support FR2-1 PC6 UEs with simultaneous DL signals reception associated with two different QCL TypeD RSs | 22-1 | Yes | N/A | UE does not support FR2 high speed train scenario with simultaneous DL signals reception associated with two different QCL TypeD RSs | Per Band | No | FR2 only | N/A | A single indication element is used to indicate for the components for 34-1.  The UE capability reported in this feature is applied when *highSpeedDeploymentTypeFR2-r17* is configured by network as *bidirectional* | Optional with capability signaling |

**Issue 1-1-2: UE features for CA**

Discussion:

Intel: all the legacy FR2 capabilities are per band.

Nokia: per UE for FR1 HST. We are also ok with per band for FR2.

Agreement:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Features** | **Index** | **Feature group** | **Components** | **Prerequisite feature groups** | **Need for the gNB to know if the feature is supported** | **Applicable to the capability signalling exchange between UEs (V2X WI only)”.** | **Consequence if the feature is not supported by the UE** | **Type**  **(the ‘type’ definition from UE features should be based on the granularity of 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC)** | **Need of FDD/TDD differentiation** | **Need of FR1/FR2 differentiation** | **Capability interpretation for mixture of FDD/TDD and/or FR1/FR2** | **Note** | **Mandatory/Optional** |
| 34.NR\_HST\_FR2\_enh | 34-2 | Enhanced FR2 HST RRM requirements for intra-band CA and inter-frequency measurements in connected mode | 1) Support of the RRM requirement for intra-band CA operation in connected mode to support FR2 high speed up to 350 km/h, as specified in TS 38.133  2) Support of the RRM requirement for enhanced inter-frequency measurements in connected mode to support FR2 high speed up to 350 km/h, as specified in TS 38.133 | 22-1 | Yes | N/A | The performance of intra-frequency measurement on SCC and/or inter-frequency measurements in connected mode for NR FR2 HST scenario cannot be guaranteed | Per Band | No | FR2 only | N/A |  | Optional with capability signaling |
| 34.NR\_HST\_FR2\_enh | 34-3 | Enhanced FR2 HST RRM requirements for inter-frequency measurement in Idle and Inactive mode | Support of the RRM requirement for inter-frequency measurements in idle and Inactive mode to support FR2 high speed up to 350 km/h, as specified in TS 38.133 | 22-1 | No | N/A | The performance of inter-frequency measurement in idle and Inactive mode for FR2 HST scenario cannot be guaranteed | FFS | No | FR2 only | N/A |  | Optional without capability signaling |

**Issue 1-1-3: UE features for enhanced MAC CE**

Discussion:

[22-2] (component #1) Or/and [22-1] (component #2)

Option 1: 22-2 and 22-1 with one UE feautre 34-4 (Samsung, HW, QC, OPPO)

Option 2: introduce two UE features (Nokia)

E///: open to discuss option 2.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Features** | **Index** | **Feature group** | **Components** | **Prerequisite feature groups** | **Need for the gNB to know if the feature is supported** | **Applicable to the capability signalling exchange between UEs (V2X WI only)”.** | **Consequence if the feature is not supported by the UE** | **Type**  **(the ‘type’ definition from UE features should be based on the granularity of 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC)** | **Need of FDD/TDD differentiation** | **Need of FR1/FR2 differentiation** | **Capability interpretation for mixture of FDD/TDD and/or FR1/FR2** | **Note** | **Mandatory/Optional** |
| 34.NR\_HST\_FR2\_enh | 34-4 | Support of enhanced MAC CE for TCI state switch indication for FR2 HST | [1. Support of enhanced one shot large UL transmit timing adjustment requirement to support FR2-1 PC6 UEs, as specified in TS 38.133 based on [the cross-RRH TCI state indication for UE-specific PDCCH MAC CE]  2. Support of enhanced RRM requirements based on new MAC CE for TCI state switch indication named as [TBA] in HST FR2 scenario, as specified in TS 38.133. |  | Yes | N/A | UE does not support enhanced MAC CE for TCI state switch indication for FR2 HST | Per Band | No | FR2 only | N/A | [Enhanced large one-shot UL transmit timing adjustment based on the new MAC CE named as [TBA] is applicable only when UE is additionally indicating the support of one-shot large timing adjustment capability (22-2)]  [Candidate value: true/false] | Optional with capability signaling |

Topic: [110][214] NR\_HST\_FR2\_enh\_part2

**R4-2400750 Topic summary for [110][214] NR\_HST\_FR2\_enh\_part2**

*Type: other For: Information  
 Source: Moderator (Samsung)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403319**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403319.zip) **WF on FR2 HST RRM performance requirements**

*Type: other For: Approval  
 Source: Samsung*

**Decision: Approved.**

**Online session (Tuesday Feb 27, 2024)**

Note: The WI performance part is scheduled to complete in this meeting.

**Sub-topic 1-3 How to design the TC for UL timing adjustment in Rel-18 FR2 HST**

[Moderator] How to design the TC for UL timing adjustment in Rel-18 FR2 HST is discussed in the sub-topic. The sub-topic contains the following two issues:

1. Whether to introduce simultaneous multi-panel operation at UL timing adjustment in Rel-18 FR2 HST
2. The discussion on the new R18 UL timing adjustment TC design for FR2 HST

**Issue 1-3-1 Whether to introduce simultaneous multi-panel operation at UL timing adjustment in Rel-18 FR2 HST**

The agreed way forward is as follows

|  |
| --- |
| Issue 1-3-1: The necessity of introducing simultaneous multi-panel operation at UL timing adjustment in Rel-18 FR2 HST   * Way Forward:   + Option 1: No need to introduce simultaneous multi-panel operation at UL timing adjustment in Rel-18 FR2 HST     - No need to combine MRTD together to design the new UL timing adjustment related TC.   + Option 2: It is necessary to introduce simultaneous multi-panel operation at UL timing adjustment in Rel-18 FR2 HST     - FFS, on whether and how to verify MRTD requirement |

[Background on MTRD TC design] **Regarding the TC of MRTD, have checked the discussions in the previous releases, there is no TCs for MRTD, specifically**.

[Background on the enhanced MRTD requirement in Rel-18 FR2 HST]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| The MRTD requirement was enhanced in Rel-18 FR2 HST  7.6.7 Minimum Requirements for PC6 UE in FR2  In HST FR2 scenario, when *highSpeedMeasFlagFR2-r17* is configured and *highSpeedDeploymentTypeFR2-r17* is configured as bidirectional for a PC6 UE supporting [*simultaneousReceptionFR2HST-r18*]*,* the UE shall be capable of handling a maximum receive timing difference specified as in the below table 7.6.7-1. The specified timing difference is between the subframe boundaries of the signals on the same CC which UE receives using two different Rx chains simultaneously.  Table 7.6.7-1: Maximum receive timing difference requirement for PC6 UE supporting [*simultaneousReceptionFR2HST-r18*]   |  |  |  | | --- | --- | --- | | **Frequency Range** | **Subcarrier spacing (kHz)** | **Maximum receive timing difference (µs)** | | FR2-1 | 120 | 8 | |

[Moderator] R4-2402557 give some reasons to support Option 2. For convenience, Moderator duplicates their observations here as reference:

* Observations from Nokia
  + TCI state switching delay test already includes PDSCH reception that is used for the verification of TCI state switching delay. Therefore, it is the most appropriate setup to verify that RTD > CP is also supported by the PC6 UE capable of two-panel reception.
* Proposals
  + Option 1 (Huawei, Ericsson, QC, Samsung): No
    - Option 1-1 (Ericsson): Option 1 can avoid complicated test configuration combining different test target. However, it can be discussed if significant loophole is found due to no such test cases combining MRTD and UL timing adjustment.
  + Option 2 (Nokia): Yes
* Recommended WF
  + TBD

Nokia: we don’t have any other test for UE simulateous multi-Rx reception.

Samsung: they are two separate UE features. UE may not support this multi-Rx reception.

Issue 1-3-1: The necessity of introducing simultaneous multi-panel operation at UL timing adjustment in Rel-18 FR2 HST

Agreement: No

**Issue 1-3-2 Discussion on the new R18 UL timing adjustment TC design for FR2 HST**

The agreed way forward is as follows

|  |
| --- |
| Issue 1-3-2: The discussion on the new R18 UL timing adjustment TC design for FR2 HST   * Way Forward:   + Option 1:     - RAN4 need to define the new R18 TC combining with UL timing adjustment and TCI state switch.   + Option 2:     - RAN4 need to define separate new R18 TCs, one for UL timing adjustment, the other for TCI state switch.   + Option 3:     - RAN4 to include simultaneous PDSCH reception and/or L1 measurement from different AOAs in the introduced new test A.7.5.8.X to verify simultaneous two-panel reception with large RTD and enhanced one-shot UL timing adjustment operation |

[Moderator] In the previous meeting, companies made a consensus to define a new TC combining with one shot large UL timing adjustment and MAC-CE based TCI state switch delay, but R4-2401600 and R4-2402808 think it might doesn’t make any sense, Moderator lists their views as sub-bullet 1).

1. **Whether need to split the new R18 test cases, one for UL timing adjustment, the other for TCI state switch**

* Proposals
  + Option 1 (Ericsson, QC): Yes.
    - Option 1-1 (QC): Introduce separate test cases to test the UE behaviour for one-shot timing adjustment and TCI state switching delay upon receiving the MAC-CE indicating 1 or 0
  + Option 1 (Ericsson, Nokia): No.
* Recommended WF
  + - TBD

1. **Discussion on test method/setup design**

* Proposals
  + Option 1 (Huawei):

|  |
| --- |
| For R18 enhanced TCI state switch, the following setup can be used to define the new test case of MAC-CE based TCI state switch:   * MAC-CE indication “1” is used in the test and the timing difference between two TCI states is set as up to 8us.   + To verify one-shot timing adjustment and R17 TCI state switching delay |

* + Option 2 (Nokia):
    - RAN4 to specify simultaneous PDSCH reception from two different AOAs in the new test for the verification of enhanced MAC-CE TCI state switch, UL timing and RTD>CP requirements in HST FR2 multi-Rx scenario.
  + Option 3 (Ericsson):
    - The new test case, which combines three requirements: MRTD, TCI state update in multi-panel reception operation, one-shot UL timing adjustment. The single test case in Option 3 also can be split to at the least two test cases.

**Sub-topic 1-1 How to design the TC for SSB based L1-RSRP in Rel-18 FR2 HST**

*Sub-topic description:*

*Open issues and candidate options before meeting:*

[Moderator] L1-measurement requirement enhancement for Rel-18 FR2 PC6 UE is introduced for RRM core requirement in simultaneous multi-panel operation part. The L1-measurement requirement includes SSB based RLM, BFD and L1-RSRP. In last meeting, companies agreed to define new test case for A.7.6.3.X SSB based L1-RSRP measurement when DRX is used for FR2-1 PC6 UEs supporting SimultaneousReceptionFR2HST-r18, but the details are still FFS. The agreed way forward is as follows

|  |
| --- |
| *Necessity of Test Cases for SSB based L1-RSRP*   * *Way Forward:*    + *TC for SSB based L1-RSRP*     - *RAN4 to define new test case for A.7.6.3.X SSB based L1-RSRP measurement when DRX is used for FR2-1 PC6 UEs supporting SimultaneousReceptionFR2HST-r18*       * *Configure highSpeedMeasFlagFR2-r17 to set2 for this TC*       * *FFS, configure M = 3 (i.e., not to configure higher layer parameter timeRestrictionForChannelMeasurements) for this TC*       * *FFS, configuration set2 with 1AOA and 2AOA setups is applied for this TC*         + *The conclusion from Rel-18 Multi-RX WI could be considered* |

In this meeting, we continue to discuss the details in terms of test design.

**Issue 1-1-1 AoA setup for multi-Rx chain DL reception in Rel-18 FR2 HST**

[Background on AoA setup in the current TS 38.133] There are 4 AoA setups in the current Spec. Section A.3.15. For convenience, Moderator duplicates some contents of the existing A.3.15 here as reference.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A.3.15 Angle of Arrival (AoA) for FR2 RRM test cases  This clause specifies the AoA setups for FR2 RRM test cases in clause A.5 and A.7. The applicable AoA setup is defined in each test case in clause A.5 and A.7.  A.3.15.1 Setup 1: Single AoA in Rx beam peak direction  There is only one active probe in the test. The DL signals, and noise if applicable, transmitted from the probe, are aligned to the UE Rx beam peak direction (as defined in TS 38.101-2 [19]).  A.3.15.2 Setup 2: Single AoA in non Rx beam peak direction  A.3.15.2.1 Setup 2a: Single AoA in non Rx beam peak direction without change in direction  There is only one active probe in the test. The DL signals, and noise if applicable, transmitted from the probe, align to a direction (AoA) which is from the set of directions corresponding to the EIS spherical coverage percentile of the DUT as defined in clause 7.3.4 of TS 38.101-2 [19] for each UE power class. The direction (AoA) of the signals shall not be changed between test iterations.  A.3.15.2.2 Setup 2b: Single AoA in non Rx beam peak direction with change in direction  There is only one active probe in the test. The DL signals, and noise if applicable, transmitted from the probe, align to a direction (AoA) which is from the set of directions corresponding to the EIS spherical coverage percentile of the DUT as defined in clause 7.3.4 of TS 38.101-2 [19] for each UE power class. For UE power class 3, the direction (AoA) of the signals shall be changed for each test iteration (for UE power classes other than 3, this is FFS).  A.3.15.3 Setup 3: 2 AoAs  There are 2 active probes in the test. The DL signals, and noise if applicable, transmitted from the two active probes, align to directions (AoAs) which are from the set of directions corresponding to the EIS spherical coverage percentile of the DUT as defined in clause 7.3.4 of TS 38.101-2 [19] for each UE power class. The relative angular offset between the directions (AoAs) of the 2 active probes, shall be changed for each test iteration. The applicable set of relative angular offsets between the 2 active probes is given in Table 3.15.3-1 for each UE power class.  Editor Note: If RAN5 finds the changing of angular offset between the directions (AoAs) of the 2 active probes per test iteration to be infeasible from the perspectives of EIS spherical coverage and other impacts, e.g.: testing time, then the test setup will be revised.  Table A.3.15.3-1: Set of relative angular offsets between active probes for each power class   |  |  | | --- | --- | | **UE Power class** | **Relative angular offset between active probes** | | 1 | 30°, 60°, 90° and 120° | | 2 | FFS | | 3 | 30°, 60°, 90°, 120° and 150° | | 4 | FFS | | 5 | FFS | | 6 | 30°, 60°, 90°, 120° and 150° | | 7 | FFS |   A.3.15.4 Setup 4: 2 AoAs, 1 AoA in Rx beam peak direction, 1 in non Rx beam peak  A.3.15.4.1 Setup 4a: 2 AoAs, 1 AoA in Rx beam peak direction, 1 in non Rx beam peak without change in direction  There are 2 active probes in the test. The DL signals, and noise if applicable, are transmitted from the two active probes. One probe is aligned to the UE Rx beam peak direction as defined in TS 38.101-2 [19]. The second is aligned to a direction (AoA) which is from the set of directions corresponding to the EIS spherical coverage percentile of the DUT as defined in clause 7.3.4 of TS 38.101-2 [19] for each UE power class. The direction (AoA) of the non Rx beam peak signal shall not be changed between test iterations.  A.3.15.4.2 Setup 4b: 2 AoAs, 1 AoA in Rx beam peak direction, 1 in non Rx beam peak with change in direction  There are 2 active probes in the test. The DL signals, and noise if applicable, are transmitted from the two active probes. One probe is aligned to the UE Rx beam peak direction as defined in TS 38.101-2 [19]. The second is aligned to a direction (AoA) which is from the set of directions corresponding to the EIS spherical coverage percentile of the DUT as defined in clause 7.3.4 of TS 38.101-2 [19] for each UE power class.  For UE power class 3, the relative angular offset between the directions (AoAs) of the 2 active probes shall be changed for each test iteration, within the probe alignment described above. The applicable set of relative angular offsets between the 2 active probes is given in Table 3.15.3-1 for each UE power class. |

Considering new multi-Rx simultaneous reception feature is introduced in HST, it is worth discussing the following issues 1)-3).

1. **Whether to use 2AoA setup for SSB based L1-RSRP test case**

* Proposals
  + Option 1 (Huawei, Samsung, Nokia): Yes.
    - For the test design, configuration set 2 with 2AOA setup should be applied for SSB based L1-RSRP test case in FR2 HST
* Recommended WF
  + For the test design, configuration set 2 with 2AOA setup should be applied for SSB based L1-RSRP test case in FR2 HST.

1. **Whether to define a new 2AoA setup for multi-Rx chain DL reception for SSB based L1-RSRP test case**

[Moderator] R4-2401898 proposes a possibility that a new 2AoA setup should be considered in the HST multi-Rx simultaneous reception scenario. A brief explanation is that: the existing AoA setup for L1-PSRP measurement for beam reporting is Setup 1 according to A.3.15.1 (please find in TS 38.133 A7.6.3.5), that means the test signal are aligned to the UE Rx beam peak direction.

In this sense, the following issue may arise. In Rel-18 FR2 multi-Rx PC6 UE, it is more likely to use 2AoA setup, which actually means the set of directions corresponding to the EIS spherical coverage percentile of the DUT (non-beam peak directions) based on the existing 2AoA setup definition. So, if we agree to use the existing 2AoA setup: Setup 3 according to A.3.15.3, a smaller antenna gain range and uncertainty gain difference Y and Z may need to be considered, which are not fully compliant with the idea of AoA setup design of the L1-RSRP measurement originated from Rel-15 discussion. Besides, considering that UE use two panels/chains to receive the different QCL Type D signals simultaneously, the implementation of the two panels may be different, thus some more uncertain gain difference parameters may be introduced with two non-beam peak direction consideration, which cannot be determined easily. From this, moderator think it is reasonable to discuss whether it is necessary to define a new 2AoA setup for multi-Rx chain DL reception in Rel-18 FR2 HST.

It is encouraged that companies to contribute views for the following proposal.

* Proposals
  + Option 1 (Samsung): Yes.

|  |
| --- |
| Define a new AoA setup to support the SSB based L1-RSRP measurement test on FR2-1 PC6 UEs supporting SimultaneousReceptionFR2HST-r18   * AoA Setup X: 2 AoAs, both AoAs are in Rx beam peak direction   + The details on how to define the AoA Setup X for test case, the conclusion from Rel-18 Multi-RX WI could be considered |

* Recommended WF
  + TBD

**Issue 1-2-3 Whether to design the test case for SCell activation delay**

[Moderator] The agreed way forward is as follows

|  |
| --- |
| **Issue 1-2-5: Necessity of Test Cases for SCell activation delay**   * Way Forward:   + TCs for SCell activation delay     - Option 1: No need to define new TC for SCell activation delay for Rel-18 FR2 HST PC6.     - Option 2: Verify an enhanced HST FR2 requirements for SCell activation delay (3ms) with the existing test A.7.5.3.1 SCell Activation and deactivation for SCell in FR2 intra-band in non-DRX     - Option 3: Other options are not precluded |

* Proposals
  + Option 1 (Ericsson, QC): No
  + Option 2 (Nokia): Yes
    - RAN4 to define the test for direct SCell activation with delay requirement of “3 ms” by enhancing the existing “A.7.5.3.5” Direct SCell activation at handover with known SCell in FR2, supporting the optional capability of “*SCellwithoutSSB*”
* Recommended WF
  + - TBD

8.9 Air-to-ground network for NR

8.9.5 RRM core requirements maintenance

[**R4-2403577**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403577.zip) **BigCR to TS 38.133 Correction of core requirements for NR ATG**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4289 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Agreed.**

**R4-2400094 (NR\_ATG-Core) CR on RRM core requirements maintenance for ATG**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3959 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2403297 (from R4-2400094).**

[**R4-2403297**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403297.zip) **(NR\_ATG-Core) CR on RRM core requirements maintenance for ATG**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3959 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2400279 [NR\_ATG-Core] CR 38.133 Correction of normative text in requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3978 rev Cat: F (Rel-18)  
  
 Source: BeammWave*

**Abstract:**

A requirement that was added after RAN4#108 by Cat B CR 3650 for the Rel-18 WI NR\_ATG-Core is phrased in a way that violates the guidelines in the Foreword section of TS 38.133 on the usage of modal verbs in normative text. This leads to that the (intende

**Decision: Endorsed.**

**R4-2400835 (NR\_ATG-Core) Discussion on the remaining FFS UE features for NR ATG**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2400836 (NR\_ATG-Core) CR to TS 38.133 Correction of core requirements for NR ATG**

*Type: CR For: Endorsement  
 38.133 v18.4.0 CR-4055 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Abstract:**

The CR number is missing on the CR coversheet. Parsing Failure: Change request number wrong on CR cover for TDoc R4-2400836. Database value : 4055. CR cover value : -. This formal CR is for endorsement, due to CR coversheet misalignment.

**Decision: Merged.**

**R4-2401331 Discussion on core requirements maintenance for ATG**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401332 DraftCR on maintenance for ATG RRM requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

**R4-2401640 Discussion on ATG maintenance of core part**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402023 Draft CR correcting unified TCI state switching requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

8.9.6 RRM performance requirements

**R4-2400839 (NR\_ATG-Perf) BigCR to TS 38.133 Introduction of test cases for NR ATG**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4056 rev Cat: B (Rel-18)  
  
 Source: CMCC*

**Decision: Agreed.**

**R4-2400095 Discussion on RRM performance requirement for ATG**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400096 Draft CR on test cases for RA and RRC Connection Release with Redirection for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2403298 (from R4-2400096).**

[**R4-2403298**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403298.zip) **Draft CR on test cases for RA and RRC Connection Release with Redirection for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2400097 Draft CR on test cases for measurement performance requirements for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2403299 (from R4-2400097).**

[**R4-2403299**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403299.zip) **Draft CR on test cases for measurement performance requirements for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2400416 On RRM performance requirement for ATG UE**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400417 Draft CR on RRM test case for ATG UE transmit timing**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Revised to R4-2403300 (from R4-2400417).**

[**R4-2403300**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403300.zip) **Draft CR on RRM test case for ATG UE transmit timing**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2400837 (NR\_ATG-Perf) Discussion on RRM performance requirements for ATG**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2400838 (NR\_ATG-Perf) draftCR to TS 38.133 Introduction of cell re-selection and HOCHO test cases for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: CMCC*

**Decision: Revised to R4-2403301 (from R4-2400838).**

[**R4-2403301**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403301.zip) **(NR\_ATG-Perf) draftCR to TS 38.133 Introduction of cell re-selection and HOCHO test cases for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: CMCC*

**Decision: Endorsed.**

**R4-2400949 Discussion on RRM performance for ATG**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2400950 Draft CR on RRM test cases (ATG 5-8 to ATG 5-13) for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: LG Electronics Inc.*

**Decision: Revised to R4-2403302 (from R4-2400950).**

[**R4-2403302**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403302.zip) **Draft CR on RRM test cases (ATG 5-8 to ATG 5-13) for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: LG Electronics Inc.*

**Decision: Endorsed.**

**R4-2401333 Discussion on performance requirements for ATG**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401334 Draft CR on signalling characteristics test case for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403303 (from R4-2401334).**

[**R4-2403303**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403303.zip) **Draft CR on signalling characteristics test case for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2401641 Discussion on the performance requirements for ATG**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401642 Draft CR on Test case of inter-frequency measurement event triggered report with SSB time index detection for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2403304 (from R4-2401642).**

[**R4-2403304**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403304.zip) **Draft CR on Test case of inter-frequency measurement event triggered report with SSB time index detection for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2401643 Draft CR on Test case of inter-frequency measurement event triggered report without gap for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2403305 (from R4-2401643).**

[**R4-2403305**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403305.zip) **Draft CR on Test case of inter-frequency measurement event triggered report without gap for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2401644 Draft CR on Test case of inter-frequency measurement event triggered report without SSB time index detection for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2403306 (from R4-2401644).**

[**R4-2403306**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403306.zip) **Draft CR on Test case of inter-frequency measurement event triggered report without SSB time index detection for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2401645 Draft CR on Test case of intra-frequency measurement event triggered report with per-UE gap for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2403307 (from R4-2401645).**

[**R4-2403307**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403307.zip) **Draft CR on Test case of intra-frequency measurement event triggered report with per-UE gap for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2401646 Draft CR on Test case of intra-frequency measurement event triggered report with per-UE gap with SSB index reading for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2403308 (from R4-2401646).**

[**R4-2403308**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403308.zip) **Draft CR on Test case of intra-frequency measurement event triggered report with per-UE gap with SSB index reading for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2401647 Draft CR on Test case of intra-frequency measurement event triggered report without gap with SSB index reading for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2403309 (from R4-2401647).**

[**R4-2403309**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403309.zip) **Draft CR on Test case of intra-frequency measurement event triggered report without gap with SSB index reading for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2401648 Draft CR on Test case of intra-frequency measurement event triggered report without gap without SSB index reading for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2403310 (from R4-2401648).**

[**R4-2403310**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403310.zip) **Draft CR on Test case of intra-frequency measurement event triggered report without gap without SSB index reading for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2401953 DraftCR: RRC re-establishment tests for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This draftCR contains test cases for RRC re-establishment for ATG according to the worksplit.

**Decision: Revised to R4-2403311 (from R4-2401953).**

[**R4-2403311**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403311.zip) **DraftCR: RRC re-establishment tests for ATG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This draftCR contains test cases for RRC re-establishment for ATG according to the worksplit.

**Decision: Endorsed.**

**R4-2401954 Discussions on RRM performance requirements for ATG**

*Type: LS out For: Approval  
 to RAN5  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the performance requirements of ATG UE and also discuss a draft LS to RAN5 related to testing feasibility of antenn arrays UE.

**Decision: Noted.**

8.9.8 Moderator summary and conclusions

Topic: [110][215] NR\_ATG

**R4-2400751 Topic summary for [110][215] NR\_ATG**

*Type: other For: Information  
 Source: Moderator (CMCC)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403313**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403313.zip) **Ad-hoc minutes on RRM requirements for NR\_ATG**

*Type: other For: Approval  
 Source: CMCC*

**Decision: Approved.**

[**R4-2403467**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403467.zip) **LS on Layer-2/3 ATG UE features**

*Type: LS out For: Approval  
 To RAN2  
 Source: CMCC*

**Decision: Approved.**

[**R4-2403468**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403468.zip) **WF on RRM requirements for NR\_ATG**

*Type: other For: Approval  
 Source: CMCC*

**Decision: Revised to R4-2403545 (from R4-2403468).**

[**R4-2403545**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403545.zip) **WF on RRM requirements for NR\_ATG**

*Type: other For: Approval  
 Source: CMCC*

**Decision: Approved.**

**Online session (Thursday, 29 February 2024)**

**Issue 2-1: Test method for UE with antenna array**

Online Agreement:

* + - As baseline, conducted test without scaling factor (i.e., scaling factor = 1). If the feasibility cannot be confirmed, define conducted test with scaling factor.
    - Check the TE aspect in RAN4 in this week.

**Feedback from R&S:**

* Conducted / OTA testing (**Issue 2-1: Test method for UE with antenna array**)
  + FR1 testing conducted or OTA, depends strictly on the DUT architecture. In case the Transceiver is accessible Conducted testing can be done, if integrated with the AAS and not accessible, OTA testing is required.
  + However the main point here is to have the testing method synchronized with RF (due to side conditions) and Demod (due to SNR / Fading reference)
  + In case of conducted testing, if part of beam sweeping procedure is done in the Transceiver, then Scale factor > 1 should be considered for the requirements, otherwise 1 should be used.

CMCC: conducted test is feasible for ATG. Regarding whether to use scaling factor, suggest to agree without scaling factor (scaling factor = 1).

QC: we are fine for now. Add an Editor’s note in the CR that this can be revisited if needed in the next meeting.

E///: we are fine.

CMCC: if with scaling factor, the bemforming model will also be discussed. If any companies suggest to modify the “1” in the next meeting, please also brign proposals on the bemforming model.

Agreement:

Endorse the CRs without scaling factor (scaling factor = [1]), and close the WI performance part in this meeting.

For the draft CRs, add an Editor’s note that: “the scaling factor may be revisited if needed”.

**Issue 2-7: Test configuration: network assistance on ATG cells reference location**

* Proposals
  + Option 1: If conducted test is used for ATG UE with the antenna array, the network assistance on ATG cells reference location should be provided, and related scaling factor should be used in the test requirement. (CMCC)
* Recommended WF
  + Depends on Issue 2-1.
    - If conducted test is used for ATG UE with the antenna array, check whether Option 1 can be agreed.
    - If OTA test is used for ATG UE with the antenna array, FFS.

Moderator: No need to consider for scaling factor =1. To be safer, introducing the network assistance information is fine.

QC: not needed without scaling factor.

Agreement:

For the CRs in this meeting, no network assistance on ATG cells reference location in the configuration.

Further discuss the issue if the scaling factor will be agreed in the next meeting.

**For TA reporting during initial access**

* Proposals
  + Option 1: No need to introduce the UE feature ‘TA reporting during initial access’ (CMCC, ZTE)
* Recommended WF
  + To be discussed.

Ad-hoc discussion:

Ericsson: We prefer to introduce this FG. Subsequent TA report cannot be guaranteed if this is not introduced.

ZTE: The motivation to report TA is to optimize GP. TA reporting during initial access is not that essential.

CMCC: Same view as ZTE. In NTN, this FG is mandatory. In ATG, we do not think this needs to be mandated.

Ericsson: In ATG, this can be optional.

Chair: Check whether it has any problem with optional support of TA reporting during initial access for ATG?

Nokia: We see problem with optional support for initial access.

CMCC: This is not essential feature for ATG network.

Ericsson: we still prefer to introduce as mandatory.

Discussion:

QC: we have single indication for TA.

CMCC: QC comment is valid for NR NTN. ATG scenario is different.

QC: no sepearte implementations from UE side.

ZTE: The intention of TA for ATG is different. During initial access, this is not critical for ATG. No optimization is suggested.

E///: the cell size is big.

Nokia: This is optional capability. During intial access, network does not know the capability.

CMCC: Conditional mandatory UE feature. Not large ISD for all the ATG deployments.

Agreement:

* + UE shall support UE feature ‘TA reporting during initial access’ if the UE indicates support of the capability ‘UE reporting of TA infomration’.

**Online session (Monday Feb 26, 2024)**

**Topic #2: ATG RRM performance requirements**

Note: the WI performance part is scheduled to be closed at this meeting.

**Issue 2-1: Test method for UE with antenna array**

* Proposals
  + Option 1: Conducted test (CMCC, Apple, LGE, HW, ZTE, CATT)
    - Option 1-1: Conducted test with scaling factor. (CMCC, LGE, HW, ZTE, CATT can compromise)
    - Option 1-2: Conducted test without scaling factor. (Apple, CATT open to)
  + Option 2: OTA test (Ericsson, CATT, Apple)
    - Option 2-1: Send LS to RAN5 to check the feasibility of introducing OTA test method for FR1 ATG UE with the antenna array (Apple, Ericsson)
    - Option 2-2: Design OTA test for FR1 ATG UE with the antenna array. (CATT open to)
* Recommended WF
  + To be discussed
    - Option 1: Conducted test with scaling factor. (CMCC, LGE, HW, ZTE, CATT can compromise)
    - Option 2: Send LS to RAN5 to check the feasibility of introducing OTA test method for FR1 ATG UE with the antenna array. (Apple, Ericsson)

QC: Option 1 means all the UE can pass the test.

E///: share QC’s view. Check with RAN5 for the tests with antenna array.

CMCC: Conducted test is agreed in RF session. Not only consider the testability, but also the test cost.

E///: it is different with RF test.

CMCC: if we send LS to RAN5, if not feasible from RAN5, what can we do?

CMCC: Cell re-selection, measurement test and handover test in connected mode are impacted by this issue.

CMCC: if only one OTA test case, maybe the TE will not implement this.

CMCC: how about conducted test without scaling factor?

LGE: UE cannot pass the test.

ZTE: can compromise to option 1.

Nokia: scaling factor = 1 in the test. Conducted test without scaling factor (scaling factor = 1), and ask RAN5 in the meantime.

QC: this will change UE behavior for the test for phased antenna UE.

Apple: the scaling factor canbe removed, since the antennas have already been removed, and it canbe controlled.

Agreement:

* + - As baseline, conducted test without scaling factor (i.e., scaling factor = 1). If the feasibility cannot be confirmed, define conducted test with scaling factor.
    - Check the TE aspect in RAN4 in this week.

**Issue 2-10: Test scope based on the test case list in R4-2321608**

**General:**

* Proposals
  + Option 1: Only non-DRX mode tests are defined in CONNECTED mode (Ericsson)
* Recommended WF
  + Only non-DRX mode tests are defined in CONNECTED mode.

QC: pick one or two test cases for DRX.

Agreement:

* + Define one test case (ATG test 5-5) for DRX. Define all other test cases in non-DRX mode in CONNECTED mode.

**For cell re-selection:**

* Proposals (Option 1 and Option 2 are not conflict options)
  + Option 1: The location based cell re-selection test cases should be removed (CMCC)
  + Option 2: No need to design the inter-frequency cell re-selection test which neighbour cell configured with high priority frequency (CMCC)
* Recommended WF
  + The location based cell re-selection test cases should be removed
  + Check whether Option 2 can be agreed.

Agreement:

* + The location based cell re-selection test cases should be removed.
  + For ATG UE, no need to design the inter-frequency cell re-selection test which neighbour cell configured with high priority frequency.

**For HO:**

* Proposals
  + Option 1: At least need to define specific test case for inter-frequency handover with unknown target cell for ATG. (CATT)
  + Option 2: Only consider unknown case (CMCC, Ericsson)
* Recommended WF
  + For inter-frequency handover and intra-frequency handover, only consider the unknown case.

QC: will have no handover test with known case.

CMCC: the intention is to reduce the test number.

**Agreement:**

* + For inter-frequency handover, only consider the unknown case.
  + For intra-frequency handover, only consider the known case.

**For RRC re-establishment**

* Proposals
  + Option 1: (CATT)
    - Intra-frequency RRC Re-establishment with known target cell
    - Inter-frequency RRC Re-establishment with unknown target cell
  + Option 2: Only consider unknown case (CMCC)
  + Option 3: (Ericsson)
    - Intra-frequency RRC Re-establishment with known target cell
    - Inter-frequency RRC Re-establishment with known target cell without serving cell timing.
* Recommended WF
  + Check whether following can be agreed:
    - Intra-frequency RRC Re-establishment with known target cell
    - Inter-frequency RRC Re-establishment with unknown target cell without serving cell timing.

E///: “without serving cell timing” is from the legacy test.

**Agreement:**

* + - Intra-frequency RRC Re-establishment with known target cell
    - Inter-frequency RRC Re-establishment with unknown target cell without [serving] cell timing.

**Issue 2-2: UE mobility/location assumption for location-based CHO**

* Proposals
  + Option 1: RAN4 is responsible to design the initial UE positioning, UE speed, reference location, and distance threshold. (CMCC)
    - In the intra-frequency distance-based CHO test case, D1-1 and D1-2 location condition can be fulfilled at T2 (earlier than TEvent\_DU + Tidentify\_intra).
    - In the inter-frequency distance-based CHO test case, D1-1 and D1-2 location condition can be fulfilled later than T2 (later than TEvent\_DU + Tidentify\_intra)
  + Option 2: The GNSS change should be set with the consideration of two distance threshold istanceThreshFromReference1 and distanceThreshFromReference2, e.g. max{distanceThreshFromReference1,distanceThreshFromReference2}+50m. (ZTE, Apple)
  + Option 3: [UE location, speed (1200 km/h), heading direction] shall be provide to UE via AT command. UE location can be changed in location triggered test cases
* Recommended WF
  + [UE location, speed (1200 km/h), heading direction] shall be provide to UE via AT command.
  + RAN4 is responsible to design the initial UE location, UE speed, reference location, and distance threshold. The UE location change should be set with the consideration of two distance threshold istanceThreshFromReference1 and distanceThreshFromReference2.
    - In the intra-frequency distance-based CHO test case, D1-1 and D1-2 location condition can be fulfilled at T2 (earlier than TEvent\_DU + Tidentify\_intra).
    - In the inter-frequency distance-based CHO test case, D1-1 and D1-2 location condition can be fulfilled later than T2 (later than TEvent\_DU + Tidentify\_intra)

**Agreement:**

* + [UE location, speed (1200 km/h), heading direction] shall be provide to UE via AT command.
  + RAN4 is responsible to design the initial UE location, UE speed, reference location, and distance threshold. The UE location change should be set with the consideration of two distance threshold istanceThreshFromReference1 and distanceThreshFromReference2.
    - In the intra-frequency distance-based CHO test case, D1-1 and D1-2 location condition can be fulfilled at T2 (earlier than TEvent\_DU + Tidentify\_intra).
    - In the inter-frequency distance-based CHO test case, D1-1 and D1-2 location condition can be fulfilled later than T2 (later than TEvent\_DU + Tidentify\_intra)

**Issue 2-3: UE mobility/location assumption for UL transmit timing test**

* Proposals
  + Option 1: Changed UE location with the UE speed assumption of 1200km/h (Apple, CMCC)
    - Option 1-1: The test system should emulate and send the GNSS signal to the test UE with mobility assumption of 1200km/h. The specific positioning of test UE is up to test system’s design (CMCC)
  + Option 2: Constant UE location. (CATT, HW, ZTE)
    - Option 2-2: [UE location, speed (1200 km/h), heading direction] are constant values during the test.
* Recommended WF
  + To be discussed
    - Option 1: **Changed** UE location with the mobility assumption of **1200km/h**, the specific UE location should be emulated by test system and provided to UE by AT command.
    - Option 2: **Constant** UE location with the mobility assumption of **0km/h**, the specific UE location should be emulated by test system and provided to UE by AT command.
    - Option 3: **Constant** UE location with the mobility assumption of **1200km/h**, the specific UE location should be emulated by test system and provided to UE by AT command. (as NTN test mode)

CMCC: We support changed UE location, based on the core requirements. Only option 1 can fufill the test purpose.

Apple: Agree with CMCC.

E///: Support option 1.

Nokia: we don’t support option 1. RAN5 to define the update rate of UE position.

R&S: The assumption which impact the requirements should be defined in RAN4.

CMCC: can first discuss the range of update rate in RAN4.

CMCC: Tq (200ms).

Agreement:

* + - Changed UE location with the mobility assumption of 1200km/h, the specific UE location should be emulated by test system and provided to UE by AT command (if the UE position can be updated based on target rate by AT command).

Tentative agreement:

* + - As baseline, the update rate of UE position is shorter than [200] ms (refer to Tq in core requirement). Check the feasibility of the update rate with TE experts.

**Issue 2-4: Test configuration: BS location**

* Proposals
  + Option 1: The BS location should be emulated by test system, with the common height of 0m. (CMCC)
* Recommended WF
  + To be discussed.

Agreement:

* + The BS location should be emulated by test system.

**Issue 2-5: Test configuration: Channel model for changed UE location/ UE speed larger than 0km/h**

* Proposals
  + Option 1: In both UL transmit timing and location-based CHO test case, the channel model should be AWGN+2412Hz for 15kHz SCS and AWGN + 5556Hz for 30kHz SCS, which 2412Hz and 5556Hz are the maximum value of doppler. The specific doppler shift trajectory is up to test system’s design considering of BS location and UE GNSS emulation. (CMCC)
  + Option 2: Considering the UE speeding by modeling Doppler shift in the test cases that UE speed larger than 0. (ZTE, Apple)
* Recommended WF
  + For the test cases that UE speed larger than 0km/h:
    - RAN4 provide the maximum doppler consider the UE speed and maximum carrier frequency, the specific doppler shift trajectory is up to test system’s design considering of BS location and UE location emulation.

**Agreement:**

* + For the test cases that UE speed larger than 0km/h:
    - RAN4 provide the maximum doppler consider the UE speed and maximum carrier frequency, the specific doppler shift trajectory is up to test system’s design considering of BS location and UE location emulation.

**Topic #1: Core Maintenance**

**Issue 1-1: ATG UE features**

* Background, in WF R2-2321608

FFS:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Feature group** | **Components** | **Prerequisite feature groups** | **Need for the gNB to know if the feature is supported** | **Applicable to the capability signalling exchange between UEs (V2X WI only)”.** | **Consequence if the feature is not supported by the UE** | **Type**  **(the ‘type’ definition from UE features should be based on the granularity of 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC)** | **Need of FDD/TDD differentiation** | **Need of FR1/FR2 differentiation** | **Capability interpretation for mixture of FDD/TDD and/or FR1/FR2** | **Note** | **Mandatory/Optional** |
| Location-based measurement report trigger | Indicates whether the UE supports location-based triggered measurement reporting (i.e., event D1) |  | Yes | N/A | If UE does not support this feature, location-based triggered measurement reporting cannot be configured. | [Per Band] | No | FR1 only | N/A |  | Optional with capability siganling |
| SR triggered by a TA report | Indicates whether the UE supports triggering of SR when a TA report is triggered and there are no available UL-SCH resources. |  | Yes | N/A | If UE does not support this feature, SR cannot be triggered by a TA report. | [Per Band] | No | FR1 only | N/A |  | Optional with capability siganling |
| TA reporting during initial access | It is mandatory to support TA reporting during initial access for UEs supporting uplink-TA-Reporting-r17 as specified in TS 38.321 [10]. |  | Yes | N/A | If UE does not support this feature, TA reporting during initial access cannot be configured. | [Per Band] | No | FR1 only | N/A |  | Optional with capability siganling |

**For Location-based measurement report trigger**

* Proposals
  + Option 1: No need to introduce the UE feature ‘Location-based measurement report trigger’ (CMCC, ZTE)
* Recommended WF
  + Option 1: No need to introduce the UE feature ‘Location-based measurement report trigger’

**For SR triggered by a TA report**

* Proposals
  + Option 1: Follow the agreement from RAN2 that introducing the feature ‘SR triggered by a TA report’ for ATG (CMCC)
  + Option 2: No need to introduce the UE feature ‘SR triggered by a TA report’ (ZTE)
* Information from TS38.306



* Recommended WF
  + To be discussed.

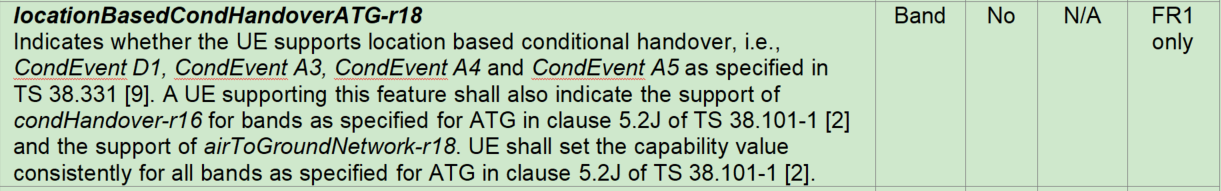
**For TA reporting during initial access**

* Proposals
  + Option 1: No need to introduce the UE feature ‘TA reporting during initial access’ (CMCC, ZTE)
* Recommended WF
  + To be discussed.

**For Location based CHO**

* Proposals
  + Option 1: The UE feature of ‘Location based CHO’ can be per UE type. (ZTE)

Information from TS 38.306, RAN2 has already agreed to introduce the per-band UE capability

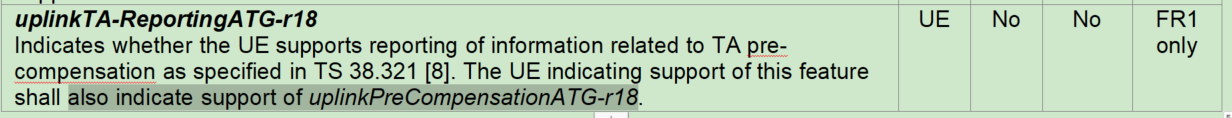


* Recommended WF
  + Follow the agreement from RAN2, per band type.

**For UE reporting of TA information**

* Proposals
  + Option 1: No need to restrict the any prerequisite in the UE feature description. (ZTE)

Information from TS 38.306, RAN2 has already agreed to introduce the UE capability with the prerequisite



* Recommended WF
  + To be discussed.

**Issue 1-2: TCI state requirements for ATG UE with the antenna array**

* Proposals
  + Option 1: TCI state requirements apply to both UE types: UE with antenna array and UE with omni-direction antenna. (HW)
* Recommended WF
  + Option 1 can be agreed

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

8.10.4 RRM core requirement maintenance

**R4-2402624 BigCR for 38.133 on RRM core requirements for NR support for dedicated spectrum less than 5MHz for FR1**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4244 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Big CR for Corrections on RRM core requirments on NR support for dedicated spectrum less than 5MHz for FR1

**Decision: Agreed.**

**R4-2400480 On remaining issues for spectrum less than 5MHz**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2400481 LS on inter-frequency neighbour cells supporting NR dedicated spectrum less than 5 MHz for FR1**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: Apple*

**Abstract:**

**Decision: Noted.**

**R4-2402202 Discussion on remaining issues in less than 5MHz BW**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402203 draftCR on RRM requirements for less than 5MHz BW**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

**R4-2402625 draft CR for 38.133 on RRM core requirements for NR support for dedicated spectrum less than 5MHz for FR1**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403488 (from R4-2402625).**

[**R4-2403488**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403488.zip) **draft CR for 38.133 on RRM core requirements for NR support for dedicated spectrum less than 5MHz for FR1**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2402809 Remaining issues on RRM core requirements for less than 5MHz**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

Session Chair: Treat proposal 2 and proposal 3 in this contribution under email thread [127].

**Decision: Noted.**

**R4-2402848 On RRM requirements maintenance for < 5MHz**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On RRM requirements for < 5MHz

**Decision: Noted.**

**R4-2402849 draft CR to 38.133: maintenance CR on less than 5MHz**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

RRC connected state mobility

**Decision: Merged.**

**R4-2402889 Discussion on incoming LS for FR1 less than 5MHz**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: MediaTek inc.*

**Abstract:**

Session Chair: Treat this under email thread [127].

**Decision: Noted.**

8.10.5 RRM performance requirements

**R4-2402204 Discussion on performance requirements for less than 5MHz BW**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402626 Discussion on less than 5Mhz RRM performance part**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402810 RRM performance requirements for less than 5MHz**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2402850 On RRM performance requirements for < 5MHz**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On RRM performance requirements for < 5MHz

**Decision: Noted.**

**R4-2402851 Simulation results for RLM (OOS/IS) and BFD for < 5MHz**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Simulation results for RLM (OOS/IS) and BFD for < 5MHz

**Decision: Noted.**

**R4-2402890 Discussion on performance part for FR1 less than 5MHz**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

8.10.7 Moderator summary and conclusions

Topic: [110][216] NR\_FR1\_lessthan\_5MHz\_BW

**R4-2400752 Topic summary for [110][216] NR\_FR1\_lessthan\_5MHz\_BW**

*Type: other For: Information  
 Source: Moderator (Nokia)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403486**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403486.zip) **AH minutes for coffee break on NR\_FR1\_lessthan\_5MHz\_BW**

*Type: other For: Approval  
 Source: Nokia*

**Decision: Approved.**

[**R4-2403487**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403487.zip) **WF on NR\_FR1\_lessthan\_5MHz\_BW**

*Type: other For: Approval  
 Source: Nokia*

**Decision: Approved.**

**Online session (Monday Feb 26, 2024)**

**Issue 1-4: Use of [Non-Distributed] assumption.**

* Proposals
  + Option 1: Change current [Non-Distributed] assumption to [Distributed] assumption for the RLM evaluation in 15PRB case for 3MHz CBW
  + Option 2: Keep the current [Non-Distributed] assumption for the RLM evaluation in 15PRB case for 3MHz CBW
  + Option 3: Recommend companies to consider whether it would make more sense to use the actual interleaving configured by network during the RLM evaluation in 15PRB case for 3MHz CBW.
* Recommended WF
  + More discussion needed.

Discussion:

* Apple: For 15 PRB, Mapping from REG to CCE, to use the exact network configuration.
* MTK: for 15PRB, UE is allowed to have inter-leaved and non-inter-leaved in the core requirements. In the test, using non-distributed does not mean UE cannot support distributed.
* QC: Just to add a note.
* Use Non-Distributed in the table, and add a note to clarify that Distributed mapping may lead to performance degradation.
* HW: similar case for CCE level.
* Proposal: Use Non-Distributed in the table, and add a note to clarify that Distributed mapping may lead to mis-matched Qin and Qout between the hypothetical PDCCH BLER and exact PDCCH configuration.

Agreement:

* Use Non-Distributed in the table, and add a note to clarify that Distributed mapping may lead to unexpected out-of-sync indication.

**Sub-topic 1-3**

*Sub-topic description*

For HO requirements the current requirements include the additional time for MIB reading if the target cell SSB BW is 12 PRBs in Tsearch. Proposal is to align these requirements with how other requirements are captured.

**Issue 1-5: Correction to HO requirements**.

* Proposals
  + Option 1: For HO requirements, include the additional SSB samples for SBI and MIB reading due to PBCH puncturing as part of T∆ instead of Tsearch.
  + Option 2: Keep the current.
* Recommended WF
  + Based on legacy HO description and definitions of Tsearch, a T∆ and Trs, it seems reasonable to align the additional delays, due to additional SSB samples for SBI and MIB reading for 12 PRB SSB BW, with how this is defined in legacy.
  + Agree on option 1.

Discussion:

HW: SIB and MIB reading is needed to known case as well.

QC: T∆  is for fine time tracking.

HW: Tsearch is only for cell search. SFN is not needed for cell search.

QC, MTK: need more time to check.

**Sub-topic 1-4**

*Sub-topic description*

Discussion related to Table 8.1.2.1-3: PDCCH transmission parameters for out-of-sync evaluation [for a UE operating on a cell with less than 5MHz BW]. It is proposed to remove the line in yellow below and clarify the applicability of the hypothetical PDCCH.

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Value for BLER Configuration #0** | | |
|  | **3MHz (12 PRBs)** | **3MHz (15 PRBs)** | **5MHz (20 PRBs)** |
| DCI format | 1-0 | | |
| Number of control OFDM symbols | [2] | [3] | [3] |
| Aggregation level (CCE) | [4] | [8] | [8] |
| Ratio of hypothetical PDCCH RE energy to average SSS RE energy | 4dB | | |
| Ratio of hypothetical PDCCH DMRS energy to average SSS RE energy | 4dB | | |
| Bandwidth (PRBs) | 12 | 15 | 20 |
| Sub-carrier spacing (kHz) | SCS of the active DL BWP | | |
| DMRS precoder granularity | REG bundle size | | |
| REG bundle size | 6 | | |
| CP length | Normal | | |
| Mapping from REG to CCE | Distributed | [Non-Distributed] | [Distributed] |

**Issue 1-6: Clarify the line in yellow**.

* Proposals
  + Option 1: Remove the line fully and capture the applicability of hypothetical PDCCH parameter for RLM/BFR, which is based on either the Tx BW of the cell or the BW of CORESET#0 in the text or a note in the table.
  + Option 2: Clarify what the intended meaning of 3MHz/5MHZ refer to (channel BW) and 12PRB/15PRB/20PRB (transmission BW).
* Recommended WF
  + More discussion needed.
  + Example from moderator on Option 2:

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Value for BLER Configuration #0** | | |
| **Channel BW** | **3MHz** | | **5MHz** |
| **Transmission BW** | **12 PRB** | **15 PRB** | **20 PRB** |
| DCI format | 1-0 | | |
| Number of control OFDM symbols | [2] | [3] | [3] |
| Aggregation level (CCE) | [4] | [8] | [8] |
| Ratio of hypothetical PDCCH RE energy to average SSS RE energy | 4dB | | |
| Ratio of hypothetical PDCCH DMRS energy to average SSS RE energy | 4dB | | |
| Bandwidth (PRBs) | 12 | 15 | 20 |
| Sub-carrier spacing (kHz) | SCS of the active DL BWP | | |
| DMRS precoder granularity | REG bundle size | | |
| REG bundle size | 6 | | |
| CP length | Normal | | |
| Mapping from REG to CCE | Distributed | [Non-Distributed] | [Distributed] |

HW: Transmission BW is the terminology from the RF spec.

MTK: need to check.

**Agreement:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Channel BW** | **3MHz** | | **5MHz** |
| **[DL Transmission BW]** | **12 PRB** | **15 PRB** | **20 PRB** |

**Sub-topic 2-1 Tests for different CBW**

Sub-topic description: Tests for different CBW

Open issues and candidate options before meeting:

Further discuss whether a UEs supporting 12 RB bandwidth also shall support 15 RB bandwidth configuration, at least in rel-18.

**Issue 2-1: a UEs supporting 12 RB bandwidth also shall support 15 RB bandwidth configuration?**

* Proposals
  + Option 1: Yes (Qualcomm, Huawei (based on proposal 2?)
  + Option 2: Define the test cases for RRM performance with 15PRB BW configuration (Qualcomm)
* Recommended WF
  + More discussion needed.

**Sub-topic 2-2 L3 and L1 accuracy requirements**

Sub-topic description: L3 and L1 accuracy requirements

Open issues and candidate options before meeting:

Further discuss if existing SSB based L3 and L1 accuracy requirements applies for less than 5MHz BW UE.

**Issue 2-2:** **existing SSB based L3 and L1 accuracy requirements applies for less than 5MHz BW UE?**

* Proposals
  + Option 1: Yes (Huawei, Qualcomm, Ericsson)
  + Option 2: No
* Recommended WF
  + Moderator: As there is no change to the SSS, which is the basis for SS-RSRP (L1 and L3), option 1 seems reasonable.
  + Suggest agreeing on Option 1: existing SSB based L3 and L1 accuracy requirements applies for less than 5MHz BW UE.

**Sub-topic 2-3 Test cases for UE operating in 5 MHz**

Sub-topic description: Test cases for UE operating in 5 MHz

Open issues and candidate options before meeting:

RAN4 further discuss following two types of UEs for specifying test cases for UE operating in 5 MHz.

* UE type 1: RAN4 specify test case for UE supporting other Channel Band width (CBW) along with less than 5 MHz CBW
* UE Type 2: RAN4 specify test case for UE supporting only less than 5 MHz.

**Issue 2-3: further discuss introducing following two types of UEs for specifying test cases for UE capable of operating in LessThan 5 MHz.**

* Proposals
  + Option 1: UE type 1: RAN4 specify test case for UE supporting other Channel Band widths (CBW) along with less than 5 MHz CBW (Huawei, Nokia (based on proposal 1), Qualcomm)
  + ~~Option 2: UE Type 2: RAN4 specify test case for UE supporting only less than 5 MHz CBW (Ericsson (based on proposal 10))~~
  + Option 3: No need to specify additional test cases for 5 MHz UE (MediaTek)
* Recommended WF
  + Moderator understanding of the issue:
    - Type 1 UE is a UE which can operate in LessThan5MHz CBWs and other CBWs (than LessThan5MHz CBWs).
    - Type 2 UE can only operate in LessThan5MHz CBWs.
  + Moderator suggest to assume Type 1 UE as a working assumption and RAN4 will specify test cases assuming UE supporting less than 5 MHz CBW may also support other Channel Band widths (CBW).
  + More discussion needed.

**Sub-topic 2-4 Use of DRX and non-DRX in test cases**

Sub-topic description: Use of DRX and non-DRX in test cases

Open issues and candidate options before meeting:

For RLM/BFD, link recovery and SSB index reading test cases, should RAN4 specify the test cases of non-DRX with 12 PRBs, while test cases with DRX are specified with 15 PRBs?

**Issue 2-4: should RAN4 specify the test cases of non-DRX with 12 PRBs, while test cases with DRX are specified with 15 PRBs?**

* Proposals
  + Option 1: Yes (MediaTek)
  + Option 2: No
* Recommended WF
  + More discussion needed.
  + Moderator: Main issue is likely that both 12PRB and 15PRB test cases have a mix of DRX and non-DRX?

8.14 Expanded and improved NR positioning

**[R4-2403567](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403567.zip) Big CR on RRM Core Maintenance for Positioning Enhancement**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4282 rev Cat: F  
 Source: Ericsson*

**Decision: Agreed.**

[**R4-2403568**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403568.zip) **Draft Big CR on RRM performance requirements for Positioning Enhancement**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 rev Cat: B  
 Source: Ericsson*

**Decision: Endorsed.**

8.14.2 RRM core requirements maintenance

**R4-2401199 Rel-18 RAN4 UE feature list for Rel18 Positioning WI**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

8.14.2.1 General aspects

**R4-2401869 General aspects for RRM core maintenance**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402676 DraftCR to 38.133 to implement measurement gap patterns for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

R4-2321448 was endorsed in RAN4#109. Some part of the endorsed CR is yet to be implemented in the spec.

**Decision: Endorsed.**

**[R4-2403266](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403266.zip) DraftCR to 38.133 to implement measurement gap patterns for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

R4-2321448 was endorsed in RAN4#109. Some part of the endorsed CR is yet to be implemented in the spec.

**Decision: Withdrawn.**

8.14.2.2 SL Positioning

**R4-2400114 Discussion on core requirements maintenance for sidelink positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400117 (NR\_pos\_enh2-Core) CR on core requirements for sidelink positioning**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3962 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2403267 (from R4-2400117).**

[**R4-2403267**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403267.zip) **(NR\_pos\_enh2-Core) CR on core requirements for sidelink positioning**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3962 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2401005 Discussion on SL positioning**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401220 On RRM core maintenance for SL positioning**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401232 Corrections to core requirements for Sidelink positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Merged.**

[**R4-2403268**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403268.zip) **Corrections to core requirements for Sidelink positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Withdrawn.**

**R4-2401613 Discussion on remainaining issues for sidelink positioning requirements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401614 (NR\_pos\_enh2-Core) Draft CR on core requirement for SL AoA and SL RTOA measurement requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2403269 (from R4-2401614).**

[**R4-2403269**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403269.zip) **(NR\_pos\_enh2-Core) Draft CR on core requirement for SL AoA and SL RTOA measurement requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2403562 (from R4-2403269).**

[**R4-2403562**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403562.zip) **(NR\_pos\_enh2-Core) Draft CR on core requirement for SL AoA and SL RTOA measurement requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2401870 RRM core maintenance for SL positioning**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402175 Discussion on RRM requirements for SL positioning**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402176 Updated simulation results for SL positioning**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402177 draftCR on RRM requirements for SL positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

[**R4-2403270**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403270.zip) **draftCR on RRM requirements for SL positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2402799 On remaining issues for SL positioning**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On remaining issues for SL positioning

**Decision: Noted.**

**R4-2402800 Draft CR to 38.133: corrections for SL positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to 38.133: corrections for SL positioning

**Decision: Revised to R4-2403271 (from R4-2402800).**

[**R4-2403271**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403271.zip) **Draft CR to 38.133: corrections for SL positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to 38.133: corrections for SL positioning

**Decision: Endorsed.**

**R4-2402801 Big CR remaining issues for SL positioning**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4262 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Big CR remaining issues for SL positioning

**Decision: Withdrawn.**

**[R4-2403272](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403272.zip) Big CR remaining issues for SL positioning**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4262 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Big CR remaining issues for SL positioning

**Decision: Withdrawn.**

8.14.2.3 LPHAP use case

**R4-2400115 Discussion on core requirements maintenance for LPHAP**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2401006 Discussion on LPHAP use case**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401052 (NR\_pos\_enh2-Core) Discussion on LPHA positioning**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401053 (NR\_pos\_enh2-Core) Draft CR on UE transmit timing for positioning measurements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Merged.**

[**R4-2403273**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403273.zip) **(NR\_pos\_enh2-Core) Draft CR on UE transmit timing for positioning measurements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Withdrawn.**

**R4-2401223 On RRM core requirements for LPHAP**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401230 Correction to UE autonomous TA adjustment for positioning SRS transmission within the SRS validity area in RRC\_INACTIVE**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2403274 (from R4-2401230).**

[**R4-2403274**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403274.zip) **Correction to UE autonomous TA adjustment for positioning SRS transmission within the SRS validity area in RRC\_INACTIVE**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2402178 Discussion on RRM requirements for LPHAP**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402179 draftCR on RRM requirements for LPHAP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403275 (from R4-2402179).**

[**R4-2403275**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403275.zip) **draftCR on RRM requirements for LPHAP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2402677 On remaining issues related to LPHAP core requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This paper discusses remaining issues related to LPHAP core requirements.

**Decision: Noted.**

**R4-2402678 DraftCR to 38.133 Corrections to core requirements for LPHAP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR proposes corrections to LPHAP core requirements

**Decision: Revised to R4-2403276 (from R4-2402678).**

[**R4-2403276**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403276.zip) **DraftCR to 38.133 Corrections to core requirements for LPHAP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR proposes corrections to LPHAP core requirements

**Decision: Endorsed.**

**R4-2402732 RRM Core Requirements for LPHAP**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.14.2.4 RedCap Positioning

**R4-2400081 Discussion on Core requirements of RedCap UE positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400082 (NR\_pos\_enh2-Core) CR on correction of measurement period requirements for RedCap UE with FH**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3956 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Merged.**

[**R4-2403277**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403277.zip) **(NR\_pos\_enh2-Core) CR on correction of measurement period requirements for RedCap UE with FH**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3956 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Withdrawn.**

**R4-2401201 Draft CR # 16:PRS measurement requirements for RedCap positioning in RRC INACTIVE state (PRS RSRP measurement requirements)**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: xiaomi*

**Decision: Revised to R4-2403278 (from R4-2401201).**

[**R4-2403278**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403278.zip) **Draft CR # 16:PRS measurement requirements for RedCap positioning in RRC INACTIVE state (PRS RSRP measurement requirements)**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: xiaomi*

**Decision: Endorsed.**

**R4-2401224 On RRM core maintenance for RedCap positioning**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401231 Correction to CSSF for SSB when PRS measurements are configured for RedCap UE**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2403279 (from R4-2401231).**

[**R4-2403279**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403279.zip) **Correction to CSSF for SSB when PRS measurements are configured for RedCap UE**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2403561 (from R4-2403279).**

[**R4-2403561**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403561.zip) **Correction to CSSF for SSB when PRS measurements are configured for RedCap UE**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2401820 RRM aspects in the study on Redcap positioning**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402180 Discussion on RedCap positioning**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402181 draftCR on RRM requirements for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403280 (from R4-2402181).**

[**R4-2403280**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403280.zip) **draftCR on RRM requirements for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2402679 On remaining issues related to RedCap positioning core requirement**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This paper discusses remaining issues related to RedCap positioning core requirements.

**Decision: Noted.**

**R4-2402680 DraftCR to 38.133 Corrections to core requirements for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR proposes corrections to RedCap positioning core requirements.

**Decision: Revised to R4-2403281 (from R4-2402680).**

[**R4-2403281**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403281.zip) **DraftCR to 38.133 Corrections to core requirements for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR proposes corrections to RedCap positioning core requirements.

**Decision: Revised to R4-2403282 (from R4-2403281).**

[**R4-2403282**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403282.zip) **DraftCR to 38.133 Corrections to core requirements for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson, CATT*

**Abstract:**

This CR proposes corrections to RedCap positioning core requirements.

**Decision: Endorsed.**

**R4-2402734 RRM Core Requirements for RedCap Positioning**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402902 Discussion on RedCap positioning maintenance**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2402903 Draft CR on correction for Rel-18 RSTD and PRS-RSRP requirements for RedCap in RRC connected state**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2403283 (from R4-2402903).**

**[R4-2403283](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403283.zip) Draft CR on correction for Rel-18 RSTD and PRS-RSRP requirements for RedCap in RRC connected state**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

8.14.2.5 PRS/SRS bandwidth aggregation

**R4-2400083 Discussion on Core requirements of PRS SRS bandwidth aggregation**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400084 (NR\_pos\_enh2-Core) CR on correction of measurement period requirements with BWA**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3957 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2403284 (from R4-2400084).**

[**R4-2403284**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403284.zip) **(NR\_pos\_enh2-Core) CR on correction of measurement period requirements with BWA**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3957 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Postponed.**

**R4-2401198 Discussion on Bandwidth Aggregation for Positioning**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401227 On RRM core maintenance for PRS/SRS BW aggregation**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401824 Discussion on RRM impacts on PRS/SRS bandwidth aggregation**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401871 RRM core maintenance for PRS/SRS Bandwidth Aggregation**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401872 CR 38.133 Corrections to measurement period requirements for PRS BW aggregation**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4187 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403285 (from R4-2401872).**

[**R4-2403285**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403285.zip) **CR 38.133 Corrections to measurement period requirements for PRS BW aggregation**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4187 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell, CATT*

**Decision: Endorsed.**

**R4-2402182 Discussion on PRS/SRS Bandwidth Aggregation**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402183 draftCR on RRM requirements for PRS CA**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403286 (from R4-2402183).**

[**R4-2403286**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403286.zip) **draftCR on RRM requirements for PRS CA**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2402184 Simulation results for Bandwidth Aggregation**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402681 On remaining issues related to PRS/SRS aggregation core requirement for positioning measurements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This paper discusses remaining issues related to PRS/SRS aggregation for positioning measurements.

**Decision: Noted.**

**R4-2402682 DraftCR to 38.133 Corrections to core requirements for bandwidth aggregation based positioning measurements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR proposes corrections to core requirements for bandwidth aggregation for positioning measurements.

**Decision: Revised to R4-2403287 (from R4-2402682).**

**[R4-2403287](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403287.zip) DraftCR to 38.133 Corrections to core requirements for bandwidth aggregation based positioning measurements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR proposes corrections to core requirements for bandwidth aggregation for positioning measurements.

**Decision: Revised to R4-2403546 (from R4-2403287).**

[**R4-2403546**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403546.zip) **DraftCR to 38.133 Corrections to core requirements for bandwidth aggregation based positioning measurements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR proposes corrections to core requirements for bandwidth aggregation for positioning measurements.

**Decision: Endorsed.**

8.14.2.6 Carrier Phase Positioning

**R4-2400119 (NR\_pos\_enh2-Core) CR on core requirements for carrier phase positioning**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3964 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2403288 (from R4-2400119).**

[**R4-2403288**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403288.zip) **(NR\_pos\_enh2-Core) CR on core requirements for carrier phase positioning**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3964 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2401007 CR on carrier phase positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: OPPO*

**Decision: Revised to R4-2403289 (from R4-2401007).**

[**R4-2403289**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403289.zip) **CR on carrier phase positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: OPPO*

**Decision: Endorsed.**

**R4-2401229 On RRM core maintenance for carrier phase positioning**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401873 RRM core maintenance for NR Carrier Phase Positioning**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402185 Discussion on RRM requirements for CPP**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402186 draftCR on RRM requirements for CPP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403290 (from R4-2402186).**

[**R4-2403290**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403290.zip) **draftCR on RRM requirements for CPP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2402603 Positioning Error Due to Carrier Frequency Offset**

*Type: discussion For: Approval  
 Source: Lenovo*

**Decision: Noted.**

**R4-2402683 On remaining issues related to carrier phase positioning core requirement**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This paper discusses remaining issues related to CPP core requirements.

**Decision: Noted.**

**R4-2402684 DraftCR to 38.133 Corrections to core requirements for carrier phase measurement for positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR proposes corrections to core requirements for CPP.

**Decision: Revised to R4-2403291 (from R4-2402684).**

**[R4-2403291](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403291.zip) DraftCR to 38.133 Corrections to core requirements for carrier phase measurement for positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR proposes corrections to core requirements for CPP.

**Decision: Endorsed.**

8.14.3 RRM performance requirements

**R4-2402685 Work plan for RRM performance requirements for positioning enhancement**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

The paper provides work plan and timeline for defining RRM performance requirements for positioning in R18.

**Decision: Approved.**

8.14.3.1 SL Positioning

**R4-2400120 Discussion on performance requirements for sidelink positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2401047 (NR\_pos\_enh2-Perf) Discussion on performance requirements for sidelink positioning**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401221 On performance requirements for SL positioning**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401222 Additional simulation results for SL positioning**

*Type: other For: Information  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401615 Discussion on performance requirements for sidelink positioning**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2402187 On performance requirements for SL positioning**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402802 On SL positioning performance**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On SL positioning performance

**Decision: Noted.**

**R4-2402803 Draft CR to 38.133: SL positioning performance requirements structure**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to 38.133: SL positioning performance requirements structure

**Decision: Revised to R4-2403292 (from R4-2402803).**

**[R4-2403292](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403292.zip) Draft CR to 38.133: SL positioning performance requirements structure**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to 38.133: SL positioning performance requirements structure

**Decision: Endorsed.**

8.14.3.2 LPHAP use case

**R4-2400118 (NR\_pos\_enh2-Perf) CR on performance requirements for LPHAP**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3963 rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Endorsed.**

[**R4-2403293**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403293.zip) **(NR\_pos\_enh2-Perf) CR on performance requirements for LPHAP**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3963 rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Withdrawn.**

**R4-2400121 Discussion on performance requirements for LPHAP**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2401049 (NR\_pos\_enh2-Perf) Discussion on performance requirements for LPHAP**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2402188 On performance requirements for LPHAP**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402686 On LPHAP performance requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This paper discusses performance requirement related issues for LPHAP.

**Decision: Noted.**

**R4-2402733 RRM Performance Requirements for LPHAP**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.14.3.3 RedCap Positioning

**R4-2400085 Discussion on Performance requirements of RedCap UE positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2401048 (NR\_pos\_enh2-Perf) Discussion on performance requirements for positioning with RedCap**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401225 On performance requirements for RedCap positioning**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401226 Simulation results for RedCap positioning with FH**

*Type: other For: Information  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2402189 On performance requirements for RedCap positioning**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402687 On performance requirement for RedCap positioning**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This paper discusses performance requirement related issues for RedCap positioning.

**Decision: Noted.**

**R4-2402688 Additional simulation results for RedCap positioning with FH in FR2**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper present simulation results for RedCap positioning.

**Decision: Noted.**

**R4-2402689 Summary of simulation results for RedCap positioning**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This paper summarizes simulation results submitted by participating companies for RedCap positioning in RAN4#110.

**Decision: Noted.**

**R4-2402735 RRM Performance Requirements for RedCap Positioning**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402736 Simulation Results for RedCap Positioning with Frequency Hopping**

*Type: other For: Information  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.14.3.4 PRS/SRS bandwidth aggregation

**R4-2400086 Discussion on Performance requirements of PRS SRS bandwidth aggregation**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400199 Simulation results for PRSSRS BW aggregation**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2401051 (NR\_pos\_enh2-Perf) Discussion on performance requirements for bandwidth aggregation for positioning**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401228 Simulation results for PRS/SRS BW aggregation**

*Type: other For: Information  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401874 Simulation results for PRS Bandwidth Aggregation**

*Type: other For: Information  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402190 On performance requirements for SRS/SRS CA**

*Type: LS out For: Approval  
 to RAN2, cc RAN1, RAN3  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402690 On performance requirement for positioning measurements based on bandwidth aggregation**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This paper discusses performance requirement related issues for PRS/SRS aggregation for positioning.

**Decision: Noted.**

**R4-2402691 Simulation results for PRS aggregation**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper present simulation results for bandwidth aggregation for positioning measurements.

**Decision: Noted.**

**R4-2402692 DraftCR to 38.133 Update to measurement report mapping for positioning measurements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR is based on the LS R4-2321545 agreed in RAN4#109.

**Decision: Endorsed.**

[**R4-2403294**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403294.zip) **DraftCR to 38.133 Update to measurement report mapping for positioning measurements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR is based on the LS R4-2321545 agreed in RAN4#109.

**Decision: Withdrawn.**

**R4-2402813 RRM performance requirements for PRS/SRS Bandwidth Aggregation**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.14.3.5 Carrier Phase Positioning

**R4-2400122 Discussion on performance requirements for carrier phase positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400200 Simulation results for CPP measurement**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2401050 (NR\_pos\_enh2-Perf) Discussion on performance requirements for CPP**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401875 Simulation results for DL RSCPD**

*Type: other For: Information  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402191 On performance requirements for CPP**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402693 On performance requirement for carrier phase measurement based positioning**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This paper discusses performance requirement related issues for CPP.

**Decision: Noted.**

**R4-2402694 Additional simulation results for carrier phase measurement**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This paper present simulation results for CPP measurements.

**Decision: Noted.**

**R4-2402911 RRM performance requirements for NR Carrier Phase Positioning**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.14.4 Moderator summary and conclusions

Topic: [110][217] NR\_pos\_enh2\_part1

**R4-2400753 Topic summary for [110][217] NR\_pos\_enh2\_part1**

*Type: other For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403259**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403259.zip) **Ad-hoc minutes #1 for NR positioning**

*Type: other For: Approval  
 Source: Intel Corporation*

**Decision: Approved.**

[**R4-2403260**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403260.zip) **Ad-hoc minutes #2 for NR positioning**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Approved.**

[**R4-2403384**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403384.zip) **Ad-hoc minutes #3 for NR positioning**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Approved.**

[**R4-2403363**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403363.zip) **Updates on measurement report mapping for Positioning Enhancements WI**

*Type: LSout For: Approval  
 To: RAN2, RAN3 cc: RAN1   
 Source: Huawei, HiSilicon*

**Decision: Approved.**

[**R4-2403489**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403489.zip) **LS on SRS BW aggregation impact on other channels/signals**

*Type: LSout For: Approval  
 To: RAN1   
 Source: Huawei, HiSilicon*

**Decision: Approved.**

[**R4-2403471**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403471.zip) **Updated simulation assumptions for RedCap Positioning with Rx FH**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Approved.**

[**R4-2403480**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403480.zip) **WF on R18 NR positioning – RedCap positioning and bandwidth aggregation for positioning measurements**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Revised to R4-2403529 (from R4-2403480).**

[**R4-2403529**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403529.zip) **WF on R18 NR positioning – RedCap positioning and bandwidth aggregation for positioning measurements**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Approved.**

Topic: [110][218] NR\_pos\_enh2\_part2

**R4-2400754 Topic summary for [110][218] NR\_pos\_enh2\_part2**

*Type: other For: Information  
 Source: Moderator (CATT)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403368**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403368.zip) **WF on R18 NR positioning - SL positioning and Carrier Phase Positioning**

*Type: other For: Approval  
 Source: CATT*

**Decision: Approved.**

[**R4-2403369**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403369.zip) **Updated summary of the simulation results for CPP**

*Type: other For: Information  
 Source: CATT*

**Decision: Noted.**

[**R4-2403370**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403370.zip) **Updated summary of the simulation results for SL positioning**

*Type: other For: Information  
 Source: CATT*

**Decision: Noted.**

Topic: [110][219] NR\_pos\_enh2\_part3

**R4-2400755 Topic summary for [110][219] NR\_pos\_enh2\_part3**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403475**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403475.zip) **WF on R18 NR positioning – LPHAP**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Decision: Approved.**

8.15 Multi-carrier enhancements for NR

8.15.2 RRM core requirements maintenance

**R4-2401347 Modification on DL interruption for Tx switching across 3/4 bands**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4111 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2401987 CR on Implementation of two-band Tx switching with dual TAG**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4208 rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Postponed.**

8.15.3 RRM performance requirements

[**R4-2403569**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403569.zip) **Big CR on RRM performance requirements for NR Multi-carrier enhancements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4283 rev Cat: B  
 Source: Huawei*

**Decision: Agreed.**

**R4-2401235 Remaining issues for DL interruption test case due to Tx switching**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2401348 Test case for DL interruptions at Tx switching across four uplink bands in FDD-TDD CA in SA for single TAG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403321 (from R4-2401348).**

[**R4-2403321**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403321.zip) **Test case for DL interruptions at Tx switching across four uplink bands in FDD-TDD CA in SA for single TAG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2401986 draftCR on DL interruptions at Tx switching across four uplink bands in TDD-TDD CA with different UL/DL pattern in SA for two TAGs**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Revised to R4-2403322 (from R4-2401986).**

[**R4-2403322**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403322.zip) **draftCR on DL interruptions at Tx switching across four uplink bands in TDD-TDD CA with different UL/DL pattern in SA for two TAGs**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

**R4-2402307 Draft CR for 38.133 - Addition of new Test case for DL interruptions at Tx switching across three uplink bands in FDD-TDD CA in SA for 2 TAGs**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403323 (from R4-2402307).**

[**R4-2403323**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403323.zip) **Draft CR for 38.133 - Addition of new Test case for DL interruptions at Tx switching across three uplink bands in FDD-TDD CA in SA for 2 TAGs**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2402904 Draft CR on TC for DL interruption at UL Tx switching across three bands in TDD-TDD CA for single TAG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2403324 (from R4-2402904).**

**[R4-2403324](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403324.zip) Draft CR on TC for DL interruption at UL Tx switching across three bands in TDD-TDD CA for single TAG**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

8.15.4 Moderator summary and conclusions

Topic: [110][220] NR\_MC\_enh

**R4-2400756 Topic summary for [110][220] NR\_MC\_enh**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Tuesday Feb 27, 2024)**

**Topic #1: Core requirements for DL interruption for Tx switching across 3/4 bands**

**Issue 1-1: Extension of TX switching for 2 bands to 2 TAGs**

* Proposals
  + Option 1(ZTE): Introduce DL interruption requirements for UL TX switching for 2 bands with 2 TAGs in R18 MC.

Note: cat B CR.

* Recommended WF

Further discussion.

E///: We disagree with the CR. The interruption should be the same with single TAG.

MTK: Procedure wise, we will not consider the new requirement in maintenance part.

QC: Same view with MTK. Following the discussion for 3/4 bands Tx switching, the DL interruption length is different with single TAG. The CR is correct.

E///: We had the discussion for 3/4-band switching, and in our view the interruption length is only impacted by the length of switching period. With the same requirement on DL interruption, 2-band 2-TAG can be implemented in a early release UE with a release independent manner.

HW: We had a lot of discussion on the interruption length for 2TAG with 3/4-band switching. Now with the WI closed, we are ok not to have the CR if difficult to reach consensus.

Nokia: We also don’t make the change.

**Topic #2: Test cases for DL interruption for Tx switching across 3/4 bands**

**Issue 2-1-1: Test of fallback band combination**

***Background***

*In RAN4#109, RAN4 RF continues discussing the applied switch period for the case of configured fallback combination and achieve conclusions. A further LS R4-2321986 is sent to RAN2 (see below).*

|  |  |
| --- | --- |
| RAN4 sent LS in R4-2317774 to ask RAN2’s view on the following issue.   |  | | --- | | **Issue: Length of switching period for the fallback band combinations**  From RAN4 UE implementation perspective, when UE support the two Tx switching band combinations of band A+B+C+D and band A+B+C+E, it is possible that UE has different switching periods for the same band pair, for example:   * For band A+B+C+D, A+B with period 35us, A+C with period 140us * For band A+B+C+E, A+B with period 140us, A+C with period 35us   In this case, RAN4 asks RAN2 the following question:   * When the network configures band A+B+C, how to determine the switching period for band pair A+B and A+C from RAN2 signalling perspective? |   In RAN4#109, RAN4 continues discussing the applied switch period for the case of configured fallback combination and comes to the following conclusion.   * UE could additionally optionally indicate in a parent BC whether to support the fallback low order BC with the same Tx switching period capability. The network determines switching period for band pair among the applicable ones and signals to the UE with RRC signalling. |

* Proposals
  + Option 1 (China Telecom):According to the latest agreement in RF session, no need of additional DL interruption test cases for the new RRC signaling of the fallback band combination.
* Recommended WF

Is option 1 agreeable?

HW: ok with option 1.

Agreement:

* + No need of additional DL interruption test cases for the new RRC signaling of the fallback band combination.

**Sub-topic 2-2: Test cases**

Kindly ask companies to cross-check the below TCs, thanks.

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2401348](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2401348.zip) | Huawei, HiSilicon | Test case for DL interruptions at Tx switching across four uplink bands in FDD-TDD CA in SA for single TAG |
| [R4-2401986](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2401986.zip) | ZTE Corporation | Test case for DL interruptions at Tx switching across four uplink bands in TDD-TDD CA with different UL/DL pattern in SA for 2 TAGs |
| [R4-2402307](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402307.zip) | Nokia, Nokia Shanghai Bell | Test case for DL interruptions at Tx switching across three uplink bands in FDD-TDD CA in SA for 2 TAGs |
| [R4-2402904](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402904.zip) | MediaTek inc. | Test case for DL interruptions at Tx switching across three uplink bands in TDD-TDD CA with different UL/DL pattern in SA for single TAG |

Note: revise all the CRs, and the big CR for post-meeting email agreement.

8.16 Further NR mobility enhancements

8.16.1 RRM Core requirements maintenance

**[R4-2403570](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403570.zip) Big CR on Core maintenance for Further NR mobility enhancements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4284 rev Cat: F  
  
 Source: MediaTek, Apple*

**Decision: Agreed.**

8.16.1.1 L1/L2 based inter-cell mobility

**R4-2400098 Discussion on UE feature for LTM**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2401912 Discussion on UE feature list for R18 LTM**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

8.16.1.1.1 General aspects and scenarios

**R4-2400099 Discussion on the necessity of Reply LS on PDCCH order RACH on neighbour cell**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400387 Discussion on general aspects and scenarios of L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400388 Draft CR for PDCCH ordered based RACH**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Postponed.**

[**R4-2403387**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403387.zip) **Draft CR for PDCCH ordered based RACH**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2401034 (NR\_Mob\_enh2-Core) Discussion on general aspects for L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401035 (NR\_Mob\_enh2-Core) Draft CR on timing requirements for UE based TA measurement for LTM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Merged.**

**R4-2401336 Discussion on general requirements for L1/L2-based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401337 Corrections on interruptions due to PDCCH ordered RACH to target LTM cell**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

[**R4-2403388**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403388.zip) **Corrections on interruptions due to PDCCH ordered RACH to target LTM cell**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401906 (NR\_Mob\_enh2-Core) Discussion on general aspects and scenarios of LTM**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2401907 (NR\_Mob\_enh2-Core) DraftCR for some general requirements on 38.133 R18 LTM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek Inc.*

**Decision: Revised to R4-2403389 (from R4-2401907).**

[**R4-2403389**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403389.zip) **(NR\_Mob\_enh2-Core) DraftCR for some general requirements on 38.133 R18 LTM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek Inc.*

**Decision: Endorsed.**

**R4-2401930 Discussion on maintenance issues of general aspects in R18 LTM**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401931 draft CR on UL transmit timing requirements for R18 LTM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2403390 (from R4-2401931).**

[**R4-2403390**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403390.zip) **draft CR on UL transmit timing requirements for R18 LTM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo, CMCC, MediaTek*

**Decision: Postponed.**

**R4-2401977 Discussion on general aspects and scenarios of L1/L2 triggered inter-cell mobility**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402627 On remaining aspects of LTM General Aspects and Scenarios**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402825 On LTM general aspects and scenarios**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On LTM general aspects and scenarios

**Decision: Noted.**

**R4-2402826 draft CR to 38.133 LTM TCI state switch activation requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On L1-RSRP measurement requirements

**Decision: Revised to R4-2403391 (from R4-2402826).**

**[R4-2403391](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403391.zip) draft CR to 38.133 LTM TCI state switch activation requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On L1-RSRP measurement requirements

**Decision: Postponed.**

8.16.1.1.2 L1-RSRP measurement requirements

**R4-2400100 (NR\_Mob\_enh2-Core) CR on intra-f L1 measurements for neighbor cell for LTM requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3960 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Merged.**

**R4-2400278 [NR\_Mob\_enh2-Core] CR 38.133 Correction of normative text in requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3977 rev Cat: F (Rel-18)  
  
 Source: BeammWave*

**Abstract:**

A requirement that was added after RAN4#109 by Cat B CR 3952r1 for the Rel-18 WI NR\_Mob\_enh2-Core is phrased in a way that violates the guidelines in the Foreword section of TS 38.133 on the usage of modal verbs in normative text. This leads to that the (

**Decision: Merged.**

**R4-2400389 Discussion on L1-RSRP measurement for LTM**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400390 Draft CR for requirements of L1-RSRP measurement**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Revised to R4-2403392 (from R4-2400390).**

[**R4-2403392**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403392.zip) **Draft CR for requirements of L1-RSRP measurement**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Endorsed.**

**R4-2401036 (NR\_Mob\_enh2-Core) Draft CR on inter frequency L1-RSRP measurement without measurement gaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Revised to R4-2403393 (from R4-2401036).**

[**R4-2403393**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403393.zip) **(NR\_Mob\_enh2-Core) Draft CR on inter frequency L1-RSRP measurement without measurement gaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Endorsed.**

**R4-2401179 DraftCR on FR1 L1-RSRP measurement for neighbor cell in LTM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: xiaomi*

**Decision: Merged.**

**R4-2401338 Discussion on L1-RSRP measurement requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401339 Corrections on L1-RSRP measurement on candidate cells**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

**R4-2401908 (NR\_Mob\_enh2-Core) Discussion on L1-RSRP measurement requirements for LTM**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2401909 (NR\_Mob\_enh2-Core) DraftCR for L1-RSRP measurement on 38.133 R18**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek Inc.*

**Decision: Revised to R4-2403394 (from R4-2401909).**

[**R4-2403394**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403394.zip) **(NR\_Mob\_enh2-Core) DraftCR for L1-RSRP measurement on 38.133 R18**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek Inc.*

**Decision: Endorsed.**

**R4-2401932 Discussion on maintenance issues of L1 measurements in R18 LTM**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401933 draft CR on L1 measurement requirements for R18 LTM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Merged.**

**R4-2401978 Discussion on L1-RSRP measurement requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401985 Correction on known cell conditions for inter-f neighbour cell**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4207 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Merged.**

**R4-2402628 On remaining aspects of LTM measurements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402629 draftCR for 38.133 on LTM measurements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

**R4-2402827 On L1-RSRP measurement requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On L1-RSRP measurement requirements

**Decision: Noted.**

**R4-2402828 draft CR to 38.133 On L1-RSRP measurement requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On L1-RSRP measurement requirements

**Decision: Revised to R4-2403395 (from R4-2402828).**

**[R4-2403395](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403395.zip) draft CR to 38.133 On L1-RSRP measurement requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On L1-RSRP measurement requirements

**Decision: Endorsed.**

8.16.1.1.3 L1/L2 inter-cell mobility delay requirements

**R4-2400101 Discussion on cell switch delay requirements for LTM**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400391 Discussion on L1/L2 based inter-cell mobility delay requirements**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400392 Draft CR for LTM cell switch delay**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Merged.**

**R4-2401340 Discussion on L1/L2 inter-cell mobility delay requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401341 Corrections on LTM cell switch delay**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

**R4-2401439 On remaining aspects of LTM cell switch delay**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401440 Draft CR for LTM cell switch delay requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403397 (from R4-2401440).**

[**R4-2403397**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403397.zip) **Draft CR for LTM cell switch delay requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2401910 (NR\_Mob\_enh2-Core) Discussion on LTM delay requirements**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2401911 (NR\_Mob\_enh2-Core) DraftCR for cell switch requirements on 38.133 R18**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek Inc.*

**Decision: Postponed.**

[**R4-2403398**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403398.zip) **(NR\_Mob\_enh2-Core) DraftCR for cell switch requirements on 38.133 R18**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek Inc.*

**Decision: Withdrawn.**

**R4-2401934 Discussion on maintenance issues of cell switch delay requirements in R18 LTM**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401935 draft CR on cell switch delay requirements for R18 LTM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2403399 (from R4-2401935).**

[**R4-2403399**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403399.zip) **draft CR on cell switch delay requirements for R18 LTM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo, MediaTek*

**Decision: Endorsed.**

**R4-2401979 Discussion on L1/L2 inter-cell mobility delay requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402829 On LTM delay requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On LTM delay requirements

**Decision: Noted.**

**R4-2402830 Draft CR to 38.133 on LTM delay requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On LTM delay requirements

**Decision: Merged.**

8.16.1.1.4 Others

**R4-2400102 Reply LS on PDCCH order RACH on neighbour cell**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: CATT*

**Decision: Noted.**

**R4-2401033 (NR\_Mob\_enh2-Core) Discussion on UE capabilities for L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401342 CR on LTM based SCell activation and direct SCell activation**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403396 (from R4-2401342).**

[**R4-2403396**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403396.zip) **CR on LTM based SCell activation and direct SCell activation**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

**R4-2401343 Discussion on UE capability for LTM measurement**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401936 Discussion on RAN4 UE features for R18 LTM**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2402630 On the remaining aspects of LTM feature list**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402786 (NR\_Mob\_enh2-Core) RAN4 UE capability on LTM and Response to RAN1 LS**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is a discussion paper on the RAN4 Feature Group list. A list of proposed changes is provided,

**Decision: Noted.**

**R4-2402831 UE feature list aspects of LTM**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss On other aspects of LTM

**Decision: Noted.**

**R4-2402832 Reply LS to RAN1 on PDCCH order RACH on neighbour cell**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: Ericsson*

**Abstract:**

Reply LS to RAN2 on L1 measurements for LTM

**Decision: Noted.**

8.16.1.2 NR-DC with selective activation of cell groups via L3 enhancements

**R4-2401038 (NR\_Mob\_enh2-Core) Draft CR on CPA**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Merged.**

**R4-2402631 draftCR for Subsequent Conditional PScell Change**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

8.16.1.3 Improvement on SCell/SCG setup delay

**R4-2400393 Discussion on improvement on FR2 SCell/SCG setup delay**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400394 Draft CR on FR2 SCell/SCG setup delay improvement**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Merged.**

**R4-2400544 CR on Improvement for SCell/SCG setup delay**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4036 rev Cat: F (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision:** The document was **withdrawn**.

**R4-2400545 Discussion on remaining issues for Scell/SCG setup delay**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2400928 DraftCR on Improvement for SCell/SCG setup delay**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2403454 (from R4-2400928).**

[**R4-2403454**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403454.zip) **DraftCR on Improvement for SCell/SCG setup delay**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Endorsed.**

**R4-2401344 Discussion on improvement on FR2 SCell/SCG setup/resume**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401417 Discussion on improvement on Scell/SCG setup dealy**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provide our view on how to update the specification base on RAN decision

**Decision: Noted.**

**R4-2401419 CR to TS 38.133 on RRM core requirements for Idle/Inactive measurement for Scell/SCG setup**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4125 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR implement the RAN agreement for Idle/Inactive measurement

**Decision:** The document was **withdrawn**.

**R4-2401560 draft CR to TS38.133 on RRM core requirement for Idle/Inactive measurement for Scell/SCG setup**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR implement the RAN agreement for Idle/Inactive measurement

**Decision: Merged.**

**R4-2401913 Discussion on UE feature list for objective 7**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2401980 Discussion on the improvement on SCell/SCG setup delay**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402632 On remaining aspects of SCell/SCG setup delay**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402633 draft CR for 38.133 on SCell/SCG setup delay**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

8.16.1.4 Enhanced CHO configurations

**R4-2400103 (NR\_Mob\_enh2-Core) CR on NR CHO including target MCG and target SCG for CHO enhancement**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3961 rev Cat: F (Rel-18)  
  
 Source: CATT, ZTE Corporation*

**Decision: Revised to R4-2403455 (from R4-2400103).**

[**R4-2403455**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403455.zip) **(NR\_Mob\_enh2-Core) CR on NR CHO including target MCG and target SCG for CHO enhancement**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-3961 rev Cat: F (Rel-18)  
  
 Source: CATT, ZTE Corporation*

**Decision: Endorsed.**

**R4-2400395 Draft CR for enhanced CHO**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Apple*

**Decision: Merged.**

**R4-2401037 (NR\_Mob\_enh2-Core) Draft CR on enhanced CHO**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Merged.**

8.16.2 RRM performance requirements

8.16.2.1 L1/L2 based inter-cell mobility

**R4-2400104 Discussion on RRM performance requirements for R18 LTM**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400396 Discussion on RRM performance requirements for part 1**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2401032 (NR\_Mob\_enh2-Perf) Discussion on performance requirements for LTM**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401345 Discussion on performance requirements for L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401441 On performance requirements for LTM**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401914 Discussion on RRM performance requirements for R18 LTM**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2401937 Discussion on performance requirements for R18 LTM**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401981 Discussion on performance requirements for LTM**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402833 Disucssion on LTM performance part**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Disucssion on mobility performance part

**Decision: Noted.**

8.16.2.2 Other RRM performance requirements

**R4-2400105 Discussion on other RRM performance requirements for R18 mobility enhancement**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400397 Discussion on RRM performance requirements for part 2**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400997 Discussion on test case of measurement report for fast CADC setup**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401031 (NR\_Mob\_enh2-Perf) Discussion on performance requirements for mobility enhancement**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401346 Discussion on performance requirements for selective activation of cell groups via L3 enhancements, Improvement on SCell/SCG setup delay and Enhanced CHO**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401418 Discussion on RRM performance requirements for Rel-18 Futher NR mobility enhancment**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provide our view on the test case scope for further Mobilty enhancment

**Decision: Noted.**

**R4-2401442 On performance requirements for SA, CHO and EMR enhancements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401505 Discussion on test cases for R18 NR Mobility Enhancements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401831 Discussion on performance requirements for mobility part2**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401915 Discussion on other RRM performance requirements for R18 mobility**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2401982 Discussion on performance requirements for NR mobility enhancements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

8.16.3 Moderator summary and conclusions

Topic: [110][221] NR\_Mob\_enh2\_part1

**R4-2400757 Topic summary for [110][221] NR\_Mob\_enh2\_part1**

*Type: other For: Information  
 Source: Moderator (MediaTek)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403261**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403261.zip) **Ad-hoc minutes for NR\_Mob\_enh2**

*Type: other For: Approval  
 Source: Apple*

**Decision: Approved.**

[**R4-2403385**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403385.zip) **WF on NR mobility enhancements (part 1)**

*Type: other For: Approval  
 Source: MediaTek*

Agreement: The UE feature list in section 7 is the starting point for further discussion, additional change is not precluded.

**Decision: Approved.**

[**R4-2403386**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403386.zip) **LS on timing assumption between source and target cells for R18 LTM cell switch**

*Type: LS out For: Approval  
 To: RAN1  
 Source: MediaTek*

**Decision: Approved.**

**Online session (Wednesday Feb 28, 2024)**

**Issue 4-5-2: Faster processing time**

* Proposals
  + Option 1 (CATT, Apple, MTK): Introduce UE capability for shorter Tprocessing,2/ TLTM-processing.
    - Option 1a (CATT):
      * At least 10ms can be considered for candidate reduced values.
      * There is no need to introduce UE capability on ‘TLTM-RRC-processing/Texecution + Tprocessing,2’.
    - Option 1b (Apple):
      * RAN4 can consider an additional UE capability with up to 2 candidate values for TLTM-processing:
        + For intra-FR: 20ms, [15ms]
        + For inter-FR: 40ms, [30ms]
    - Option 1c (MTK):
      * + The candidate values can be 15ms for intra-FR cell switch.
    - Option 1d (Ericsson):
      * + Potential value is 10ms.
  + Option 2 (Huawei, ZTE): TLTM\_processing,2 can be reduced when target Pcell/SCell is current SCell/PCell.
    - Option 2a (Huawei): TLTM\_processing,2 can be 5ms when target Pcell/SCell is current SCell/PCell with UE capability.
    - Option 2b (ZTE): RAN4 should consider whether the SCell is for DL-only or both DL/UL when target Pcell is current Scell.
  + Option 3 (Nokia): TLTM\_processing to be reduced for the case when the target cell is a current serving cell.
  + Option 4 (ZTE): Introduce UE capability on “TLTM-RRC-processing/Texecution + Tprocessing,2”
* Recommended WF
  + Recommend agree on
    - Introduce a capability for shorter TLTM-processing.
      * The candidate value is [15ms] for intra-FR cell switch and [30ms] for inter-FR cell switch without any condition
      * FFS: [5ms, 10ms] with applicable conditions.
    - Not introduce a separate UE capability on “TLTM-RRC-processing + TLTM-processing.”

Agreement:

* Introduce a capability for shorter TLTM-processing.
  + The candidate values are {10ms, 15ms} for intra-FR cell switch and {20ms, 30ms} for inter-FR cell switch without any condition.
  + FFS on the processing time for the scenario of the target Pcell is the current SCell.
* Not introduce a separate UE capability on “TLTM-RRC-processing + TLTM-processing.”

HW: If the target Pcell is the current SCell, UE not supporting this advanced UE feature can also support the faster processing time.

MTK: don’t agree HW proposal. It cannot over all the related scenarios.

Nokia: supportive of HW proposal.

E///: HW’s proposal is related to another issue.

MTK: agree with E///.

QC: the configuration of Scell cannot different with that of Pcell. Agree with MTK technically. We cannot agree HW proposal unless we see all the details and feasibility.

Apple: Still have concern on the FFS part.

* + - * FFS: If the target Pcell is the current SCell, UE not supporting this capability can also support the faster processing time.

**Issue 4-4-2: Granularity of Interruption due to RF retuning for PDCCH- ordered RACH**

* Proposals
  + Option 1 (CATT, Apple, MTK, QC, Ericsson, vivo, Huawei):
    - Regarding the capability for interruption on DL symbols due to PDCCH-ordered RACH, the reported granularity is Per band pair (between the target band for RACH transmission and band under UE’s current band combo) per band combination. Details of signalling design is up to RAN2.
  + Option 2 (QC):
    - Introduce a NeedForGapsConfigNR-like framework for the information of 39-4a with 39-4 to save a signaling overhead.
    - Send an LS to RAN2.
* Recommended WF
  + Recommend agree on Option 1.

QC: we are very much concerned about signalling complexity. We have a lot of internal discussion on the implementation team, option 2 is feasible. We believe option 2 is a better way. We can compromise considering the majority view and if this is the only way to go.

MTK: we support QC proposal from RAN4 perspective. There may be some issue with RAN2 perspective for option 2.

Apple: have different understanding. Don’t support to send two options to RAN2 to trigger more discussion after the core WI completion.

QC: for option 2, the UE capability is controlled by RRC configuration, no issue based on the feedback from our RAN2 colleague.

Agreement:

* Regarding the capability for interruption on DL symbols due to PDCCH-ordered RACH, the reported granularity is Per band pair (between the target band for RACH transmission and band under UE’s current band combo) per band combination. Details of signalling design is up to RAN2.

**Issue 4-2-1: Capability for inter-f L1 measurement without gap**

* Proposals
  + Option 1 (Apple, Huawei, MTK, Ericsson):
    - introduce UE capability for inter-frequency L1 measurement without gap in RAN4 feature list, as it is not covered by RAN1 feature.
    - The granularity is per BC
  + Option 2 (QC):
    - Reuse interFreq-needForGap in NeedForGapsInfoNR for LTM inter-frequency L1-RSRP measurements.
* Agreement
  + - Introduce UE capability for inter-frequency L1 measurement without gap, with SSB within active BWP (i.e., no gap and no interruption) in RAN4 feature list.
    - The granularity is [per BC or per UE]

QC: the same situation as the previous issue.

CMCC: fine to have UE capability. Per UE not per BC. For L3 measurement, per UE is used.

MTK: we have concern on per UE. In L3 measurement, scaling factor is added.

Apple, QC, vivo: ok with either per BC or per UE.

HW: prefer per BC.

Other companies have no strong view.

Nokia: “no gap” or “no gap and no interruption”? We believe it is “no gap and no interruption”.

QC: does mixed numerologies considered here?

Moderator: covered here.

QC: want to check mixed numerologies.

**Issue 4-3-4: Number of SSBs within a slot**

* Proposals
  + Option 1 (Huawei): Introduce capability to indicate
    - The max number of SSB resources configured to measure L1-RSRP for RTD<=CP and RTD>CP within a slot across serving cells and candidate cells for intra- and inter-frequency without gap L1-RSRP measurement. Candidate values: {1,2,3,4,7,8}.
    - The max number of SSB resources configured to measure L1-RSRP within a slot across serving cells and candidate cells for intra- and inter-frequency without gap L1-RSRP measurement for RTD<CP. Candidate values: {1,2,3,4,7,8}.
    - The max number of SSB resources configured to measure L1-RSRP within a slot across candidate cells for inter-frequency L1-RSRP measurement with MG. Candidate values: {1,2,3,4,7,8}
    - The capabilities of inter-frequency measurement w/o gap can be merged with intra-frequency measurement.
    - The granularity is per BC
  + Option 2 (Apple):
    - The max number of SSB resources configured to measure L1-RSRP within a slot across candidate cells is [1, 2, 4, 8, 16]
    - UE capability for number of SSBs to measure is reported per band. It is also counted in existing L1 measurement capability FG 2-24.
  + Option 3 (vivo):
    - For FG of UE NOT supporting RTD>CP for each L1 measurement layer, define components on the max number of SSBs within a slot or max number of SSBs configured, same as legacy UE capability design.
    - For FG of UE supporting RTD>CP for each L1 measurement layer, define components based on the number of SSB Layers and the number of resources to measure per-layer
  + Option 4 (MTK): No need to introduce a capability to indicate “The max number of SSB resources for L1-RSRP measurement that UE can measure within a slot across candidate cells”.
* Recommended WF
  + Need more discussion.

**Number of SSBs within a slot**

* + Introduce capability to indicate
    - The max number of SSB resources configured to measure L1-RSRP for RTD<=CP and RTD>CP within a slot across serving cells and candidate cells for intra- and inter-frequency without gap L1-RSRP measurement. Candidate values: {1,2,3,4,7,8}.
    - The max number of SSB resources ~~configured~~ to measure L1-RSRP within a slot across serving cells and candidate cells for intra- and inter-frequency without gap L1-RSRP measurement ~~for RTD<CP~~. Candidate values: {1,2,3,4,7,8}.
      * If UE does not report this capability, it means no additional restriction on the number of SSBs within a slot.
    - The max number of SSB resources configured to measure L1-RSRP within a slot across candidate cells for inter-frequency L1-RSRP measurement with MG. Candidate values: {1,2,3,4,7,8}
    - The capabilities of inter-frequency measurement w/o gap can be merged with intra-frequency measurement.
    - The granularity is per BC

E///: No need to introduce a capability to indicate “The max number of SSB resources for L1-RSRP measurement that UE can measure within a slot across candidate cells”. Number of SSBs network can transmit is already in RAN1 spec.

Apple: We have this discussion based on RAN1 LS. Everything is more clear on how UE implement this feature if we define this capability.

HW: Share the same view as Apple. This is related to UE processing capability.

vivo: Share the same view as Apple. This is related to UE processing capability.

QC: what additional UE processing is required?

Apple: additional capacity from UE side.

QC: this is for non-serving cell.

HW: no scaling factor in some scenario. UE will measure SSBs from different cells simultaneously.

Options for further discussion:

* + Option A: The max number of SSB resources to measure L1-RSRP within a slot across serving cells and candidate cells for intra- and inter-frequency without gap L1-RSRP measurement. Candidate values: {1,2,3,4,7,8}. (HW, Apple, vivo, CATT)
    - * If UE does not report this capability, it means no additional restriction on the number of SSBs within a slot.
  + Option B: No need to introduce a capability to indicate “The max number of SSB resources for L1-RSRP measurement that UE can measure within a slot across candidate cells”. (QC, E///)

**Issue 5-2-1: Test coverage on cell switch delay**

* Proposals
  + Option 1 (CATT):
    - Test cases for LTM cell switch delay requirements should consider the following aspects:
      * PCell or PSCell
      * RACH-based or RACH-less
      * Frequency range of serving cell and target cell, FR1 or FR2
      * Whether the target TCI state indicated in the LTM cell switch command is in the active TCI state list.
    - For PCell cell switch,
      * It is enough to only test from FR1 to FR1 and from FR1 to FR2 cell switch.
      * It is enough to only test from FR1 to FR1 cell switch for RACH-less cell switch.
    - For PSCell cell switch, it is enough to only test RACH-based cell switch from FR1 to FR1 for PSCell cell switch.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PCell or PSCell** | **RACH-based or RACH-less** | **Frequency range of serving cell and target cell** | **Whether the target TCI state indicated in the LTM cell switch command is in the active TCI state list** | **Test cases list** |
| PCell | RACH-based | from FR1 to FR1 | with early TCI state activation | RACH-based cell switch from FR1 to FR1 with early TCI state activation |
| without early TCI state activation | RACH-based cell switch from FR1 to FR1 without early TCI state activation |
| from FR1 to FR2 | with early TCI state activation | RACH-based cell switch from FR1 to FR2 with early TCI state activation |
| without early TCI state activation | RACH-based cell switch from FR1 to FR2 without early TCI state activation |
| RACH-less | from FR1 to FR1 | with early TCI state activation | RACH-less cell switch from FR1 to FR1 with early TCI state activation |
| without early TCI state activation | RACH-less cell switch from FR1 to FR1 without early TCI state activation |
| PSCell | RACH-based | from FR1 to FR1 | with early TCI state activation | RACH-based cell switch from FR1 to FR1 with early TCI state activation |

* + Option 2 (CMCC): Specify test case for cell switch delay
  + Option 3 (Nokia): Define a full test case list with all the existing scenarios
    - PCell or PSCell
    - RACH-based or RACH-less
    - Frequency range of serving cell and target cell, FR1 or FR2, and inter-FR
    - Intra-f or inter-f
    - Whether target TCI state in cell switch command is active at the time UE receives the cell switch command
  + Option 4 (ZTE): Test cases for cell switching delay, including PCell and PSCell
  + Option 5 (Apple, MTK):

|  |  |
| --- | --- |
| **Core requirements defined** | **Detail** |
| PCell Cell switch requirements | A.6.3.x.1   * RACH based Cell switch from FR1 to FR1   + Intra-frequency cell switch |
| A.6.3.x.2   * RACH-less Cell switch from FR1 to FR1   + Intra-frequency cell switch |
| A.6.3.x.3   * RACH based Cell switch from FR1 to FR1   + Inter-frequency cell switch |
| A.7.3.x.1   * RACH based Cell switch from FR2 to FR2   + Intra-frequency cell switch |
| A.7.3.x.2   * RACH-less Cell switch from FR2 to FR2   + Intra-frequency cell switch |
| A.7.3.x.3   * RACH based Cell switch from FR2 to FR2   + Inter-frequency cell switch |
| PSCell cell switch | A.6.3.y.1   * RACH based Cell switch from FR1 to FR1   + Intra-frequency cell switch |
| A.7.3.y.1   * RACH based Cell switch from FR2 to FR2   + Intra-frequency cell switch |

* + - MTK:
      * TE then activates TCI state of target cell if UE supports pre TCI state activation on candidate cell(s).
      * If UE does not support pre TCI state activation on candidate cell(s), TE does not activate TCI state.
  + Option 6 (Ericsson):
    - Cell switch to neighbour cell to be tested in following scenarios
      * Source cell is in FR1 and neighbour is in FR1
      * Source cell is in FR1 and neighbour is in FR2
      * Source cell is in FR2 and neighbour is in FR1
      * Source cell is in FR2 and neighbour is in FR2
    - Interruption requirements to be tested in following scenarios
      * RACH less Cell switch
      * RACH based cell switch
      * Cell switch when TCI states are pre-actviated
      * Cell switch when target cell is one of the serving cell
* Recommended WF

*Considering the following factors: the majority view, the coverage, the total number of test cases, supporting pre TCI state activation is an optional capability, cross FR cell switch has testability issue. Moderator has the following recommendation.*

* + Recommend agree on the following test case at first

|  |  |
| --- | --- |
| **Core requirements defined** | **Detail** |
| PCell Cell switch requirements | A.6.3.x.1   * RACH based Cell switch from FR1 to FR1   + Intra-frequency cell switch |
| A.6.3.x.2   * RACH-less Cell switch from FR1 to FR1   + Intra-frequency cell switch |
| A.6.3.x.3   * RACH based Cell switch from FR1 to FR1   + Inter-frequency cell switch |
| A.7.3.x.1   * RACH based Cell switch from FR2 to FR2   + Intra-frequency cell switch |
| A.7.3.x.2   * RACH-less Cell switch from FR2 to FR2   + Intra-frequency cell switch |
| A.7.3.x.3   * RACH based Cell switch from FR2 to FR2   + Inter-frequency cell switch |
| PSCell cell switch | A.6.3.y.1   * RACH based Cell switch from FR1 to FR1   + Intra-frequency cell switch |
| A.7.3.y.1   * RACH based Cell switch from FR2 to FR2   + Intra-frequency cell switch |

* + Further discuss whether to use the same test case to cover TCI state activated and not activated before cell switch command, as supporting pre TCI state activation is an optional UE capability
    - TE then activates TCI state of target cell if UE supports pre TCI state activation on candidate cell(s).
    - If UE does not support pre TCI state activation on candidate cell(s), TE does not activate TCI state.
  + Further discuss whether to cover inter-FR cell switch
  + FFS other scenarios

Moderator: suggest not to cover inter-FR cell switch. The processing time is tested in legacy handover test, no additional test point.

Nokia: not ok with this. Start with intra-FR, keep inter-FR open.

Apple: testability with inter-FR.

Options:

* Not cover inter-FR cell switch (MTK, Apple, HW, vivo, CATT, E///, ZTE)
* Cover intra-FR and inter-FR cell switch (Nokia, CMCC)

Agreement:

For FR1 cell switch delay, define test cases for both with and without TCI state activation. For UE supporting TCI state activation, not perform the test without TCI state activation.

Start with intra-FR, keep inter-FR open.

**Issue 5-3-1: Test coverage on PDCCH-order RACH**

* Proposals
  + Option 1 (Nokia, Apple, MTK, Ericsson): Define separate test cases for PDCCH ordered RACH
    - Option 1a (Apple, MTK): Define the following test cases for PDCCH ordered RACH

|  |  |
| --- | --- |
| PDCCH-order RACH on neighbor cell | A.6.5.x.1   * intra-frequency target cell in FR1 * RACH BW is within active BWP |
| A.6.5.x.2   * inter-frequency target cell in FR1 * RACH BW is outside any configured BWP |
| A.7.5.x.1   * intra-frequency target cell in FR2 * RACH BW is within active BWP |
| A.7.5.x.2   * inter-frequency target cell in FR2 * RACH BW is outside any configured BWP |

* + - Option 1b (Ericsson): PDCCH order based RACH to neighbour cell to be tested in following scenarios for delay and interruption
      * Source cell is in FR1 and neighbour is in FR1
      * Source cell is in FR1 and neighbour is in FR2
      * Source cell is in FR2 and neighbour is in FR1
      * Source cell is in FR2 and neighbour is in FR2
* Recommended WF
  + Recommend agree to define the following cases for PDCCH ordered RACH

|  |  |
| --- | --- |
| PDCCH-order RACH on neighbor cell | A.6.5.x.1   * intra-frequency target cell in FR1 * RACH BW is within active BWP |
| A.6.5.x.2   * inter-frequency target cell in FR1 * RACH BW is outside any configured BWP |
| A.7.5.x.1   * intra-frequency target cell in FR2 * RACH BW is within active BWP |
| A.7.5.x.2   * inter-frequency target cell in FR2 * RACH BW is outside any configured BWP |

* + Further discuss whether to define different test cases when serving cell is in the same or different FR of target cell.

**Test coverage on PDCCH-order RACH**

Moderator: the requirement is same regardless in the same or different FR. Suggest not define test cases for different FR case.

Agreement:

Not define test cases when serving cell is in different FR of target cell.

**Issue 1-1-3-1: How to handle and that are not captured both in RAN4 and RAN1**

* Proposals
  + Option 1 (CATT, MTK, Ericsson, ZTE): Send RAN1 LS to ask them to capture in RAN1 spec
  + Option 2 (Apple, vivo, QC, Nokia): explicitly specify , and in TS38.133.
* Recommended WF
  + Need more discussion

Moderator: In previous meeting, it is RAN4 majority companies view that this can be captured in RAN1. But RAN1 has not captured this. Need to discuss.

QC: send LS to RAN1, the decision is up to RAN1.

CATT: Support option 1. Can consider soft wording, like ask RAN1 to consider.

ZTE: Support option 1.

Apple: We don’t have strong view. Some parameters are quite dynamic depending on the scenario (the scenarios are not in RAN1 spec yet), and the definition needs to be clarified when capturing in the spec.

QC: it is not an issue. Capture in one spec is clear enough.

vivo: support option 2. Some of the parameters are difficult for RAN1 to capture.

Nokia: support option 2.

* + Option 1 (CATT, MTK, Ericsson, ZTE): Send RAN1 LS to ask them to capture in RAN1 spec
  + Option 2 (Apple, vivo, QC, Nokia): explicitly specify , and in TS38.133.
    - Not support: ZTE

Agreement:

RAN4 to discuss the CR based on option 2. If RAN4 cannot reach an agreeable version of CR, send LS to RAN1.

**Issue 2-4-4: Whether “timeRestrictionForChannelMeasurements” is needed in LTM L1 measurement configuration**

*TimeRestrictionForChannelMeasurements is not contained in LTM-CSI-ReportConfig-r18 yet.*

* Proposals
  + Option 1 (vivo):
    - For LTM intra-frequency L1 measurement, UE performs L1 measurement based on only the most recent, no later than the CSI reference resource, occasion of SS/PBCH associated with the CSI resource setting, at least for intra-frequency L1 measurement. No need for RRC IE timeRestrictionForChannelMeasurements’ in LTM L1 measurement configuration.
    - Send LS to RAN1/2 enclosing RAN4 conclusions for this issue.
* Recommended WF
  + Need more discussion.

Moderator: this parameter is not in the existing R18 spec for LTM.

E///: this has already been discussed in RAN1/2, not missing parameter. No need to send LS.

Apple: we also support E/// view.

HW: Not have this IE means “1”?

CMCC: 1 for intra, 2 for inter

Apple: 3 for intra, 4 for inter, as the restriction is not applied.

vivo: We support not have this IE. 1 for intra and 2 for inter.

E///: agree with CMCC and vivo.

MTK: we need to define accuracy requirements, which will be impacted by this issue.

CMCC: ok with option 2.

Apple, QC, Nokia, ZTE: not support option 2.

Candidate options:

Option 1: No need for RRC IE ‘timeRestrictionForChannelMeasurements’ in LTM L1 measurement configuration.

Option 1a: 1 for intra-frequency, 2 for inter-frequency (vivo, CMCC, E///, Nokia, ZTE)

Option 1b: 3 for intra-frequency, 4 for inter-frequency (Apple)

Encourage compromised proposal on the numbers for option 1, for example, based on certain condition.

Option 2: RAN4 recommend to Introduce RRC IE ‘timeRestrictionForChannelMeasurements’ in LTM L1 measurement configuration.

**Issue 1-3-1: Timing restriction between source cell and target cell**

*In moderator’s understanding, RAN4 has common understanding that the timing restriction mentioned in Option 1 should be extended to cell switch purpose.*

* Proposals
  + Option 1 (MTK):
    - Send RAN1 LS to ask them to extend the following timing restrictions in 38.211 to cell switch purpose, including PCell switch and PSCell switch

|  |
| --- |
| For handover purposes to a target cell in paired or unpaired spectrum where the target cell uses , the UE may assume the absolute value of the time difference between radio frame in the current cell and radio frame in the target cell is less than if the association pattern period in clause 8.1 of [5, TS 38.213] is not equal to 10 ms.  For inter frequency handover purposes where the source cell is either in paired or unpaired spectrum and the target cell is in unpaired spectrum and uses , the UE may assume the absolute value of the time difference between radio frame in the current cell and radio frame in the target cell is less than |

* Recommended WF
  + Recommend agree on Option 1.

Agreement:

* + - It in RAN4 understanding the following is also applied to cell switch. Ask RAN1 to take this information into account.
    - Further refine the wording in the LS.

|  |
| --- |
| For handover purposes to a target cell in paired or unpaired spectrum where the target cell uses , the UE may assume the absolute value of the time difference between radio frame in the current cell and radio frame in the target cell is less than if the association pattern period in clause 8.1 of [5, TS 38.213] is not equal to 10 ms.  For inter frequency handover purposes where the source cell is either in paired or unpaired spectrum and the target cell is in unpaired spectrum and uses , the UE may assume the absolute value of the time difference between radio frame in the current cell and radio frame in the target cell is less than |

Topic: [110][222] NR\_Mob\_enh2\_part2

**R4-2400758 Topic summary for [110][222] NR\_Mob\_enh2\_part2**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

Topic summary in RRM session

**Decision: Approved.**

[**R4-2403445**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403445.zip) **Ad-hoc minutes for NR\_Mob\_enh2\_part2**

*Type: other For: Approval  
 Source: Apple*

Agreement: the tentative agreemetns in the adhoc minutes are comfirmed.

**Decision: Approved.**

[**R4-2403456**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403456.zip) **WF on R18 Further NR mobility enhancement - part 2**

*Type: other For: Approval  
 Source: Apple*

**Decision: Revised to R4-2403548 (from R4-2403456).**

[**R4-2403548**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403548.zip) **WF on R18 Further NR mobility enhancement - part 2**

*Type: other For: Approval  
 Source: Apple*

**Decision: Approved.**

[**R4-2403457**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403457.zip) **LS on R18 mobility - Improvement on SCell/SCG setup delay**

*Type: LS out For: Approval  
 To: RAN2  
 Source: Apple*

**Decision: Revised to R4-2403549 (from R4-2403457).**

[**R4-2403549**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403549.zip) **LS on R18 mobility - Improvement on SCell/SCG setup delay**

*Type: LS out For: Approval  
 To: RAN2  
 Source: Apple*

**Decision: Approved.**

**Online session (Wednesday Feb 28, 2024)**

**Issue 2-1: applicability of validity check**

Continue discussion on the following candidate solution based on ad-hoc outcomes:

The validity check is not applicable to

       Any measurements during IDLE/INACTIVE but no included in configuration of R18 CA/DC setup improvement.

       Any measurements during CONNECTED mode.

Support of R18 CA/DC setup improvement shall have no impact on R16 EMR reporting behaviour.

**Issue 2-2: side condition and configurations of validity check**

* Candidate solutions:
  + Proposal 1: (QC)
    - Dedicate measurement configurations for fast FR2 CA/DC setup is required.
      * Dedicate measurement configurations such as EMR configuration for EMR-UE, broadcasted configuration (SIB11) for non-EMR UE.
  + Proposal 2: (ZTE)
    - Reuse the same side conditions configured on RSRP or RSRQ for EMR
  + Proposal 3: (Nokia)
    - Rel-18 configuration should be independent from Rel-16 EMR configuration to avoid flushing configuration upon T331 expiry.
* Recommended WF
  + Discuss candidate solutions.

**Issue 4-1-1: test coverage of NR-DC with selective activation of cell groups**

* Candidate solutions:
  + Option 1: (CATT, Apple, CMCC, vivo, MTK, [ZTE?])
    - Intra-frequency CPC from FR1-FR1 NR-DC to FR1-FR1 NR-DC
    - Inter-frequency CPC from FR1-FR1 NR-DC to FR1-FR2 NR-DC
  + Option 2: (HW)
    - FR1-FR1 subsequent Conditional PSCell Addition in NR-DC
    - FR2-FR2 subsequent Conditional PSCell Addition in NR-DC
    - FR1-FR1 subsequent Conditional PSCell change in NR-DC
    - FR2-FR2 subsequent Conditional PSCell change in NR-DC
  + Option 3: (E///)
    - Introduce a new test case with multiple configurations to cover as many DC combination as possible for NR-DC with selective activation.
  + Option 4: (Nokia)

|  |  |
| --- | --- |
| Subsequent Conditional PSCell Addition Delay | FR1 SA to FR1-FR1 NR-DC |
| FR1 SA to FR1-FR2 NR-DC |
| Subsequent Conditional PSCell Change | FR1-FR1 NR-DC to FR1-FR1 NR-DC |
| FR1-FR2 NR-DC to FR1-FR1 NR-DC |
| FR1-FR1 NR-DC to FR1-FR2 NR-DC |
| FR1-FR2 NR-DC to FR1-FR2 NR-DC |

* Recommended WF
  + Discuss candidate solutions.

**Issue 4-2-1: whether to introduce test case to verify validity procedure for R18 fast CA/DC setup**

* Candidate solutions:
  + Option 1: yes (CATT, Apple, CMCC, HW, E///, Nokia, OPPO, vivo, ZTE)
  + Option 2: no (QC)
* Recommended WF
  + Discuss candidate solutions.

**Issue 4-2-2: test scope for R18 fast CA/DC setup**

* Candidate solutions:
  + Validity procedure (e.g.measurementreport based on measurement results obtained after T331 expires before msg1.)
    - Support: CATT, Apple, CMCC, HW, E///, Nokia, OPPO
  + Measurement accuracy
    - Support: E///
    - Object: OPPO
  + Rel-18 early measurement reporting of both Rel-16 EMR and cell-reselection measurements.
    - Support: Nokia, MTK
* Recommended WF
  + Discuss candidate solutions.

**Issue 4-3-1-1: test coverage for CHO including target MCG and target SCG in NR-DC (obj.3)**

* Candidate solutions:
  + Option 1: (CATT, MTK, ZTE)
    - FR1-FR1 NR-DC to FR1-FR1 NR-DC
    - FR1-FR1 NR-DC to FR1-FR2 NR-DC
  + Option 2: (Apple)
    - FR1-FR1 NR-DC to FR1-FR1 NR-DC,
    - FR1-FR2 NR-DC to FR1-FR1 NR-DC,
    - FR1-FR1 NR-DC to FR1-FR2 NR-DC,
    - FR1-FR2 NR-DC to FR1-FR2 NR-DC.
    - Introduce test applicability to clarify that UE only needs to test one of the test cases or one of the configurations if UE supports multiple NR-DC combinations.
  + Option 2a: (CMCC, HW, Nokia)
    - FR1-FR1 NR-DC to FR1-FR1 NR-DC,
    - FR1-FR2 NR-DC to FR1-FR1 NR-DC,
    - FR1-FR1 NR-DC to FR1-FR2 NR-DC,
    - FR1-FR2 NR-DC to FR1-FR2 NR-DC.
  + Option 3: Introduce test cases with multiple configurations to cover as many DC combination as possible for enhanced CHO configuration. One new test case for CHO with target MCG and candidate SCG. (E///)
  + Option 4: (vivo)
    - FR1-FR1 NR-DC to FR1-FR1 NR-DC
      * SMTC of target known PSCell is present in reconfigurationWithSync
      * parallel processing
    - FR1-FR2 NR-DC to FR1-FR2 NR-DC
      * SMTC of target unknown PSCell is present in targetcellSMTC-SCG-r16 but not in reconfigurationWithSync
      * sequential processing.
  + Option 5: (QC)
    - Test case is not needed.
* Recommended WF
  + Discuss candidate solutions.

**Issue 4-3-2-1: test coverage for CHO including target MCG and candidate SCG in NR-DC (obj.4)**

* Candidate solutions:
  + Option 1: (CATT, MTK, ZTE)
    - FR1-FR1 NR-DC to FR1-FR1 NR-DC
    - FR1-FR1 NR-DC to FR1-FR2 NR-DC
  + Option 1a: (Apple, vivo)
    - FR1-FR1 NR-DC to FR1-FR1 NR-DC
    - FR1-FR1 NR-DC to FR1-FR2 NR-DC (with testability issue)
  + Option 2: (CMCC, HW, Nokia)
    - FR1-FR1 NR-DC to FR1-FR1 NR-DC,
    - FR1-FR2 NR-DC to FR1-FR1 NR-DC,
    - FR1-FR1 NR-DC to FR1-FR2 NR-DC,
    - FR1-FR2 NR-DC to FR1-FR2 NR-DC.
  + Option 3: Introduce test cases with multiple configurations to cover as many DC combination as possible for enhanced CHO configuration. One new test case for CHO with target MCG and candidate SCG with CPC. (E///)
  + Option 4: (QC)
    - Test case is not needed.
* Recommended WF
  + Discuss candidate solutions.

8.17 Dual Tx/Rx Multi-SIM for NR

8.17.1 RRM requirements maintenance for Rel-17 MUSIM gaps

[**R4-2403571**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403571.zip) **Big CR on Core maintenance for NR Dual Tx/Rx Multi-SIM**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4285 rev Cat: F   
 Source: vivo*

**Decision: Agreed.**

**R4-2401967 (NR\_DualTxRx\_MUSIM-Core) draft CR for beam failure detection for Rel-18 MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo, MTK*

**Decision: Revised to R4-2403476 (from R4-2401967).**

[**R4-2403476**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403476.zip) **(NR\_DualTxRx\_MUSIM-Core) draft CR for beam failure detection for Rel-18 MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo, MTK*

**Decision: Endorsed.**

**R4-2401968 (NR\_DualTxRx\_MUSIM-Core) draft CR for candidate beam detection for Rel-18 MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo, MTK*

**Decision: Revised to R4-2403477 (from R4-2401968).**

[**R4-2403477**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403477.zip) **(NR\_DualTxRx\_MUSIM-Core) draft CR for candidate beam detection for Rel-18 MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo, MTK*

**Decision: Endorsed.**

**R4-2401969 (NR\_DualTxRx\_MUSIM-Core) draft CR for RLM for Rel-18 MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo, MTK*

**Decision: Revised to R4-2403478 (from R4-2401969).**

[**R4-2403478**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403478.zip) **(NR\_DualTxRx\_MUSIM-Core) draft CR for RLM for Rel-18 MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo, MTK*

**Decision: Endorsed.**

**R4-2401970 (NR\_DualTxRx\_MUSIM-Core) draft CR for TRP specific Link Recovery Procedures for Rel-18 MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo, MTK*

**Decision: Revised to R4-2403479 (from R4-2401970).**

[**R4-2403479**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403479.zip) **(NR\_DualTxRx\_MUSIM-Core) draft CR for TRP specific Link Recovery Procedures for Rel-18 MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo, MTK*

**Decision: Endorsed.**

**R4-2401971 (NR\_DualTxRx\_MUSIM-Core) draft CR for Carrier-specific scaling factor for Rel-18 MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Postponed.**

**R4-2401972 (NR\_DualTxRx\_MUSIM-Core) draft CR for NR intra or inter-frequency measurement for Rel-18 MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Postponed.**

8.17.1.1 General aspects

**R4-2400877 On maintenance issues for MUSIM genearl aspects**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2400963 Remaining issues on MUSIM General**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the general rules for MUSIM gaps

**Decision: Noted.**

**R4-2401008 Discussion on general RRM requirements for Rel-17 MUSIM gaps**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401189 Discussion on general issues for Rel-17 MUSIM gaps**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401735 General aspects and need for mandatory MUSIM gaps**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.17.1.2 Collisions handling and others

**R4-2400964 Remaining issues on collision between MUSIM**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the priority rules for MUSIM gaps

**Decision: Noted.**

**R4-2400965 CR on MUSIM** applicability **requirement**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4065 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

The CR for MUSIM applicability

**Decision: Postponed.**

**R4-2401009 Discussion on MUSIM gap collisions handling**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401190 draftCR on impact on RLM and link recovery due to MUSIM gaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: xiaomi*

**Decision: Merged.**

[**R4-2403349**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403349.zip) **draftCR on impact on RLM and link recovery due to MUSIM gaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: xiaomi*

**Decision: Withdrawn.**

**R4-2401736 Discussion on collisions handling and MUSIM operations**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2401737 DraftCR collisions handling and MUSIM operations**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Clarifications of the UE collision handling and requirements when configured with MUSIM

**Decision: Postponed.**

[**R4-2403350**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403350.zip) **DraftCR collisions handling and MUSIM operations**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Clarifications of the UE collision handling and requirements when configured with MUSIM

**Decision: Withdrawn.**

**R4-2401823 Discussion on collisions between gaps and priority rules**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402172 draftCR on RRM requirements for MUSIM gaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403351 (from R4-2402172).**

[**R4-2403351**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403351.zip) **draftCR on RRM requirements for MUSIM gaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2402173 Discussion on remaining issues in RRM requirements for MUSIM**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402206 On maintenance issues for MUSIM collision handling and others**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2402899 Draft CR on correction for R18 MUSIM gap collision handling requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2403352 (from R4-2402899).**

[**R4-2403352**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403352.zip) **Draft CR on correction for R18 MUSIM gap collision handling requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

**R4-2402900 Draft CR on correction for L3 measurement requirements due to R18 MUSIM gaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2403353 (from R4-2402900).**

[**R4-2403353**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403353.zip) **Draft CR on correction for L3 measurement requirements due to R18 MUSIM gaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

**R4-2402901 Draft CR on correction for L1 and PRS measurement requirements due to R18 MUSIM gaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2403547 (from R4-2402901).**

**[R4-2403547](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403547.zip) Draft CR on correction for L1 and PRS measurement requirements due to R18 MUSIM gaps**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

8.17.2 RRM performance requirements

**R4-2400878 Further discussion on RRM performance requirements for MUSIM**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2400966 Discussions on test cases in MUSIM gaps**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the general rules for MUSIM gap test cases

**Decision: Noted.**

**R4-2401010 Discussion on test case design for MUSIM gap**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401039 (NR\_DualTxRx\_MUSIM-Perf) Discussion on performance requirements for MUSIM gaps**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2401188 Discussion on RRM performance requirements for Rel-17 MUSIM gaps**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401219 Scope of RRM performance for Rel-17 MUSIM gaps**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2401459 (NR\_DualTxRx\_MUSIM-Perf) Discussion on performance part for MUSIM gaps**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2401741 RRM performance requirements for NR\_DualTxRx\_MUSIM**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402174 Discussion on RRM test cases for MUSIM**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402898 Discussion on the performance part requirements for MUSIM**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

8.17.3 Moderator summary and conclusions

Topic: [110][223] NR\_DualTxRx\_MUSIM

**R4-2400759 Topic summary for [110][223] NR\_DualTxRx\_MUSIM**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403254**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403254.zip) **LS on MUSIM capability**

*Type: LS out For: Approval  
 To: RAN2  
 Source: vivo*

Nokia: are we going to capture all the UE features for MUSIM?

E///: RAN2 has already defined this UE feature with slightly different wording. Need to align the wording.

Session Chair: the LS is withdrawn since RAN2 has already agreed this UE feature.

**Decision: Withdrawn.**

[**R4-2403348**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403348.zip) **WF on NR Dual TxRx Multi-SIM**

*Type: other For: Approval  
 Source: vivo*

**Decision: Approved.**

**Online session (Tuesday Feb 27, 2024)**

**Issue 2-1-1: Relationship between priority based solution and “keep” solution**

* Proposals
  + P1: A UE supporting feature 43-1 shall support both priority-based solution and keep solution (oppo)
  + P2: A UE supporting MUSIM gaps shall at least support priority based solution. A UE supporting MUSIM gaps may support keep solution. (ZTE)

*Recommendations: Check P2 is agreeable.*

*Moderator note: The agreed UE feature 43-1 captured in agreed WF R4-2321613 was not captured by RAN4 LS R4-2321730 or R4-2321823*

*Recommendations: Sent the following agreed UE capability at RAN4 109 (captured in WF R4-2321613) in a LS during the meeting.*

Moderator: P2 is the common understanding.

* + P2: A UE supporting MUSIM gaps shall at least support priority based solution. A UE supporting MUSIM gaps may support keep solution.

**Sub-topic 3-1 Test case design**

**Issue 3-1-8: Configuration on MUSIM gap pattern, ga priority or whether use “keep solution” in the test case**

* Proposals
  + P1: Gap pattern configuration: MUSIM gap patterns used in the test, together with other information like priority or “keep solution”, can be directly configured by NW A. (vivo, China Telecom, Huawei)
    - No test cases defined for priority or collision handling solution indicated by UE (vivo)
    - suggest RAN4 to further discuss how to ensure that the MUSIM gaps directly configured by NW A can be supported by UE. For example, UE reports in advance its supported MUSIM gap patterns. (China Telecom)
  + P2: RAN4 to discuss how to verify the expected MUSIM gaps behaviour following the test cases expected (Ericsson)
  + P3: MUSIM gaps are requested by UE based on NW-B’s SSB and paging occasions emulated by TE. The MUSIM gaps not matched with the test purpose could be rejected by TE or excluded in the final statistics (oppo)
  + P4: RAN4 consult RAN5 on the feasibility of testing UE initiating MUSIM gaps request from the TE; MUSIM gaps configurations (offset, MGRP, MGL, priority) can be discussed independently in each TC (MTK)

Recommendations: RAN4 starts performance work based on the assumption that MUSIM gaps and whether “keep solution” is used have been configured by NW A.

For functionality of UE request MUSIM gaps

* Option 1: need not be verified
* Option 2: other options

vivo: With this, we can start the test case design.

MTK: we may need to chek with RAN5.

Nokia: If UE request a MUSIM pattern not supported by the network, and the network will give MUSIM gap to UE. Cover both keep and priority based if test case is defined.

Apple: On verifying the functionality of UE request MUSIM gaps, it is not clear what will be verified.

vivo: can further discuss whether to verify the functionality of UE request MUSIM gaps.

QC: We prefer not to define the test case. But if all other companies want to test it, we need a test mode in which network can configure MUSIM gap based on the request, e.g, the request from TE. BS can not configure the gap without any request.

HW: In Rel-17, RAN5 has already defined signaling for gap request procedure. Whether to verify the functionality of UE request MUSIM gaps: not verify, or up to RAN5.

Nokia: The TE may not support all the MUSIM gaps.

E///: not necessary to test the functionality of UE request MUSIM gaps.

Agreement:

RAN4 starts performance work based on the assumption that MUSIM gaps requested by UE can be configured by TE. Meanwhile, check the testability considering the following aspects:

* Further check the issue in case TE cannot support the gap requested by UE.

**Issue 3-1-2: Test case setup**

* Proposals
  1. Scenario: Only define test cases for NR SA scenario for FR1 and FR2 (vivo Ericsson)
  2. L1 impact: no test case defined for L1 measurements (vivo oppo Huawei)
  3. DRX: test cases for non-DRX only (vivo Ericsson oppo MTK)
  4. SBI reporting: Define test case without SBI reporting (vivo Ericsson oppo)
  5. Measurement target: Consider SSB only (vivo MTK）
  6. per-UE gap and per-FR gap: all gaps in the test case are per UE gaps only (vivo Ericsson oppo)
  7. Overlapping scenario: only consider fully non-overlap and partially partial overlap cases (vivo)
  8. AWGN channel (oppo)

*Recommendations: Check whether all these items are agreeable*

**Issue 3-1-3: Whether verify “keep solution” in test cases**

* Proposals
  + Option 1: Verify both priority-based solution and keep solution (vivo CMCC, xiaomi, China Telecom, Nokia)
  + Option 2: Test priority-based solution for collision between MUSIM gaps (Huawei)
  + Option 3: FFS on “keep solution” (MTK)

*Recommendations:*

**Issue 3-1-4: Whether consider collision involved with Type-1 gap in test cases**

* Proposals
  + Option 1: Type of gaps to be considered: MUSIM and type-2 gaps, Type-1 gaps (vivo Ericsson CMCC Nokia)
  + Option 2: No test for collision between MUSIM gaps and Type-1 MG (oppo Huawei)

*Recommendations:*

**Issue 1-1-1: Mandatory MUSIM gap patterns or constraints on MUSIM gap request from UE side**

* Proposals
  + P1: No need to introduce mandatory MUSIM gap patterns and constraints on MUSIM gap request from UE side (oppo xiaomi Huawei)
  + P2: Define 1 or 2 mandatory MUSIM gap patterns, as minimum the UE shall support MUSIM gap 6ms MGL and 160ms MGRP (Nokia)
  + P3: UE support at least one MUSIM gap pattern within a subset of MUSIM gap patterns and UE shall know the preferred MUSIM gap patterns from NW before UE requesting the MUSIM gaps.(Ericsson)
  + P4: For compromise, when UE requests more than one periodic MUSIM gaps, at least one MUSIM gap has a MGRP larger than x ms where x could be 1280 (vivo)

*Recommendations: Suggest to consider compromise between simply “Yes” and “No”*

8.18 NR NTN enhancement

8.18.6 RRM core requirements

Agreement: The core part of NR NTN RRM is closed.

[**R4-2403572**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403572.zip) **Big CR to TS 38.133 on RRM requirements for NR NTN enhancement**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4286 rev Cat: B   
 Source: Qualcomm*

**Decision: Endorsed.**

**R4-2400486 Reply LS on RAN2 agreements for satellite switch with resync**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: Apple*

**Decision: Noted.**

**R4-2402788 (NR\_NTN\_enh-Core) 1 NTN support for frequency band above 10GHz**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

8.18.6.1 NR-NTN RRM requirements in above 10 GHz bands

**R4-2400123 Discussion on NTN RRM requirements in above 10GHz bands**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2400124 Reply LS on the system parameters for NTN above 10 GHz**

*Type: LS out For: Approval  
 to RAN1  
 Source: CATT*

**Decision: Noted.**

**R4-2400484 On NR-NTN RRM requirements in above 10 GHz bands**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2400511 Motivation to support mobile VSAT in NGSO deployment scenarios**

*Type: discussion For: Decision  
 Source: Eutelsat Group*

**Decision: Noted.**

**R4-2400943 Discussion on RRM requirements for NR NTN UE in above 10GHz bands**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2401016 Discussion on RRM requirements for NTN above 10 GHz bands and other enhancement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401192 Discussion on RRM requirements for NTN bands above 10GHz**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401497 Discussion on remain issues for NR-NTN RRM requirements in above 10 GHz bands**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401596 RRM requirements in above 10 GHz bands**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

RRM requirements in above 10 GHz bands

**Decision: Noted.**

**R4-2401821 Discussion on NR-NTN deployment in above 10GHz bands**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401830 Reply LS to RAN1 on the system parameters for NTN above 10GHz**

*Type: LS out For: Approval  
 to RAN1  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402192 Discussion on RRM requirements for NTN in Ka band**

*Type: LS out For: Approval  
 to RAN1  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402193 draftCR on measurement requirements for NTN in Ka band**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403495 (from R4-2402193).**

[**R4-2403495**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403495.zip) **draftCR on measurement requirements for NTN in Ka band**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2402194 draftCR for RRM impacts of DMRS bundling**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

**R4-2402314 Response LS on the systems parameters for NTN above 10 GHz**

*Type: LS out For: Approval  
 to RAN1  
 Source: Ericsson*

**Abstract:**

RAN1 sent a reply LS in R1-2312553 with questions related to a RAN4 LS R4-2305926. In this reply LS we answer the questions from RAN1.

**Decision: Noted.**

**R4-2402382 Timing considerations and LS reply to RAN1 on FR2-NTN.**

*Type: discussion For: Decision  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

MCC: This is a discussion paper on timing considerations for FR2-NTN. In the annex of this paper is a proposed draft LS to RAN1 on Further LS reply on the system parameters for NTN above 10 GHz.

**Decision: Noted.**

**R4-2402485 Discussion on RRM requirements for NR-NTN UEs in above 10GHz bands**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2402488 Draft CR on VSAT UE timing requirements for NTN in above 10GHz**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Samsung*

**Decision: Revised to R4-2403496 (from R4-2402488).**

[**R4-2403496**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403496.zip) **Draft CR on VSAT UE timing requirements for NTN in above 10GHz**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Samsung*

**Decision: Endorsed.**

**R4-2402928 Reply LS on the system parameters for NTN above 10 GHz**

*Type: LS out For: Approval  
 to RAN1  
 Source: THALES*

**Abstract:**

Response to: LS R1-2312553 System parameters for NTN above 10 GHz from RAN1

**Decision: Noted.**

**R4-2402930 Remaining issues on NTN UL Timing Accuracy for above 10 GHz**

*Type: discussion For: Discussion  
 Source: THALES*

**Abstract:**

References and solutions for timing error requirement for case 3 (mobile UE with GSO connectivity) for 120kHz. [Higher value than 7.5]\*64\*Tc to be replaced by [8.5]\*64\*Tc.

**Decision: Noted.**

8.18.6.2 Network verified UE location

**R4-2401193 Discussion on Network verified UE location**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401499 Discussion on RRM impact on Network verified UE location in NTN**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401597 Network verified UE location**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Network verified UE location

**Decision: Noted.**

**R4-2402195 Discussion on RRM requirements for NW verified location**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402383 Discussion on the required modifications on Rx-Tx time difference for NTN**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402708 DraftCR to 38.133 on measurement requirements for UE verified Location in NTN**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403497 (from R4-2402708).**

[**R4-2403497**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403497.zip) **DraftCR to 38.133 on measurement requirements for UE verified Location in NTN**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2402709 DraftCR to 38.133 on performance requirements for UE verified Location in NTN**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403498 (from R4-2402709).**

[**R4-2403498**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403498.zip) **DraftCR to 38.133 on performance requirements for UE verified Location in NTN**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2402789 (NR\_NTN\_enh-Core) Network verified UE location**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

8.18.6.3 NTN-TN and NTN-NTN mobility and service continuity enhancements

**R4-2400125 Reply LS on satellite switch with resync**

*Type: LS out For: Approval  
 to RAN2, RAN1  
 Source: CATT*

**Decision: Noted.**

**R4-2400219 On NTN mobility and service continuity enhancements**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2400485 On mobility and service continuity for eNTN**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2400846 (NR\_NTN\_enh-Core) Discussion on the LS from RAN2 and RRM core requirement for NR NTN mobility enhancements**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2400944 Discussion on NTN service continuity enhancement**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2401017 Discussion on RRM requirements for NR NTN mobility enhancement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401194 Discussion on NTN-TN and NTN-NTN mobility and service continuity enhancements**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401498 Discussion on remain issues for NTN-NTN mobility enhancements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401500 Draft CR on RRC\_CONNECTED state mobility for NTN**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2403499 (from R4-2401500).**

[**R4-2403499**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403499.zip) **Draft CR on RRC\_CONNECTED state mobility for NTN**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2401501 Draft CR on cell reselection requirements for NTN-NTN mobility**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Not pursued.**

[**R4-2403500**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403500.zip) **Draft CR on cell reselection requirements for NTN-NTN mobility**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Withdrawn.**

**R4-2401598 NTN-TN and NTN-NTN mobility and service continuity enhancements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

NTN-TN and NTN-NTN mobility and service continuity enhancements

**Decision: Noted.**

**R4-2401822 Discussion on NTN-TN and TN-NTN mobility**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401825 (NR\_NTN\_enh–Core) Modify the section number for Tmeasure in handover delay**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4176 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation*

**Abstract:**

The CR number is missing on the CR coversheet. Parsing Failure: Change request number wrong on CR cover for TDoc R4-2401825. Database value : 4176. CR cover value : xxx. A revision will be required.

**Decision:** The document was **withdrawn**.

**R4-2401963 (NR\_NTN\_enh–Core) Modify the section number for Tmeasure in handover delay.**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4203 rev Cat: F (Rel-18)  
  
 Source: ZTE*

**Decision: Merged.**

**R4-2402196 Discussion on mobility enhancements in NTN**

*Type: LS out For: Approval  
 to RAN2, RAN1  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402197 draftCR on requirements for satellite switch with re-sync**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

**R4-2402384 Considerations on Satellite Switching with re-sync**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402486 Discussion on RRM requirements for NTN-NTN and NTN-TN mobility**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2402790 (NR\_NTN\_enh-Core) Mobility requirements for NTN below 10GHz**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

8.18.7 RRM performance requirements

**R4-2401018 Discussion on RRM performance requirements for NR NTN mobility enhancement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401599 RRM performance requirements for NTN**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

RRM performance requirements for NTN

**Decision: Noted.**

**R4-2402198 Discussion on performance requirements for Rel-18 NTN**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402385 Test cases scope and configuration for NTN enhancements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402487 Discussion on RRM performance part for Rel-18 NTN**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

8.18.9 Moderator summary and conclusions

Topic: [110][224] NR\_NTN\_enh

**R4-2400760 Topic summary for [110][224] NR\_NTN\_enh**

*Type: other For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403256**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403256.zip) **Ad-hoc minutes on RRM requirements for NR\_NTN\_enh**

*Type: other For: Approval  
 Source: Samsung*

**Decision: Approved.**

[**R4-2403492**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403492.zip) **WF on RRM requirements for NR\_NTN\_enh**

*Type: other For: Approval  
 Source: Qualcomm*

**Decision: Approved.**

[**R4-2403493**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403493.zip) **Reply LS on RAN2 agreements for satellite switch with resync**

*Type: LS out For: Approval  
 To: RAN2, Cc: RAN1  
 Source: Apple*

**Decision: Approved.**

[**R4-2403494**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403494.zip) **Further LS reply on the system parameters for NTN above 10 GHz**

*Type: LS out For: Approval  
 To: RAN1  
 Source: Nokia*

**Decision: Approved.**

**Online session (Tuesday Feb 27, 2024)**

**Issue 1-6B: Te\_NTN for 60kHz and 120kHz in Case3**

Agreement:

Further discuss and select from alt. 1 or alt. 2 on Thursday:

Alt 1:

single value -> [9.5] Ts

Alt 2:

Specify two values with UE capability to complete the core requirements in Rel-18

* Set 1: [8.5] Ts
* Set 2: [12] Ts

HW, Apple object Alt1.

Nokia, ZTE, E/// object Alt2.

Session Chair: any concern on the tentative agreement in adhoc.

Nokia, ZTE: has concern on the value in set 2.

QC: We don’t prefer two sets. We can compromise to close the WI.

ZTE: 9Ts is the biggest we can accept.

E///: Single value of 9.5Ts is ok.

Nokia: Single value of 9Ts is ok.

Apple: UE speed and update rate of xx need to be considered.

**Issue 4-3: NTN to NTN time-based measurement initiation for cell reselection in earth-moving cell**

**Moderator’s WF**

* For time-based NTN to NTN cell reselection in earth-moving cell, reuse the existing RRC idle/inactive mode requirements (4.2C and 5.1C) referring to ‘t-service’.
  + Note: “UE shall start measurement of the neigbhor cells indicated by the serving cell before t-Service is reached according to the requirements” is already stated in the existing requirements.

Session Chair: any objection on the recommendation?

Agreement:

For companies not supporting the moderator’s WF, to have offline discussion with other companies. If consensus on any other compromised alternative can be achieved, we can go with that alternative. If not, the moderator’s WF will be agreed on Thursday.

**Issue 4-4: NTN to NTN location-based measurement initiation for cell reselection in earth-moving cell**

**Moderator’s WF**

* For location triggered cell reselection measurement for earth moving cell, a margin of X meters for determining the distance between UE and reference location is added. Decide a specific value for X (20 ~ 80).

Moderator: check 80 is agreeable?

CMCC: 70 is more reasonable.

ZTE: 80.

Nokia: 50 following the legacy. satellite location error margin is not needed. Can compromise.

Samsung: 30m for satellite location error margin and 50m for GNSS error margin is used for the legacy requirement. Considering the earth-moving, additional margin is needed. The final value could be 80m.

Agreement:

X = [80] m

**Issue 3-2: Measurement period and accuracy requirements on RTD**

Agreement:

* Nsample = 1 for UE Rx-Tx measurement period requirements
* Define additionally the single satellite based RTT requirement without MG based on the existing RTT requirements, given that the RTT requirement with MG was already agreed as baseline.

**Online session (Thursday, 29 February 2024)**

**Issue 1-3: Further relaxation of Te\_NTN for PRACH**

**Agreement:**

* Define same Te\_NTN requirements for all UL channels, i.e. no separate Te\_NTN requirement for PRACH

**Issue 1-6B: Te\_NTN for 60kHz and 120kHz in Case3**

Nokia: We can compromise to Alt 2 as long as we have a side condition:  
Alt 2a:

Alt 2 + ”If the UE updates its GNSS position, and difference between the TA calculated using UE new and old positions is above the UL Transmit Timing inaccuracy, UE shall perform a new RACH.”

Tentative agreement:

* For 120kHz of UL SCS in case3, Te\_NTN [Ts] is X.
  + - [10] Ts

**Issue 1-7: NTA-offset**

**Agreement:**

* NTA,offset for FR2-NTN is 0.

**Issue 1-12: Applicability of UL timing requirements for PUSCH DMRS bundling**

**Agreement:**

* The existing UL timing accuracy requirements apply to UL transmissions in TDW for PUSCH DMRS bundling.

**Issue 2-7: Measurement gap**

**Agreement:**

* For FR2-NTN support, UE is not required to support per-FR gap (e.g. independentGapConfig). FR2-NTN capable UE is not expected to perform measurements on FR1-NTN.

**Issue 2-13: UE capability**

**Agreement:**

* The following UE capabilities introduced in Rel-17 NR NTN are not applicable for each UE type (Type 1 and Type 2) in FR2-NTN:
  + maxNumber-NGSO-SatellitesWithinOneSMTC-r17
  + parallelMeasurementWithoutRestriction-r17
  + parallelSMTC-r17
  + maxNumber-LEO-SatellitesPerCarrier-r17
  + parallelMeasurementGap-r17

**Issue 2-14: Draft reply LS to RAN2 (R4-2400007 /R1-2312553, Response on LS on the system parameters for NTN above 10 GHz)**

**Agreement: (Nokia will draft a reply LS)**

* RAN4 to send a reply LS to RAN2 (R4-2400007/R1-2312553, Response on LS on the system parameters for NTN above 10 GHz).

**Issue 3-3: Measurement period and accuracy requirements on DL timing drift**

**Agreement:**

* No UE requirement on DL timing drift measurement/calculation.

**Issue 3-4: Measurement accuracy requirements on UL timing drift**

**Agreement:**

* Further discussion in maintenance phase is not precluded based on contribution driven.
  + No new applicability condition for UE Rx-Tx measurement requirements related to amount of variation in the applied TA during measurement period.

**Issue 3-5: Other impact on RRM**

**Agreement:**

* When UE switches to a new satellite switch with same PCI, and no UE requirement applies. RAN4 can further discuss whether to stop or re-start the measurement in maintenance phase based on contribution driven.

**Issue 4-1: TN to NTN cell reselection**

**Agreement:**

* Measurement requirements on inter-frequency cell reselection from NR TN to NTN
  + - * Kcarrier\_TN \* Tdetect/measure/evaluate,NR\_Inter\_TN + ~~K~~~~carrier\_HST~~ ~~\* T~~~~detect/measure/evaluate,NR\_Inter\_HST~~ ~~+~~ + T\_GNSS if the UE does not support the feature for enhanced RRM requirements defined in TS38.306 [14] or if the enhancedMeasurementLEO-r17 is not enabled, or within Kcarrier\_TN \* Tdetect/measure/evaluate,NR\_Inter\_TN + ~~K~~~~carrier\_HST~~ ~~\* T~~~~detect/measure/evaluate,NR\_Inter\_HST~~ ~~+~~ if the UE supports the feature for enhanced RRM requirements defined in TS38.306 [14] and the enhancedMeasurementLEO-r17 is enabled.
        + The parameter Kcarrier\_TN is the number of NR TN inter-frequency carriers indicated by the serving cell.
        + The parameter Kcarrier\_NTN is the number of NR NTN inter-frequency carriers indicated by the serving cell.
        + Tdetect/measure/evaluate,NR\_Inter\_TN is the NR TN inter-frequency cell re-selection requirement defined in Table 4.2.2.4-1 in TS38.133
        + Tdetect/measure/evaluate,NR\_Inter\_NTN is the NR NTN inter-frequency cell re-selection requirement defined in Table 4.2C.2.4-1 in TS38.133
  + T\_GNSS is TTFF (Time To First Fix) of which value is left undefined in RRM spec. If UE GNSS has been switched ON, T\_GNSS can be assumed zero.
    - The note below is to be implemented in RRM requirement spec:
      * the above requirement does not assume UE always performs NTN cell detection/measurement as well as TN cells. ~~It is left to UE implementation when to start NTN cell detection/measurement.~~
* Implement the requirements for TN-to-NTN cell reselection in IDLE mode in a new subclause under clause 4.2.
* FFS how to implement in CR the impact to the TN-to-TN requirement under this scenario in the maintenance phase.

Updated agreement on top of adhoc agreement:

* + The requirements apply provided that network provides SIB19. UE is not required to ensure having a valid version of SIB19 and the exact time of reacquiring SIB19 is up to UE implementation.

**Issue 4-2: NTN to TN cell reselection**

**Agreement:**

* Measurement requirements on cell reselection from NTN to NR TN (inter-frequency intra-RAT)
  + - Kcarrier\_TN \* Tdetect/measure/evaluate,NR\_Inter\_TN + ~~[K~~~~carrier\_HST~~ ~~\* T~~~~detect/measure/evaluate,NR\_Inter\_HST]~~ ~~+~~ if the UE does not support the feature for enhanced RRM requirements defined in TS38.306 [14] or if the enhancedMeasurementLEO-r17 is not enabled, or within Kcarrier\_TN \* Tdetect/measure/evaluate,NR\_Inter\_TN ~~+ K~~~~carrier\_HST~~ ~~\* T~~~~detect/measure/evaluate,NR\_Inter\_HST~~ + if the UE supports the feature for enhanced RRM requirements defined in TS38.306 [14] and the enhancedMeasurementLEO-r17 is enabled.
      * The parameter Kcarrier\_TN is the number of NR TN inter-frequency carriers indicated by the serving cell, except for the frequency carrier where there is no coverage of that frequency based on the provide TN cell coverage information and UE GNSS position information.
      * The parameter Kcarrier\_HST is the number of NR TN inter-frequency carriers which are configured with highSpeedMeasInterFreq-r17 indicated by the serving cell, except for the frequency carrier where there is no coverage of that frequency based on the provide TN cell coverage information and UE GNSS position information.
      * The parameter Kcarrier\_NTN is the number of NR NTN inter-frequency carriers indicated by the serving cell.
      * Tdetect/measure/evaluate,NR\_Inter\_TN is the NR TN inter-frequency cell re-selection requirement defined in Table 4.2.2.4-1 in TS38.133
      * Tdetect/measure/evaluate,NR\_Inter\_NTN is the NR NTN inter-frequency cell re-selection requirement defined in Table 4.2C.2.4-1 in TS38.133
    - When the distance between the UE and tn-ReferenceLocation is larger than tn-DistanceRadius +50m, the UE is allowed to not perform measurements on the TN frequency in the corresponding area.
* Measurement requirements on cell reselection from NTN to LTE TN (inter-RAT)
  + - ~~N~~~~EUTRA\_carrier\_HST~~ ~~\* [T~~~~detect/measure/evaluate,EUTRAN\_HST~~ ~~+~~ NEUTRA\_carrier~~]~~  \* Tdetect/measure/evaluate,EUTRAN
      * The parameter NEUTRA\_carrier\_HST is the total number of configured E-UTRA carriers indicated to meet high speed requirements in the neighbour frequency list, except for the frequency carrier where there is no coverage of that frequency based on the provide TN cell coverage information and UE GNSS position information.
      * The parameter NEUTRA\_carrier is the number of EUTRA TN carriers indicated by the serving cell, except for the frequency carrier where there is no coverage of that frequency based on the provide TN cell coverage information and UE GNSS position information.
    - When the distance between the UE and tn-ReferenceLocation is larger than tn-DistanceRadius +50m, the UE is allowed to not perform measurements on the TN frequency in the corresponding area.

**Issue 4-3: NTN to NTN time-based measurement initiation for cell reselection in earth-moving cell**

Agreement:

* For time-based NTN to NTN cell reselection in earth-moving cell, reuse the existing RRC idle/inactive mode requirements (4.2C and 5.1C) referring to ‘t-service’.
  + Note: “UE shall start measurement of the neigbhor cells indicated by the serving cell before t-Service is reached according to the requirements” is already stated in the existing requirements.

**Issue 5-1: NTN to NTN RACH-less (C)HO**

**Agreement: (f/u can be through CRs in the future meetings)**

* For RACH-less HO,
  + on PRACH in TIU
    - Leave TIU as is. RAN4 to add back PRACH to TIU if supported by RAN2 spec in maintenance phase, e.g.
      * PRACH if TA timer is not running and there is no PUCCH SR
      * PRACH if no valid configured grant based PUSCH is found
  + Remove SR on PUCCH from TIU
    - RAN4 to add back it to TUE if supported by RAN2 spec in maintenance phase.
* For RACH-less CHO,
  + The requirement for time-based CHO can be the baseline, with the following modification on TIU
    - For combination of RACH-less handover with time-based conditional handover, TIU can be a configured grant based PUSCH, dynamic grant based PUSCH, SR on PUCCH, according to NW configuration and scheduling.

**Issue 5-2-H1: (‘Hard’ Satellite switch) Separate link switch time instances for UL and DL**

**Agreement:**

* Do not define separate starting points for UL and DL for hard switch

**Issue 5-2-H2: (‘Hard’ Satellite switch) Interruption time**

**Agreement:**

* Starting point of the interruption time
  + t-Service
* Tsearch
  + Tfirst\_SSB [ms], where Tfirst\_SSB is the time to the end of the first complete SSB burst indicated by
    - SMTC of serving cell + ssb-TimeOffset + PDD propagation difference
* TIU
  + The interruption uncertainty in acquiring the first UL transmission resource, which can be a configured grant based PUSCH, dynamic grant based PUSCH, SR on PUCCH, according to NW configuration and scheduling, or PRACH if TA timer is not running and there is no PUCCH SR
  + Note: Anything not compliant with RAN2 spec, if identified, will be removed.
* From T-service until the satellite switch completion, the UE is allowed to skip measurements other cells and satellites than the target satellite

**Issue 5-2-S2: (‘Soft’ Satellite switch) Interruption time**

* **Agreement**: Satellite switch latency Requirement
  + If t-Service – t-serviceStart >= Tsearch + T∆ + Tmargin and UE is able to perform downlink synchronization with the target NGSO satellite and keep the connection (DL and UL) with the source NGSO satellite simultaneously
    - Satellite switch **ending pint** is **no later than** is Tprocessing + TIU from t-Service
  + Otherwise
    - Satellite switch **ending pint** is **no later than** Tsearch + T∆ + Tmargin + Tprocessing + TIU from t-serviceStart
  + Interruption is allowed only after t-Service

**Agreement:**

* Tsearch
  + Tfirst\_SSB [ms], where Tfirst\_SSB is the time to the end of the first complete SSB burst indicated by
    - SMTC of serving cell + ssb-TimeOffset + PDD propagation difference
* TIU (ending point of interruption is at TIU)
  + The interruption uncertainty in acquiring the first UL transmission resource, which can be a configured grant based PUSCH, dynamic grant based PUSCH, SR on PUCCH, according to NW configuration and scheduling, or PRACH if TA timer is not running and there is no PUCCH SR
  + Note: Anything not compliant with RAN2 spec, if identified, will be removed.
* T∆: Same as the existing requirements
* Tmargin: Same as the existing requirements
* Further discuss whether UE is allowed to skip or deprioritize measurements on the serving cell and neighbor cells from T-Start in maintenance phase

**Issue 5-3: NTN to NTN time and location-based trigger CHO enhancements**

**Agreement:**

* For NTN to NTN time or location only-based trigger CHO enhancements, the existing conditional CHO requirement defined in 6.1C.2.2 (DCHO = TRRC + TEvent\_DU + Tmeasure + Tinterrupt + TCHO\_execution, Tinterrupt = Tprocessing + TIU + T∆ + Tmargin) is reused with the following updates:
  + TEvent\_DU is the delay uncertainty which is the time from when the UE successfully decodes a conditional handover command until the time (condition T1-1) or location condition (both condition D1-1 and condition D1-2) is fulfilled.
  + Remove Tmeasure
  + Add Tsearch to Tinterrupt, i.e. Tinterrupt = Tprocessing + TIU + T∆ + Tmargin+ Tsearch, and the definition of Tsearch is the same as the existing one defined in [6.1C.1.2]

**Online discussion (Friday, 01 March 2024)**

**Issue 5-2-S2: (‘Soft’ Satellite switch) Interruption time**

**Agreement:**

* Satellite switch delay (Tsoft-switch), from t-serviceStart to the time instance for the first UL transmission to the target satellite, is defined as below:
  + Tsoft-switch = max(t-Service - t-serviceStart, Tsearch + T∆ + Tmargin) + Tprocessing + TIU
* ‘The time instance for the first UL transmission to the target satellite’ is no earlier than t-Service.

**Issue 5-2-S1: (‘Soft’ Satellite switch) RAN2 LS on soft satellite switch**

**Agreement:**

Further discuss on the solutions of alleviating the scheduling restriction problem can be further discussed in maintenance phase.

**Issue 1-6B: Te\_NTN for 60kHz and 120kHz in Case3**

**Agreement:**

* For 120kHz of UL SCS in case3, Te\_NTN [Ts] is X.
  + - [10] Ts
    - Further discussion on the side condition is not precluded in maintenance part based on contribution driven.

**Peformance part:**

**Issue 6-1: Configuration of test cases**

**Agreement:**

* Strive to reuse Rel-17 NR NTN test setup for satellite specific parameters. Any changes, if needed/identified for FR2-NTN, can be considered.

**Issue 6-2: NTN bands above 10 GHz**

**Agreement:**

* For FR2-NTN Type 1 and Type 2 UEs, the below are baseline. Type 1 and Type 2 UEs can have different sets of test cases.
  + RRC Idle and Inactive mobility in intra-satellite scenario
  + UL timing accuracy
  + L1-RSRP
  + RLM
  + L3 measurements in intra-satellite scenario
  + Intra-satellite Handover
  + Blind inter-satellite Handover
  + For relative accuracy for intra-frequency measurement, FFS whether to define requirements for intra-sat only based on the assumption of same Rx beam.

**Issue 6-3: NTN bands below 10 GHz**

**Agreement:**

* For FR1-NTN test cases, the below are baseline.
* Network verified UE location
* NTN-TN cell reselection
* NTN to NTN time-based measurement initiation for cell reselection in earth-moving cell, only for satellite switch
* NTN to NTN location-based measurement initiation for cell reselection in earth-moving cell, for cell switch
* NTN to NTN RACH-less (C)HO
* NTN to NTN Satellite switching without PCI change
  + Hard switch
    - RACH based
    - RACH-less
  + soft switch
    - RACH based
    - RACH-less
* NTN to NTN time-based trigger CHO enhancements
* NTN to NTN location- based trigger CHO enhancements

Agreement:

* For network verified UE location,
* For accuracy requirement, re-use the TN accuracy requirements, including both baseband estimation accuracy and RF calibration margin, and side conditions with Nsample = 1
* Existing report mapping for UE and gNB Rx-Tx are re-used for NW verified location

8.20 NR Network-controlled Repeaters

8.20.4 RRM core requirements maintenance

[**R4-2403573**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403573.zip) **Big CR on Core maintenance for NR Network-controlled Repeaters**

*Type: CR For: Agreement  
 38.106 v18.3.0 CR-0066 rev Cat: F   
  
 Source: ZTE*

**Decision: Agreed.**

**R4-2400106 ( NR\_netcon\_repeater-Core) CR to TS 38.106 on RRM core requirements for NR network-controlled repeaters**

*Type: CR For: Agreement  
 38.106 v18.3.0 CR-0054 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Endorsed.**

**R4-2402513 (NR\_netcon\_repeater-Core) Maintenance CR to TS 38.106: NCR RRM part**

*Type: draftCR For: Endorsement  
 38.106 v18.3.0 CR- rev Cat: (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Endorsed.**

8.20.5 RRM performance requirements

**R4-2401374 Discussion on RRM test cases for NR NCR-MT**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2402516 Discussion on NCR-MT RRM performance requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2402560 On NCR RRM Performance Requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.20.7 Moderator summary and conclusions

Topic: [110][225] NR\_netcon\_repeater

**R4-2400761 Topic summary for [110][225] NR\_netcon\_repeater**

*Type: other For: Information  
 Source: Moderator (ZTE)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403481**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403481.zip) **WF on NCR RRM performance requirements**

*Type: other For: Approval  
 Source: ZTE*

**Decision: Approved.**

**Online session (Thursday Feb 29, 2024)**

**Topic #1: NCR-MT RRM maintenance CRs**

**Issue 1-1: R4-2400106,** (NR\_netcon\_repeater-Core) CR to TS 38.106 on RRM core requirements for NR network-controlled repeaters, CATT

* Recommended
  + Endorsed and to be captured into the big CR for NCR-MT RRM core requirement maintenance

**Issue 1-2: R4-2402513,** (NR\_netcon\_repeater-Core) Maintenance CR to TS 38.106: NCR RRM part, ZTE

1. *In clause 2, there are two redundant RAN1 specification captured, to remove the duplicated spec in the reference section.*
2. *To clarify the applicability of timing requirement for Local area NCR-MT or both.*
3. *To clarify the applicability of RLM/BFD/BFR requirement for local area NCR-MT only.*
4. *Some other editorial changes in other clauses*

* Recommended
  + To be checked online and to be captured into the big CR for NCR-MT RRM core requirement maintenance

**NCR-MT Perf part**

**Sub-topic 1 NCR-MT Test cases**

* **Issue 1-**1: test case
  + Proposal 1: The following test case list are suggested to verify the RRM requirements of NR NCR-MT:

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Requirements** | **Type of Test** | **Basic test configuration** |
| 1 | RRC Re-establishment | RRC Re-establishment for NR NCR-MT | Developed based on the existing NR IAB-MT tests for in TS38.106 |
| 2 | Transmit Timing | NR NCR-MT transmit timing tests for FR1 | Developed based on the existing NR IAB-MT transmit timing tests for FR1 in TS38.106 |
| 3 | NR NCR-MT transmit timing tests for FR2 | Developed based on the existing NR IAB-MT transmit timing tests for FR2 in TS38.106 |
| 4 | Radio Link Monitoring | NR NCR-MT SSB based RLM out-of-sync test for FR1 | Developed based on the existing NR IAB-MT SSB based RLM out-of-sync test for FR1 in TS38.106 |
| 5 | NR NCR-MT SSB based RLM in-sync test for FR1 | Developed based on the existing NR IAB-MT SSB based RLM in-sync test for FR1 |
| 6 | NR NCR-MT CSI-RS based RLM out-of-sync test for FR1 | Developed based on the existing NR IAB-MT CSI-RS based RLM out-of-sync test for FR1 in TS38.106 |
| 7 | NR NCR-MT CSI-RS based RLM in-sync test for FR1 | Developed based on the existing NR IAB-MT CSI-RS based RLM in-sync test for FR1 in TS38.106 |
| 8 | NR NCR-MT SSB based RLM out-of-sync test for FR2 | Developed based on the existing NR IAB-MT SSB based RLM out-of-sync test for FR2 in TS38.106 |
| 9 | NR NCR-MT SSB based RLM in-sync test for FR2 | Developed based on the existing NR IAB-MT SSB based RLM in-sync test for FR2 in TS38.106 |
| 10 | NR NCR-MT CSI-RS based RLM out-of-sync test for FR2 | Developed based on the existing NR IAB-MT CSI-RS based RLM out-of-sync test for FR2 in TS38.106 |
| 11 | NR NCR-MT CSI-RS based RLM in-sync test for FR2 | Developed based on the existing NR IAB-MT CSI-RS based RLM in-sync test for FR2 in TS38.106 |
| 12 | Link recovery procedure | NR NCR-MT SSB based BFD and link recovery test for FR1 | Developed based on the existing NR IAB-MT SSB based BFD and link recovery test for FR1 in TS38.106 |
| 13 | NR NCR-MT CSI-RS based BFD and link recovery test for FR1 | Developed based on the existing NR IAB-MT CSI-RS based BFD and link recovery test for FR1 in TS38.106 |
| 14 | NR NCR-MT SSB based BFD and link recovery test for FR2 | Developed based on the existing NR IAB-MT SSB based BFD and link recovery test for FR2 in TS38.106 |
| 15 | NR NCR-MT CSI-RS based BFD and link recovery test for FR2 | Developed based on the existing NR IAB-MT CSI-RS based BFD and link recovery test for FR2 in TS38.106 |

* + Proposal 2: The RRM test cases apply for Local-area NCR-MT classes only.
  + Proposal 3: Introduce four NCR-MT TCs for Inter-/Intra-frequency RRC Re-establishment in FR1/FR2-1.
  + Proposal 4:Introduce two NCR-MT TCs for Transmit Timing for FR1/FR2-1.
  + Proposal 5:Introduce eight NCR-MT TCs for Radio Link Monitoring in non-DRX mode: for Out-of-sync /In-synch for FR1/ FR2-1 PCell configured with SSB-based/CSI-based RLM.
  + Proposal 6:Introduce four NCR-MT TCs for Beam Failure Detection and Link Recovery in non-DRX mode: for FR1 /FR2-1 PCell configured with SSB-based/CSI-RS-based BFD and LR.
  + Proposal 7: to reuse the IAB-MT RRM test case as baseline for NCR-MT RRM test case.
* Recommended WF
  + Proposal 1 is agreed
  + Proposal 2 is agreed

Agreement:

* + The following test case list are agreed to verify the RRM requirements of NR NCR-MT:

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Requirements** | **Type of Test** | **Basic test configuration** |
| 1 | RRC Re-establishment | RRC Re-establishment for NR NCR-MT | Developed based on the existing NR IAB-MT tests for in TS38.106 |
| 2 | Transmit Timing | NR NCR-MT transmit timing tests for FR1 | Developed based on the existing NR IAB-MT transmit timing tests for FR1 in TS38.106 |
| 3 | NR NCR-MT transmit timing tests for FR2 | Developed based on the existing NR IAB-MT transmit timing tests for FR2 in TS38.106 |
| 4 | Radio Link Monitoring | NR NCR-MT SSB based RLM out-of-sync test for FR1 | Developed based on the existing NR IAB-MT SSB based RLM out-of-sync test for FR1 in TS38.106 |
| 5 | NR NCR-MT SSB based RLM in-sync test for FR1 | Developed based on the existing NR IAB-MT SSB based RLM in-sync test for FR1 |
| 6 | NR NCR-MT CSI-RS based RLM out-of-sync test for FR1 | Developed based on the existing NR IAB-MT CSI-RS based RLM out-of-sync test for FR1 in TS38.106 |
| 7 | NR NCR-MT CSI-RS based RLM in-sync test for FR1 | Developed based on the existing NR IAB-MT CSI-RS based RLM in-sync test for FR1 in TS38.106 |
| 8 | NR NCR-MT SSB based RLM out-of-sync test for FR2 | Developed based on the existing NR IAB-MT SSB based RLM out-of-sync test for FR2 in TS38.106 |
| 9 | NR NCR-MT SSB based RLM in-sync test for FR2 | Developed based on the existing NR IAB-MT SSB based RLM in-sync test for FR2 in TS38.106 |
| 10 | NR NCR-MT CSI-RS based RLM out-of-sync test for FR2 | Developed based on the existing NR IAB-MT CSI-RS based RLM out-of-sync test for FR2 in TS38.106 |
| 11 | NR NCR-MT CSI-RS based RLM in-sync test for FR2 | Developed based on the existing NR IAB-MT CSI-RS based RLM in-sync test for FR2 in TS38.106 |
| 12 | Link recovery procedure | NR NCR-MT SSB based BFD and link recovery test for FR1 | Developed based on the existing NR IAB-MT SSB based BFD and link recovery test for FR1 in TS38.106 |
| 13 | NR NCR-MT CSI-RS based BFD and link recovery test for FR1 | Developed based on the existing NR IAB-MT CSI-RS based BFD and link recovery test for FR1 in TS38.106 |
| 14 | NR NCR-MT SSB based BFD and link recovery test for FR2 | Developed based on the existing NR IAB-MT SSB based BFD and link recovery test for FR2 in TS38.106 |
| 15 | NR NCR-MT CSI-RS based BFD and link recovery test for FR2 | Developed based on the existing NR IAB-MT CSI-RS based BFD and link recovery test for FR2 in TS38.106 |

* + The RRM test cases apply for Local-area NCR-MT classes only.

**Sub-topic 2 NCR-MT Test configuration**

* **Issue 1-**1: Test configuration
* **Proposal 1:** RAN4 to specify NCR-MT RRM test configurations by reusing the Appendix G.1 IAB-MT RRM test configurations from TS 38.174.
* **Proposal 2:** RAN4 to agree that similarly to IAB-MT, the actual NCR-MT RRM test can be conducted by any set of configuration parameters which are left to implementations and manufacturer declarations.
* **Proposal 3:** RAN4 to define conditions for measurements on NR Inter/Intra-frequency Cells for RRC Connection Re-establishment for Local Area IAB-MTs (like in Appendix H.1 in TS 38.174 for IAB-MT).
* **Proposal 4:** to add the test configuration of FDD bands on top of IAB-MT test configuration for NCR-MT;

Discussion:

ZTE: FR1 FDD, TDD and FR2 are supported for NCR. FDD not supported for IAB-MT yet.

Nokia: further check. Separte DL and UL for forward and control links, need to think about the detailed configuration.

ZTE: The comment is valid for legacy repeater, no much difference here from repeater side.

* Agreement:
  + RAN4 to specify NCR-MT RRM test configurations by reusing the Appendix G.1 IAB-MT RRM test configurations from TS 38.174 as baseline;
  + The actual NCR-MT RRM test can be conducted by any set of configuration parameters which are left to implementations and manufacturer declarations.
  + RAN4 to define conditions for measurements on NR Inter/Intra-frequency Cells for RRC Connection Re-establishment for Local Area IAB-MTs (like in Appendix H.1 in TS 38.174 for IAB-MT).
  + Further check: to add the test configuration of FDD bands on top of IAB-MT test configuration for NCR-MT;

**Sub-topic 3 Access beam switching delay**

*Open issues and candidate options before e-meeting:*

*This access beam switching delay requirement has been discussed in the previous meetings, it was agreed to not to define any specific requirement for it.*

* **Issue 1-**1: Access beam switching delay
* **Proposal 1:** RAN4 to introduce new test cases to verify latency of NCR-Fwd access link beam configuration/switching for LA NCR nodes supporting aperiodic and/or semi-persistent beam indication for access link**.**
* Recommended WF:
* To be further discussed online

ZTE: We have not discussed the RRM core requirements, and the procedure is defined in RAN1.

Nokia: In core requirements, we agreed not to add anything additionally in RAN4 on top of RAN1 spec. We can define test case based on RAN1 procedure. This is a new behavior for NCR. To ensure no loss due to late switch.

CATT: Agree with ZTE.

HW: Agree with ZTE/CATT.

E///: How we test the switch time for repeater? It is different from UE.

Nokia: No core requirement in RAN4, but core spec in RAN1. It is feasible to configure the test.

ZTE: Majority’s view is not define the test case. We had similar discussion for legacy repeater. It is difficult to configure and implement the test, very complicated.

Session chair: can we agree not to define the test?

Nokia: this feature is very important for NCR.

8.21 NR MIMO evolution for downlink and uplink

8.21.2 RRM core requirements maintenance

**R4-2402493 Big CR to TS 38.133 on NR MIMO evolution for downlink and uplink**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4236 rev Cat: F (Rel-18)  
  
 Source: Samsung*

**Abstract:**

reverved according to guidance

**Decision: Agreed.**

8.21.2.1 RRM requirements impacts

**R4-2400462 On RRM requirements for TDCP measurement**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2401173 Discussion on TDCP requirement for FeMIMO**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: ()  
  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401903 (NR\_MIMO\_evo\_DL\_UL-Core) Discussion on L1-RSRP measurement for R18 MIMO**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2402017 Discussion TDCP requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **withdrawn**.

**R4-2402836 Discussion on TDCP requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on TDCP requirements

**Decision: Noted.**

**R4-2402925 Discussion TDCP requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.21.2.2 Timing requirements for UL multi-DCI multi-TRP with two TAs

**R4-2401375 Discussion on timing requirements for UL multi-DCI multi-TRP with two TAs**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401376 DraftCR on maintaining timing requirements for multi-DCI multi-TRP with two Tas**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

[**R4-2403373**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403373.zip) **DraftCR on maintaining timing requirements for multi-DCI multi-TRP with two Tas**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2402018 Discussion on 2 TAs requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402019 Draf CR correction of 2 Tas timing requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403374 (from R4-2402019).**

[**R4-2403374**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403374.zip) **Draf CR correction of 2 Tas timing requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2402489 Discussion on timing requirements for multi-DCI multi-TRP with two TAs**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2402787 (NR\_MIMO\_evo\_DL\_UL-Core) DL Timing Reference for dual TA in mDCI-based mTRP**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2402837 Timing requirements for UL multi-DCI multi-TRP with two TAs**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Timing requirements for UL multi-DCI multi-TRP with two TAs

**Decision: Noted.**

**R4-2402838 draft CR to 38.133 on UL Transmit timing for MIMO Evoloution**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

draft CR to 38.133 on UL Transmit timing for MIMO Evoloution

**Decision: Revised to R4-2403375 (from R4-2402838).**

**[R4-2403375](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403375.zip) draft CR to 38.133 on UL Transmit timing for MIMO Evoloution**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

draft CR to 38.133 on UL Transmit timing for MIMO Evoloution

**Decision: Endorsed.**

8.21.2.3 Unified TCI framework

**R4-2400463 On RRM requirements for unified TCI framework with mTRP**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400464 CR for DL TCI state switching delay requirements for eUTCI for mDCI**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4016 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Postponed.**

[**R4-2403376**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403376.zip) **CR for DL TCI state switching delay requirements for eUTCI for mDCI**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4016 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2400465 CR for UL TCI state switching delay requirements for eUTCI for mDCI**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4017 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Postponed.**

[**R4-2403377**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403377.zip) **CR for UL TCI state switching delay requirements for eUTCI for mDCI**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4017 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2401059 CR CR on Active TCI state list update delay for eUTCI for sDCI**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4073 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Postponed.**

[**R4-2403378**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403378.zip) **CR CR on Active TCI state list update delay for eUTCI for sDCI**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4073 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2401174 Discussion on Unified TCI states for FeMIMO**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: ()  
  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401175 DraftCR on L1-RSRP measurement for cell with different PCI when UE supports RTD> CP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: xiaomi*

**Decision: Revised to R4-2403379 (from R4-2401175).**

[**R4-2403379**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403379.zip) **DraftCR on L1-RSRP measurement for cell with different PCI when UE supports RTD> CP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: xiaomi*

**Decision: Endorsed.**

**R4-2401325 Discussion on RRM requirements for uTCI extension to mTRP for Rel-18 MIMO**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401326 DraftCR on maintenance for Active TCI state switching delay for unified TCI for sDCI mTRP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

[**R4-2403380**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403380.zip) **DraftCR on maintenance for Active TCI state switching delay for unified TCI for sDCI mTRP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401904 (NR\_MIMO\_evo\_DL\_UL-Core) Discussion on R18 MIMO for Unified TCI framework**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2401938 draft CR on L1-RSRP RRM requirements in R18 NR MIMO evolution**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2403381 (from R4-2401938).**

[**R4-2403381**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403381.zip) **draft CR on L1-RSRP RRM requirements in R18 NR MIMO evolution**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2402020 Discussion on TCI switching delay**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402021 Draft CR correction of unified TCI requirements with mTRP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

[**R4-2403382**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403382.zip) **Draft CR correction of unified TCI requirements with mTRP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2402490 Discussion on enhanced unified TCI framework in Rel-18 MIMO evolution**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2402492 Draft CR on active downlink TCI state switching delay for unified TCI for sDCI mTRP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Samsung*

**Decision: Endorsed.**

[**R4-2403383**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403383.zip) **Draft CR on active downlink TCI state switching delay for unified TCI for sDCI mTRP**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Samsung*

**Decision: Withdrawn.**

**R4-2402839 Unified TCI state requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Unified TCI state requirements

**Decision: Noted.**

8.21.3 RRM performance requirements

**R4-2400466 On performance requirements and test cases for MIMO Evolution**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2401377 Discussion on RRM performance for R18 MIMO evolution**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401905 Discussion on test cases list for MIMO evo**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2402022 Discussion on RRM performance requirements for MIMO evolution**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402491 Discussion on RRM Performance part for Rel-18 MIMO evolution for Downlink and Uplink**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2402840 RRM performance requirements for MIMO evolution**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

RRM performance requirements

**Decision: Noted.**

8.21.5 Moderator summary and conclusions

Topic: [110][226] NR\_MIMO\_evo\_DL\_UL

**R4-2400762 Topic summary for [110][226] NR\_MIMO\_evo\_DL\_UL**

*Type: other For: Information  
 Source: Moderator (Samsung)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403371**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403371.zip) **Ad-hoc minutes on RRM requirements for NR\_MIMO\_evo\_DL\_UL**

*Type: other For: Approval  
 Source: Samsung*

**Decision: Approved.**

**Issue 3-2-2: Whether to define TCs for m-DCI mTRP cases?**

Ad-hoc Discussion:

* OP1: Define TC for m-DCI mTRP cases (Huawei, MediaTek, Nokia, Samsung)
* OP2: Do not define TC for m-DCI mTRP cases (Apple, Ericsson, MediaTek)

Moderator: can we agree option 2?

HW: we are ok with option 2.

Nokia: we prefer option 1.

Apple: nothing new can be verified compared to the Rel-17 test. The only difference is the overlapping case, with extra time for measurement, which is the corner case. Even if we define new test, the overlapping case will not covered anyway.

Session chair: further check on Friday.

**Issue 2-1-3: For sDCI mTRP, how to specify DL MAC CE based dual TCI state switch the switching delay requirements for Case 3, if SSB are adjacent in FR2?**

* Proposals
  + Proposal 1 (Apple, MediaTek)
    - Longer delay is expected
  + Proposal 2 (Nokia)
    - (TSSB1 = TSSB2): THARQ + + max(TL1-RSRP1, TL1-RSRP2) + max {TOuk1\*(Tfirst-SSB1+ AD1\*TSSB1 + TSSB-proc), TOuk2\*(Tfirst-SSB2 + TSSB-proc)} / *NR slot length*; AD1 = 1 if SSBs are adjacent in FR2; 0 otherwise
  + Proposal 3 (Ericsson)
    - THARQ *+ + {TL1-RSRP1 +TOuk1\*(Tfirst-SSB1+ TSSB-proc) + TL1-RSRP2 +TOuk2\*(Tfirst-SSB2+ TSSB-proc)} / NR slot length*

Apple: the delay is doubled, which is very long. It is does not make much sense to introduce such long delay the spec. But we are also fine with Proposal 3.

[**R4-2403372**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403372.zip) **WF on RRM requirements for NR\_MIMO\_evo\_DL\_UL**

*Type: other For: Approval  
 Source: Samsung*

**Decision: Approved.**

**Online session (Monday Feb 26, 2024)**

**Topic #3: RRM performance part**

**Sub-topic 3-1: TDCP**

**Issue 3-1-1: Whether to define TDCP accuracy requirement/test case for TDCP?**

* Proposals
  + Proposal 1: (Apple, Huawei)
    - Do not define accuracy requirements and test cases for TDCP measurement.
  + Proposal 2: (xiaomi)
    - Do not define accuracy requirement but define test cases for TDL-A.
  + Proposal 3: (Nokia)
    - Define TDCP requirements with 4 samples averaging
    - Define TDCP requirements with lag of 10 slots
    - Define TDCP requirements with amplitude and phase
  + Proposal 4: (Ericsson)
    - RAN4 to agree on approach 1 or 2 for defining the TDCP requirements and test cases.
      * Approach 1: Defining generic requirements and test cases for SNR above certain threshold
        + Step 1: Define the accuracy requirements and define the applicability of accuracy requirements such that these accuracy requirements are only applicable for SNR above a certain threshold.
        + Step 2: Agree on the configurations for the test
        + Step 3: Define the test case where the measured value shall be in the range of expected value for [Y1]% of the total number of the tests. Y1 can be FFS
      * Approach 2: Instead of defining generic accuracy requirements which are applicable for specific SNR conditions, defining the test cases for TDCP under specific scenarios (e.g., doppler spread and SNR) by considering different companies results into consideration.
  + Proposal 5: (MediaTek)
    - RAN4 to discuss a test case for TDCP when SNR=20 dB and doppler frequency is less than 100 Hz.
  + Proposal 6: (Samsung)
    - only define amplitude reporting. Define test case or with accuracy requirements with the same test condition in test case.
* Recommended WF
  + To discuss:
    - OP1: No accuracy requirements and no TC (Apple, Huawei)
    - OP2: Generic accuracy requirements (Nokia, Ericsson)
      * Both amplitude and phase (Nokia)
      * Only amplitude (Ericsson)
    - OP3: Fine for certain condition TC (Xiaomi, Nokia, Ericsson, MediaTek, Samsung)

HW: We can compromise to option 3, to define test case in AWGN channel.

E///: ok with option 3, but not under AWGN, since TPDP is for channel correlation.

Xiaomi: We support option 3. Whether it is for accuracy or functionality test? If it is for accuracy, low doppler can be an compromise.

Nokia: UE to distinguish high or low mobility scenario.

Apple: OK to compromise to option 3. Need to find a value or margin for the test. Cannot define TDCP requirement in AWGN condition. Select high or low mobility condition.

E///: discuss the configuration further, for example:

* Channel:
* Doppler:
* SNR value

Agreement:

Define test cases for TDCP under certain conditions, and the conditions can be discussed in Issue 3-1-3.

**Issue 3-1-2: Whether to define additional criteria for TDCP?**

* Proposals
  + Proposal 1: (Apple)
    - Introduce additional L1-SINR or L1-RSRP reporting along with TDCP reporting
    - Network can trigger aperiodic CSI for TDCP measurement reporting based on serving cell L1 measurement report
    - UE is expected to receive aperiodic CSI for TDCP measurement reporting only when reported L1-RSRP or L1-SINR from serving cell are larger than a threshold.
* Recommended WF
  + TBA

E///: RAN4 to define the requirement based on RAN1 spec.

Samsung: We cannot accept proposal 1. Huge impact on RAN1 spec. It is also up to network implementation.

Apple: to make the report useful to the network.

Nokia: Leave out this option, and up to the network.

Agreement: Not to introduce additional L1-SINR or L1-RSRP reporting along with TDCP reporting in Rel-18.

**Issue 3-1-3: Design for the test case of TDCP if TC of TDCP is accepted**

* Proposals
  + Proposal 1: (xiaomi)
    - Channel model: TDL-A
    - SNR = 15dB
    - Test metric: Median value delta between estimated median and ideal median value, where ideal median value can be derived from Bessel function.
    - Test requirements:
      * Based on correlation value delta without quantization
      * Based on index delta after quantization
  + Proposal 2: (Ericsson)
    - Step 1: Determine the configuration (e.g., SNR, doppler spread) for the test.
    - Step 2: for the configuration agreed in step 1, determine the TDCP accuracy range (i.e., TDCP accuracy value X1 to X2) from the simulation results from different companies.
    - Step 3: Define the test case for the configurations agreed in step 1 and the TDCP value UE should report to pass the test is determined from the range of values determined in step 2 (i.e., X1 to X2). For the repeated tests UE should pass the test at least [Y2] % of the times. Y2 can be FFS.
  + Proposal 3: (MediaTek)
    - SNR = 20dB
    - Doppler frequency is less than 100Hz
  + Proposal 4: (Samsung)
    - Channel model: TDL-A
    - SNR = 20dB
    - define two time periods of UE for low doppler condition and high doppler condition. The estimated index error as max (X – Ideal Bessel value, Y – Ideal Bessel value) can be overserved for T1 and T2.

Discussion:

HW: accuracy or functionality test?

* + - Channel model: TDL-A, AWGN, Doppler frequency is less than 100Hz
    - SNR = 10dB, 15dB, 20dB
    - The distance between two TRSs: 10 (Nokia), 1
    - Doppler: high and/or low
    - Test metric:
    - Alt 1: Xiaomi

**Median** value delta between estimated median and **ideal** median value, where ideal median value can be derived from Bessel function.

Alt 2: E///, Apple, QC, MTK

* + - Step 1: Determine the configuration (e.g., SNR, doppler spread) for the test.
    - Step 2: for the configuration agreed in step 1, determine the TDCP accuracy range (i.e., **~~median~~** ~~TDCP~~ **~~accuracy~~** ~~value X1 to X2, or,~~ TDCP accuracy value X1 to X2) from the simulation results from different companies.
    - Step 3: Define the test case for the configurations agreed in step 1 and the TDCP value UE should report to pass the test is determined from the range of values determined in step 2 (i.e., X1 to X2). [For the repeated tests UE should pass the test at least **[Y2] % of the times**. Y2 can be FFS.]

Alt 3: Samsung, Nokia,

HW, Apple not ok

* + - define two time periods of UE for low doppler condition and high doppler condition. The estimated index error as max (X – Ideal Bessel value, Y – Ideal Bessel value) can be overserved for T1 and T2.

Apple: alt 3 is very dynamic. To define test based on fixed Doppler.

Xiaomi: the median value for the ideal value does not change.

Agreement:

* + Test metric:
    - Step 1: Determine the configuration (e.g., SNR, doppler spread) for the test.
    - Step 2: for the configuration agreed in step 1, determine the TDCP accuracy range (i.e., TDCP accuracy value X1 to X2) from the simulation results from different companies.
    - Step 3: Define the test case for the configurations agreed in step 1 and the TDCP value UE should report to pass the test is determined from the range of values determined in step 2 (i.e., X1 to X2). [For the repeated tests UE should pass the test at least **[Y2] % of the times**. Y2 can be FFS.]
      * The text in [] is the baseline, and other proposal is not precluded.
  + Test Parameters:
    - Channel model: fading channel
      * As baseline, TDL-A30
    - Pick one value from SNR = 10dB, 15dB, 20dB
    - The distance between two TRSs: 1 slot as baseline, further discuss on 10 slots

**Issue 3-1-4: TDCP Measurement Report Mapping - amplitude**

* Proposals
  + Proposal 1: (Apple, Huawei)

|  |  |
| --- | --- |
|  | **TDCP Range** |
| 0 | 0.9945< TDCP <=1 |
| 1 | 0.9922< TDCP <=0.9945 |
| 2 | 0.9890< TDCP <=0.9922 |
| 3 | 0.9844< TDCP <=0.9890 |
| … | … |
| 12 | 0.6464< TDCP <=0.75 |
| 13 | 0.5< TDCP <=0.6464 |
| 14 | 0.2929< TDCP <=0.5 |
| 15 | 0≤ TDCP <=0.2929  (≤: only difference in Apple’s and Huawei’s ) |

* + Proposal 2: (Samsung)
    - TDCP amplitude: use the RAN1 points as the middle (but not the centre due to non-uniform) of each range as

|  |  |
| --- | --- |
| Estimated TDCP value | Report index |
| 0.9953≤Estimated TDCP≤1 | 0 |
| 0.99335<Estimated TDCP<0.9953 | 1 |
| … | … |
| 0≤Estimated TDCP<0.39645 | 15 |

**Sub-topic 3-2: Test Cases**

**Issue 3-2-1: Whether to define TCs for two TAs?**

* Proposals
  + Proposal 1: (MediaTek)
    - No
  + Proposal 2: (Apple, Huawei, Nokia, Samsung, Ericsson)
    - Yes

|  |  |
| --- | --- |
| Apple&Ericsson | * Test case 1: UE transmit timing in FR1 * Test case 2: UE transmit timing in FR2 * Test case 3: timing advance in FR1 * Test case 4: timing advance in FR2 |
| Huawei | New timing advance adjustment test |
| Nokia | * Test case for UE transmit timing accuracy (MRTD>CP); * Test case for UE timing advance adjustment accuracy (MRTD > CP). * Test case for UE transmit timing accuracy (MRTD=CP); * Test case for UE timing advance adjustment accuracy (MRTD = CP).   UE only run one bundle depends on UE capability |
| Samsung | * Uplink transmit timing for NR SA in FR1 * Uplink transmit timing for NR SA in FR2 |

**Issue 3-2-2: Whether to define TCs for m-DCI mTRP cases?**

* Proposals
  + Proposal 1: (Apple, Ericsson)
    - No
  + Proposal 2: Yes (Huawei, MediaTek, Nokia, Samsung)

|  |  |
| --- | --- |
| Huawei | * mDCI FR2 MAC-CE based active joint TCI state switch for a known TCI state * mDCI FR2 MAC-CE based active DL TCI state switch for a known TCI state * mDCI FR2 MAC-CE based active UL TCI state switch for a known TCI state * mDCI FR1 MAC-CE based active joint TCI state switch for a known TCI state with RTD larger than CP for inter-cell * mDCI FR1 MAC-CE based active DL TCI state switch for a known TCI state with RTD larger than CP for inter-cell * mDCI FR1 MAC-CE based active UL TCI state switch for a known TCI state with RTD larger than CP for inter-cell |
| MediaTek | * FR2 active downlink TCI state switching with only when SSB overlaps or adjacent to SSB from other TRP: only known TCI states |
| Nokia | target TCI states that can be either known or unknown   * MAC-CE based active DL TCI state switch: no two TAs * MAC-CE based active UL TCI state switch: no two TAs * MAC-CE based active DL TCI state switch: with two TAs but no RTD>CP * FFS: MAC-CE based active UL TCI state switch: with two TAs but no RTD>CP * FR1 MAC-CE based active DL TCI state switch: with two TAs and RTD>CP * FFS: FR1 MAC-CE based active UL TCI state switch: with two TAs and RTD>CP |
| Samsung | * TC-x: NR FR2, inter-cell mDCI + DL TCI + both two are known, RTD<CP * TC-x: NR FR1, inter-cell mDCI + UL TCI + both two are known, RTD>CP |

\* For target TCI states:

Both are known: Huawei, MediaTek, Samsung

Unknown in test: Nokia

**Issue 3-2-3: Whether to define TCs for s-DCI mTRP cases?**

* Proposals

|  |  |
| --- | --- |
| Apple | * No TC for eUTCI for sDCI mTRP with single TCI state switch * Do not introduce test case for Joint dual TCI state switch for sDCI mTRP. * TCs for eUTCI for sDCI mTRP with dual TCI state switch in FR2   + Separate TCI state switch on DL, with sDCI TDM transmission scheme   + Separate UL TCI state switch, with PUSCH repetition |
| Huawei | * sDCI FR2 MAC-CE based active joint TCI state switch for a known TCI state * sDCI FR2 MAC-CE based active DL TCI state switch for a known TCI state * sDCI FR2 MAC-CE based active UL TCI state switch for a known TCI state |
| MediaTek | * FR2 active downlink TCI state switching: both known TCI states; SSB is not adjacent to SSB from other TRP * Active joint or uplink TCI state switching: both known TCI states |
| Nokia | * FR2 MAC-CE based dual TCI switch for both target TCIs are known (Case 1) * FR2 MAC-CE based dual TCI switch for one of target TCIs is unknown and another is known (Case 2). * FFS: FR2 MAC-CE based dual TCI switch for both target TCIs are unknown (Case 3). |
| Samsung | * TC-x: NR FR2, intra-cell (Serving cell) sDCI + DL TCI + dual TCI state switching + one is known; one is unknown * TC-x: NR FR2, intra-cell (Serving cell) sDCI + UL TCI + dual TCI state switching + both two are known * TC-x: NR FR2, intra-cell (Serving cell) sDCI + DL TCI + dual TCI state switching + two are unknown |
| Ericsson | * sDCI based MAC CE based unified TCI state switching should be tested for   + joint TCI state switching   + Separate DL TCI state switch   + Separate UL TCI state switch |

8.22 NR sidelink evolution

8.22.2 RRM core requirements maintenance

**R4-2401608 Big CR for RRM requirements for NR sidelink evolution maintenance**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4153 rev Cat: F (Rel-18)  
  
 Source: LG Electronics Inc., OPPO*

**Decision: Agreed.**

8.22.2.1 Sidelink CA

**R4-2401950 (NR\_SL\_enh2-Core) Discussions on WAN interruptions for sidelink CA**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

RAN4 discussed the CA operation for sidelink at previous meeting and good progress was reached resulting in closure of the work item. There is, however, one open issue related to interruption in RRC CONNECTED mode which is discussed in this paper.

**Decision: Noted.**

**R4-2401951 (NR\_SL\_enh2-Core) Draft CR to 38.133: WAN interruptions due to SL carrier addition/release for SL CA**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this CR WAN interruption requirements for SL UE due SL component carrier addition/release is defined.

**Decision: Not pursued.**

**R4-2402725 RRM Core Requirements Maintenance for NR Sidelink CA**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.22.2.2 SL unlicensed operation and others

**R4-2400945 Discussion on maintenance for NR sidelink unlicensed operation**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2400946 Draft CR for selection/reselection of sync referecne source for SL-U**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: LG Electronics Inc.*

**Decision: Revised to R4-2403344 (from R4-2400946).**

[**R4-2403344**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403344.zip) **Draft CR for selection/reselection of sync referecne source for SL-U**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: LG Electronics Inc.*

**Decision: Endorsed.**

**R4-2401011 Discussion on SL-U RRM requirements**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401012 CR on SL-U RRM requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: OPPO*

**Decision: Revised to R4-2403345 (from R4-2401012).**

[**R4-2403345**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403345.zip) **CR on SL-U RRM requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: OPPO*

**Decision: Endorsed.**

**R4-2401948 (NR\_SL\_enh2-Core) Corrections to SL unlicensed requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4202 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR contains corrections sidelink unlicensed requirements

**Decision: Revised to R4-2403346 (from R4-2401948).**

[**R4-2403346**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403346.zip) **(NR\_SL\_enh2-Core) Corrections to SL unlicensed requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4202 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR contains corrections sidelink unlicensed requirements

**Decision: Endorsed.**

**R4-2402263 RRM Core Requirements maintenance for NR Sidelink unlicensed operation**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.22.3 RRM performance requirements

**R4-2400557 SL RRM performance discussion**

*Type: discussion For: Approval  
 Source: Qualcomm, Inc.*

**Decision: Noted.**

**R4-2400947 Discussion on RRM performance for NR sidelink evolution**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2400948 Draft CR for measurement accuracy for SL-U**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: LG Electronics Inc.*

**Decision: Postponed.**

**R4-2401013 Discussion on performance requirements for Rel-18 SL**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2401378 Discussion on RRM test cases for R18 SL evolution**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401916 Discussion on RRM performance requirements for R18 SL**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2401952 Discussions on RRM performance requirements for sidelink**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we discuss and provide our initial view on the performance requirements based on the agreed core requirements.

**Decision: Noted.**

**R4-2402264 RRM Performance Requirements for NR Sidelink evolution**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.22.5 Moderator summary and conclusions

Topic: [110][227] NR\_SL\_enh2\_part1

**R4-2400763 Topic summary for [110][227] NR\_SL\_enh2\_part1**

*Type: other For: Information  
 Source: Moderator (LGE)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403314**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403314.zip) **Ad-hoc minutes on RRM requirements for NR\_SL\_enh2 WI**

*Type: other For: Approval  
 Source: Apple*

**Decision: Approved.**

**Issue 2-5: Accuracy requirements – RSSI**

Proposals

* Option 1(QC, MTK): Reuse **RSSI accuracy requirements from NR-U** for SL-U LBT measurement.
* Option 2(LGE, OPPO, Ericsson?): **Reuse SL-RSSI accuracy requirements** for SL-U.

Agreement: Reuse SL-RSSI accuracy requirementsfor SL-U congestion control, and further discuss for SL-U LBT.

QC delegate is not the room, and has checked offline with QC.

[**R4-2403347**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403347.zip) **WF on RRM requirements for NR\_SL\_enh2\_part1**

*Type: other For: Approval  
 Source: LG Electronics*

**Decision: Approved.**

Topic: [110][228] NR\_SL\_enh2\_part2

**R4-2400764 Topic summary for [110][228] NR\_SL\_enh2\_part2**

*Type: other For: Information  
 Source: Moderator (OPPO)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403472**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403472.zip) **WF for [110][228] NR\_SL\_enh2\_part2**

*Type: other For: Approval  
 Source: OPPO*

**Decision: Approved.**

8.23 Enhanced support of reduced capability NR devices

8.23.2 RRM core requirements maintenance

[**R4-2403574**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403574.zip) **Big CR on Core maintenance for Enhanced support of reduced capability NR devices**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4287 rev Cat: F  
  
 Source: Ericsson*

**Decision: Agreed.**

**R4-2401351 Discussion on remaining requirements for eRedCap UE**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401983 Discussion on impacts to RRM core requirements for Enhanced RedCap**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401984 CR to TS 38.133 on Enhanced support of reduced capability NR devices**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4206 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation*

MTK: ok with this.

**Decision: Revised to R4-2403530 (from R4-2401984).**

[**R4-2403530**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403530.zip) **CR to TS 38.133 on Enhanced support of reduced capability NR devices**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4206 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation*

MTK: ok with this.

**Decision: Endorsed.**

**R4-2402366 (NR\_redcap\_enh-Perf) Correction to measurement on higher priority carrier**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

The release 18 work item on enhanced RedCap was completed at last meeting. As part of the discussions, the requirements on higher priority carriers were discussed and corresponding CR was agreed in [2]. The CR contains a number in [ ] which is to be confi

**Decision: Noted.**

**R4-2402367 (NR\_redcap\_enh-Perf) DraftCR: Correction to measurement on higher priority carrier**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Square brackets in higher priority carrier measurement requirements are removed.

**Decision:** The document was **withdrawn**.

**R4-2402369 (NR\_redcap\_enh-Core) Correction to measurement on higher priority carrier**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

The release 18 work item on enhanced RedCap was completed at last meeting. As part of the discussions, the requirements on higher priority carriers were discussed and corresponding CR was agreed in [2]. The CR contains a number in [ ] which is to be confi

**Decision: Noted.**

**R4-2402370 (NR\_redcap\_enh-Core) DraftCR: Correction to measurement on higher priority carrier**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Square brackets in higher priority carrier measurement requirements are removed.

**Decision: Postponed.**

**R4-2402727 RRM Core Requirements for Enhanced RedCap**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402729 (NR\_redcap\_enh-Core) Corrections to Measurements on Higher Priority Carriers in RRC\_IDLE state**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4252 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2402730 (NR\_redcap\_enh-Core) Corrections to NR Measurements on Higher Priority Carriers in RRC\_INACTIVE state**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4253 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

[**R4-2403490**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403490.zip) **(NR\_redcap\_enh-Core) draft CR on eDRX INACTIVE requirements for non-Redcap UEs**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)   
 Source: MediaTek*

**Decision: Endorsed.**

8.23.3 RRM performance requirements

**R4-2400107 Discussion on RRM performance requirements for R18 enhanced RedCap**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2401191 Discussion on RRM performance for Rel-18 eRedCap**

*Type: discussion For: Discussion  
 Source: xiaomi*

**Decision: Noted.**

**R4-2401352 Discussion on test cases for eRedCap UE**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401949 Discussions on RRM performance requirements for release 18 RedCap**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss performance requirements for Rel-18 RedCap UE.

**Decision: Noted.**

**R4-2402731 RRM Performance Requirements for Enhanced RedCap**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402811 High priority search with eDRX**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

8.23.5 Moderator summary and conclusions

Topic: [110][229] NR\_redcap\_enh

**R4-2400765 Topic summary for [110][229] NR\_redcap\_enh**

*Type: other For: Information  
 Source: Modrator (Ericsson)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403295**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403295.zip) **WF on** **R18 NR RedCap RRM requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Revised to R4-2403531 (from R4-2403295).**

[**R4-2403531**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403531.zip) **WF on** **R18 NR RedCap RRM requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Approved.**

**Online session (Wednesday Feb 28, 2024)**

**Core part: Sub-topic 1-1 Relaxed measurements in INACTIVE mode**

**Issue 1-2: Relaxation scenarios for INACTIVE mode neighbour cell measurements**

* Proposals
  + Option 1 (HW, ZTE, Nokia):

The following relaxation cases (as R17 redcap) are to be specified for R18 eRedCap INACTIVE mode with inactive eDRX > 10.24s:

* Measurements for UE fulfilling stationary criterion
* Measurements for a UE fulfilling not-at-cell edge while stationary criterion
* Measurements for a UE fulfilling stationary and not-at-cell-edge criteria
* Measurements for a UE fulfilling low mobility and stationary criteria
* Measurements for a UE fulfilling low mobility and not-at-cell-edge while stationary criteria
* Measurements for a UE fulfilling not-at-cell edge and not-at-cell edge while stationary criteria
* Measurements for a UE fulfilling low mobility and not-at-cell edge criteria and not-at-cell-edge while stationary criteria
* Measurements for a UE fulfilling low mobility, not-at-cell edge and stationary criterion
* Measurements for UE fulfilling low mobility criterion
* Measurements for UE fulfilling not-at-cell edge criterion
* Measurements for UE fulfilling low mobility and not-at-cell edge criteria
  + Option 2: TBA

MTK: we agreed option 1 in the last meeting. We submitted the CR in this meeting. Modify the existing section or create new section?

HW: we provided a Rel-17 CR to address this issue. If to reuse the Rel-17, we can first correct the Rel-17 spec.

ZTE: agee with HW.

* Agreement:
  + RAN4 to agree define relaxed neighbour cell measurement requirements for Rel-18 RedCap UE in INACTIVE mode for the relaxation scenarios listed in option 1.

**Issue 1-1: Relaxation factor for INACTIVE mode neighbour cell measurements**

* Proposals
  + Option 1 (HW, Nokia): The relaxed requirements for INACTIVE mode with inactive eDRX > 10.24s for R18 eRedCap can reuse relaxation factor 6 **within RAN PTW**.
  + Option 2: TBA
* Recommended WF
  + RAN4 to reuse to relaxation factor of 6 from Rel-17 RedCap for the Rel-18 RedCap following the measurement rules Rel-18 eRedCap WI discussions.

Moderator: consider factor of 6.

Apple: agree with moderator. Reuse factor 6 within RAN PTW is only for evaluation and measurement, not for seraching.

MTK: There are also other factors.

Agreement:

Relaxation factor from idle mode and fixed relaxation period from idle mode are used for inactive mode. The relaxlation within single RAN PTW is only for evaluation and measurement, not for seraching.

**Performance part**

**Issue 2-1: INACTIVE mode tests**

* Proposals
  + Option 1 (HW, CATT): For Idle eDRX and inactive eDRX length are set 20.48s, following test cases are to be specified for R18 eRedCap in RRC-INACTIVE state:
    - Cell reselection to FR1 intra-frequency NR case with eDRX\_IDLE cycle and eDRX\_INACTIVE ≥ 20.48s;
    - Cell reselection to FR2 intra-frequency NR case with eDRX\_IDLE cycle and eDRX\_INACTIVE ≥ 20.48s;
    - Cell reselection to FR1 inter-frequency NR case with eDRX\_IDLE cycle and eDRX\_INACTIVE ≥ 20.48s;
    - Cell reselection to FR2 inter-frequency NR case with eDRX\_IDLE cycle and eDRX\_INACTIVE ≥ 20.48s;
    - E-UTRA Cell reselection to higher priority NR target Cell in FR1 with eDRX\_IDLE cycle and eDRX\_INACTIVE ≥ 20.48s.
  + Option 1a (CATT): In addition to the test cases in option 1, also following tests is defined:
    - Test cases for cell reselection to lower priority E-UTRAN
  + Option 2 (Xiaomi, Ericsson): No tests cases are defined for release 18 RedCap UE with enhanced eDRX.
* Recommended WF
  + Discussions needed.

Moderator: In LTE, we have no eDRX tests in the current spec, it is due to long testing time in our understanding.

CATT: RAN4 defined requirement for RedCap in Rel-17. Considering this Rel-18 enhancement is an important feature, suggest to define the requirements.

ZTE: We support option 2. No test for R17 RedCap eDRX.

QC: Agree with ZTE.

HW: If go with option 2, no any test for Rel-18 RRM requirement.

Agreement:

* + No tests cases are defined for release 18 RedCap UE with enhanced eDRX.

**Issue 2-2: Test configurations**

* Proposals
  + Option 1:
    - For test of Rel-18 enhanced RedCap UE, at least the new BWP configurations and SSB configurations shall be introduced in clause A.3.
    - For NR configuration in different tests, a new supported configuration in test parameters shall be introduced into the existing testing parameters.
* Recommended WF
  + Whether new test configurations are needed depends on the outcome of issue 2-1. If new tests are agreed to be defined, then discuss corresponding test configurations. Therefore this issue is to be discussed after issue 2-1.

**Issue 2-3: Test for transition requirements**

* Proposals
  + Option 1 (Nokia): No additional performance requirement needs to be specified for transition.
* Agreement:
  + No additional performance requirement needs to be specified for transition.

**Core maintenance Issue 1-3: Measurements on higher priority carriers**

* Proposals
  + Option 1 (Nokia):
    - RAN4 should align the requirements on higher priority carriers between NR and LTE: UE shall search every layer of higher priority at least every Thigher\_priority\_search = max(60 \* Nlayers , 1 \* eDRX\_IDLE cycle length).
  + Option 2 (Ericsson): RAN4 to confirm the previous agreement on higher priority carrier measurement requirements by removing the [ ].

Thigher\_priority\_search = max(60, 1 \* eDRX\_IDLE cycle length) \* Nlayers

* + Option 3 (QC):
    - When eDRX is configured without PTW (i.e., for eDRX cycle lengths of <=10.24s), specify the high priority search rate as 24\*eDRX\_IDLE cycle length to ensure that the high priority search rate is **not faster** than the normal search rate.
    - When eDRX is configured with PTW (i.e., for eDRX cycle lengths of >10.24s), specify the high priority search rate as 12\*eDRX\_IDLE cycle length to ensure that the high priority search rate is **not faster** than the normal search rate.
* Recommended WF
  + Discussions needed.

E///: option 3 was discussed in the last meeting but not agreed. Use case is different from the normal case.

MTK: do not agree option 1. Ok with option 2. For option 3, not sure whether it makes any difference.

Nokia: In previous meetings, both option 1 and 2 were discussed. Option 1 was agreed based on discussion in LTE.

Apple: to P3, per frequency layer, or all layers? => per layer. If 24 is agreed, the delay is too long in some cases.

HW: for option 3, the delay can be several hours or several days in some cases.

vivo: in the legacy requirement, when perform measurement on neigbor cell, still perform measurement the high priority carrier.

8.24 Enhanced NR Sidelink Relay

8.24.1 RRM core requirements maintenance

**R4-2400574 CR to TS 38.133 on RRM core requirements for enhanced NR sidelink relay**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4039 rev Cat: F (Rel-18)  
  
 Source: LG Electronics*

**Abstract:**

The relay UE selection/reselection of U2U relay scenario reference clause update according to the updated RAN2 specification.

**Decision: Agreed.**

**R4-2401917 Discussion on RRM performance requirements for R18 SL relay**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision: Noted.**

8.24.2 RRM performance requirements

**R4-2400559 SL relay discussion**

*Type: discussion For: Approval  
 Source: Qualcomm, Inc.*

**Decision: Noted.**

**R4-2400573 Discussion on sidelink relay RRM performance requirements**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: LG Electronics Inc.*

**Abstract:**

SL relay RRM performance requirements

**Decision: Noted.**

**R4-2401379 Discussion on the impacts on RRM test cases for R18 SL relay**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401941 (NR\_SL\_relay\_enh-Perf) Draft CR to 38.133 on applicability of SD-RSRP and SL-RSRP accuracy requirements in multipath scenario**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR defines applicability of SD-RSRP and SL-RSRP accuracy requirements for the remote UE in multipath scenario

**Decision: Revised to R4-2403336 (from R4-2401941).**

[**R4-2403336**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403336.zip) **(NR\_SL\_relay\_enh-Perf) Draft CR to 38.133 on applicability of SD-RSRP and SL-RSRP accuracy requirements in multipath scenario**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR defines applicability of SD-RSRP and SL-RSRP accuracy requirements for the remote UE in multipath scenario

**Decision: Endorsed.**

**R4-2402726 RRM Performance Requirements for Enhanced NR Sidelink Relay**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

8.24.3 Moderator summary and conclusions

Topic: [110][230] NR\_SL\_relay\_enh

**R4-2400766 Topic summary for [110][230] NR\_SL\_relay\_enh**

*Type: other For: Information  
 Source: Moderator (LGE)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403258**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403258.zip) **WF on RRM requirements for NR\_SL\_relay\_enh**

*Type: other For: Approval  
 Source: LGE*

**Decision: Approved.**

**Online session (Wednesday Feb 28, 2024)**

QC: our delegate is not in the room.

Session Chair: the tentative agreement is agreeable for delegates in the room. The agreement has been confirmed by QC.

**Issue 2-1-1: CR to TS 38.133 on RRM core requirements for enhanced NR sidelink relay**

* Proposals
  + R4-2400574 CR to TS 38.133 on RRM core requirements for enhanced NR sidelink relay
* Recommended WF
  + Moderator’s view: Need to further discussion

Agreement: R4-2400574 is agreed.

**Sub-topic 1-1 RRM performance requirements for R18 sidelink relay UE**

**Issue 1-1-2: Whether the applicability description update is necessary for the accuracy requirements of SD-RSRP and SL-RSRP for R18 SL remote UE performing relay UE selection/reselection in multipath scenario.**

* Proposals
  + Option 1: Do not consider out of SL frequency coverage scenario for SD-RSRP and SL-RSRP measurement accuracy requirement. (Qualcomm)
  + Option 2: The applicability description update is necessary. (Ericsson, LGE, MTK)
  + Additional applicability description example:
    - Existing accuracies of SD-RSRP and SL-RSRP in clause 10.4.5 shall also apply for the remote UE in the multipath scenario provided that the remote UE:
      * is synchronised to the sidelink relay UE that is measured and
      * is in-coverage on the frequency used for sidelink if both the direct path and the SL on the indirect path are on the same frequency or
      * is out of coverage on the frequency used for sidelink if the direct path and the SL on the indirect path are on different frequencies.
* Recommended WF
  + Moderator’s view: Most companies agreed that the legacy requirements are applicable to multipath scenario, but the applicability description is not fully cover the R18 multipath scenario. So, we need to further discuss whether the applicability description update is necessary and the detail description contents also.

Agreement:

* + - Existing accuracies of SD-RSRP and SL-RSRP in clause 10.4.5 shall also apply for the remote UE in the multipath scenario provided that the remote UE:
      * is synchronised to the sidelink relay UE that is measured and
      * is in-coverage on the frequency used for sidelink if both the direct path and the SL on the indirect path are on the same frequency or
      * FFS: is out of coverage on the frequency used for sidelink if the direct path and the SL on the indirect path are on different frequencies.

**Issue 1-1-3: Test case for delay of selection/reselection of relay UE by remote UE in U2U relay scenario**

* Proposals
  + Option 1: There is no need to define new RRM accuracy requirements for R18 enhanced SL relay. (Qualcomm, Huawei)
  + Option 2: Define a test case on selection/reselection of relay UE for U2U scenario. (Nokia, MTK, Ericsson, LGE)
* Recommended WF
  + Moderator’s view: Need to further discussion

LGE: If UE supporting U2U is mandated to support U2N, new test case is not needed. If not, new test case is needed. Need to check the UE feature dependency.

Session Chair: For UE capability perspective, UE supporting U2U is NOT mandated to support U2N. But from some UEs, UE can still report to support U2U and U2N.

Tentative agreement:

Check the UE feature dependency.

* If UE supporting U2U is mandated to support U2N, new test case is not needed.
* If not, new test case is needed. Define applicability that only U2U or U2N case needs to be tested.

**Issue 1-1-6: Test cases for interruptions caused by SL DRX activation and deactivation of remote UE in multi-path relay scenario**

* Proposals
  + Option 1: There is no need to define new RRM accuracy requirements for R18 enhanced SL relay. (Qualcomm, Huawei, LGE, MTK)
  + Option 2: To verify the interruption requirements caused by the remote UE on its serving cell and the relay UE on its serving cell due to the transitions between the active and non-active times of the SL DRX in multipath scenario, reuse the methodology in test case in clause A.9.1.6.2 (Test for interruption to WAN at transitions between active and non-active during SL-DRX in asynchronous case) by configuring the remote UE (UE1) and the relay UE (UE2) served by different cells (Cell1 and Cell2 respectively) on different carrier frequencies. (Ericsson)
  + The purpose of the test shall be to verify the interruption caused on the serving cell (Cell1) (direct path) by the remote UE and interruption caused on the serving cell (Cell2) (indirect path) by the relay UE do not exceed the required limit while there are transitions between active and non-active times during the SL-DRX (between the remote UE and relay UE on the indirect path).
* Recommended WF
  + Moderator’s view: The majority of companies support option 1. Companies are encouraged to check whether they can compromise on option 1.

E///: the existing test case cannot cover the Rel-18 scenario. Reuse the existing test, modify and accommodate the new scenario.

HW: no need to add new tests just for the new scenario.

E///: don’t agree with HW.

LGE: agree with HW. The new scenario does not have big impact UE implementation compared to the legacy scenario.

**Issue 1-1-1: SD-RSRP and SL-RSRP accuracy requirements for R18 SL remote UE performing relay UE selection/reselection in multipath scenario**

* Proposals
  + Option 1: There is no need to define new RRM accuracy requirements for R18 enhanced SL relay. (HW, MTK, Nokia, Ericsson, LGE, Qualcomm)
* Recommended WF
  + Moderator’s view: Regarding RRM performance requirement for the accuracy requirement of SD-RSRP and SL-RSRP at SL relay multipath scenario, most companies agreed that the legacy requirements are applicable to multipath scenario, so the new RRM accuracy requirements for R18 enhanced SL relay is not necessary.

Agreement:

* + There is no need to define new RRM accuracy requirements for R18 enhanced SL relay.

**Issue 1-1-4: Applicability rule for delay of (re)selection of relay UE by remote UE**

* Proposals
  + Option 1: To limit testing, define an applicability rule in annex A of TS 38.133, that the UE capable of both U2U relay and U2N relay operations is required to pass only one of the two test cases: under U2U scenario or U2N relay scenario. (Ericsson, LGE, MTK)
* Recommended WF
  + Moderator’s view: This issue can be discussed after issue 1-1-3 is concluded with option 2.

**Issue 1-1-5: Test requirements for delay of selection/reselection of relay UE by remote UE in U2U relay scenario**

* Proposals
  + Option 1: Test requirements from Clause A.9.1.7.2 shall be used for U2U relay scenario with the assumption that the remote UE, U2U relay UE, and the target UE are out of coverage. (Nokia)
* Recommended WF
  + Moderator’s view: This issue can be discussed after issue 1-1-3 is concluded with option 2.

**Issue 1-1-7: Applicability rule for interruptions caused by the remote UE and the relay UE on their serving cells due to the transitions between the active and non-active times of the SL DRX**

* Proposals
  + Option 1: To limit testing, define an applicability rule in annex A of TS 38.133, that the UE capable of both multipath relay and U2N relay operations is required to pass only the test case in multipath operation. (Ericsson)
* Recommended WF
  + Moderator’s view: This issue can be discussed after issue 1-1-6 is concluded with option 2.

**Issue 1-2-1: CR to TS 38.133 on RRM performance requirements for enhanced NR sidelink relay**

* Proposals
  + R4-2401941 Draft CR on applicability of SD-RSRP and SL-RSRP accuracy requirements in multipath scenario
* Recommended WF
  + Moderator’s view: This issue can be discussed after issue 1-1-2 is concluded with option 2.

8.25 Mobile IAB (Integrated Access and Backhaul) for NR

8.25.4 RRM core requirements maintenance

[**R4-2403575**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403575.zip) **Big CR on Core maintenance for NR Mobile IAB**

*Type: CR For: Agreement  
 38.174 v18.3.0 CR-0105 rev Cat: F  
  
 Source: Qualcomm*

**Decision: Agreed.**

**R4-2401335 DraftCR on maintenance for RRM requirements for mIAB**

*Type: draftCR For: Endorsement  
 38.174 v18.3.0 CR- rev Cat: (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403524 (from R4-2401335).**

**[R4-2403524](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403524.zip) DraftCR on maintenance for RRM requirements for mIAB**

*Type: draftCR For: Endorsement  
 38.174 v18.3.0 CR- rev Cat: (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2402562 draftCR to TS38.174 on Missing and Applicable mIAB-MT Requirements**

*Type: draftCR For: Endorsement  
 38.174 v18.3.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403325 (from R4-2402562).**

[**R4-2403325**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403325.zip) **draftCR to TS38.174 on Missing and Applicable mIAB-MT Requirements**

*Type: draftCR For: Endorsement  
 38.174 v18.3.0 CR- rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

8.25.5 RRM performance requirements

**R4-2401606 RRM performance requirements for mobile IAB**

*Type: Work Plan For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2402054 Discussion on Mobile IAB RRM Performance Requirements**

*Type: other For: Discussion  
 Source: Dell Technologies*

**Decision: Noted.**

**R4-2402561 On mIAB RRM Core Requirements Maintenance**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402563 On mIAB RRM Performance Requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402824 Draft CR to 38.133 on handover test cases for mIAB-MT in Annex G of TS 38.174**

*Type: draftCR For: Endorsement  
 38.174 v18.3.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This draft CR defines all the HO test cases for mIAB-MT in annex G of TS 38.174 as agreed in the WF in R4-2321534.

**Decision: Postponed.**

8.25.7 Moderator summary and conclusions

Topic: [110][231] NR\_mobile\_IAB

**R4-2400767 Topic summary for [110][231] NR\_mobile\_IAB**

*Type: other For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403326**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403326.zip) **WF on RRM requirements for NR\_mobile\_IAB**

*Type: other For: Approval  
 Source: Qualcomm*

**Additional agreement:**

**Issue 1-11: CR split**

|  |  |
| --- | --- |
| Requirements/Tests | Company |
| Measurement Accuracy requirements | Qualcomm |
| Measurement Accuracy test cases | Qualcomm |
| Handover tests | Ericsson |
| Active TCI switch tests | Huawei |
| Measurement procedures – intra-frequency measurement tests | **Huawei** |
| Transmit timing tests | Nokia |
| Signaling characteristics | Qualcomm |
| UL spatial relation switch | Huawei |

**Decision: Approved.**

**Online session (Wednesday Feb 28, 2024)**

**Sub-topic 1-1**

*RRM core requirements maintenance*

The CR in R4-2401335 contains the following proposals:

|  |  |
| --- | --- |
| ***Reason for change:*** | 1. According to the speicfication suffix information in 4.12, mIAB needs to support both local area IAB-MT requirements and additional requirements with suffixes B. However, according to agreements reached in R4-2310085, No requirements for inter-frequency RRC Re-establishment and RRC release with re-direction. Thus, clarifications about applicability are needed. 2. There are typos in the spec. |
| ***Summary of change:*** | 1. Clarify in 12.1.1.1 (with mIAB dedicated section 12.1.1.1B) and 12.1.1.3 (No requirements for mIAB) that requirements do not apply to mIAB-MT. 2. Typo correction. |

**Issue 1-1: Correction CR in R4-2401335**

* Proposals
  + Option 1: CR is agreeable
  + Option 2: CR should be revised
  + Option 3: CR is not agreeable, the changes are not needed
* Recommended WF
  + To be discussed

Please provide any comments for any necessary changes

HW: add applicability in different sections of the spec, or add a sub-section on the applicability.

Nokia: prefer a new section.

QC: prefer a new sub-section on the overall applicability to RRM.

HW: we can compromise.

Agreement:

Create a new sub-section on the applicability of m-IAB RRM requirements.

Work offline the CR.

**Sub-topic 1-2**

*RRM Maintenance -*

**Issue 1-2: Clarficiations to applicability of legacy requirements**

* Proposals
  + Option 1: Add new clause 4.7.3 in TS 38.174 to clarify the applicability of legacy IAB-MT RRM requirements to mIAB-MT.
    - the requirements in Sub-topic 1-3 and 1-4.
* Recommended WF
  + Option 1

Please provide any comments for any other changes

**Sub-topic 1-3**

*RRM maintenance*

**Issue 1-3: Random access requirements applicability**

* Proposals
  + Option 1: Random access requirements in Clause 12.1.1.2, TS 38.174 are applicable to mIAB-MT.
* Agreement
  + Option 1

**Sub-topic 1-4**

*RRM maintenance*

**Issue 1-4: Timing requirements**

* Proposals
  + Option 1: Existing timing requirements in Section 12.2, TS 38.174 are applicable to mIAB-M
* Agreement
  + Option 1

**Sub-topic 1-5**

*RRM maintenance*

**Issue 1-5: Timer accuracy requirements**

* Proposals
  + Option 1: RAN4 to define mIAB-MT timer accuracy requirements by reusing UE requirements from Clause 7.2 of TS 38.133
  + Option 2: Do not define timer accuracy requirements
* Recommended WF
  + To be discussed

QC: the necessity is not clear.

Nokia: we don’t have this requirement for IAB-MT. No see a reason to exclude the requirement.

* Agreement
  + RAN4 to define mIAB-MT timer accuracy requirements by reusing UE requirements from Clause 7.2 of TS 38.133.

**Sub-topic 1-6**

*RRM maintenance*

**Issue 1-6: UL spatial relation switch requirements**

* Proposals
  + Option 1: RAN4 to introduce Uplink spatial relation switch delay requirements for mIAB-MTs by reusing UE requirements in Section 8.12 from TS 38.133
  + Option 2: others
* Recommended WF
  + To be discussed

QC: Core part is closed. If consensus is reached, we have no issue.

Nokia: we need this requirement.

* Agreement
  + RAN4 to introduce Uplink spatial relation switch delay requirements for mIAB-MTs by reusing UE requirements in Section 8.12 from TS 38.133

**Sub-topic 1-7**

*Draft maintenance CR*

A draft CR based on the proposals in Sub-topics 1-2 to 1-6 is proposed in R4-2402562

**Issue 1-7: Draft CR for maintenance**

* Proposals
  + Option 1: Agree R4-2402562
  + Option 2: CR needs changes
  + Option 3: CR is not agreeable
* Recommended WF
  + To be discussed

Please provide concrete comments if CR needs to be revised

**Sub-topic 1-8**

*2-step RACH requirements*

It is proposed to introduce 2-step RACH test requirements for mIAB-MT

**Issue 1-8: 2-step RACH**

* Proposals
  + Option 1: Introduce 2-step RACH test requirements based on the corresponding UE test requirements in 38.133 (Clause A6.3 for FR1 and clause A7.3 for FR2-1)
  + Option 2: Only introduce 4-step **non-**contention based RA test based on the corresponding UE test in TS 38.133
* Recommended WF
  + To be discussed

Nokia: 4-step RACH is the most typical case for m-IAB.

Dell: We sugget to use 2-step for FR2, and 4-step for FR1.

E///: only 4-step.

QC: only 4-step.

Agreement:

* + Only introduce 4-step non-contention based RA test based on the corresponding UE test in TS 38.133

**Sub-topic 1-9**

*Measurement performance requirements*

**Issue 1-9: Measurement performance requirements**

* Proposals
  + Option 1: The measurement performance requirements for mIAB-MT should be introduced in Clause 12.5B of TS 38.174. The requirements to be reused from TS 38.133 can be found in the list below:
    - Clause 10.1.2 – FR1 RSRP
    - Clause 10.1.3 – FR2 RSRP
    - Clause 10.1.6 – RSRP reporting mapping
    - Clause 10.1.7 – FR1 RSRQ
    - Clause 10.1.8 – FR2 RSRQ
    - Clause 10.1.11 – RSRQ reporting mapping
    - Clause 10.1.12 – FR1 SINR
    - Clause 10.1.13 – FR2 SINR
    - Clause 10.1.16 – SINR report mapping
    - Clause 10.1.19 – FR1 L1-RSRP
    - Clause 10.1.20 – FR2 L1-RSRP
  + Option 2: others
* Agreement
  + Option 1

**Sub-topic 1-10**

*Measurement accuracy test cases*

**Issue 1-10: Measurement accuracy test cases**

* Proposals
  + Option 1:

**Introduce the following measurement accuracy test cases based on the corresponding tests from TS 38.133:**

* FR1 SS-RSRP accuracy test : Section A.6.7.1.1
* FR1 SS-RSRQ accuracy test: Section A.6.7.2.1
* FR1 SS-SINR accuracy test: Section A.6.7.3.1
* FR1 L1-SINR accuracy test: Section A.6.7.4.1
* FR2 SS-RSRP accuracy test : Section A.7.7.1.1
* FR2 SS-RSRQ accuracy test: Section A.7.7.2.1
* FR2 SS-SINR accuracy test: Section A.7.7.3.1
* FR2 L1-SINR accuracy test: Section A.7.7.4.1
  + Option 2: others
* Agreement:
  + Option 1

**Sub-topic 1-11**

*Transmit timing test*

**Issue 1-11: Transmit timing test handling**

* Proposals
  + Option 1: Legacy NR IAB-MT Transmit Timing Tests for FR1/FR2-1 (Clauses G.2.2.1.1/2 of TS 38.174) shall be applicable and reused for mIAB-MTs.
  + Option 2: others

Agreement: Option 1

**Sub-topic 1-12**

*UL spatial relation switching*

**Issue 1-12: UL spatial relation switching tests**

* Proposals
  + Option 1: **RAN4 to define MAC-CE based uplink spatial relation switch and RRC based spatial relation switch test cases by reusing UE test cased defined in A.5.5.9.1 and A.5.5.9.1 of TS 38.133.**
  + Option 2: others
* Recommended WF
  + To be discussed

Agreement: Option 1.

**Sub-topic 1-13**

*Test configurations*

**Issue 1-13: Test configurations**

* Proposals
  + Option 1: Reuse the test configurations in Annex G.1 for the mIAB-MT RRM tests.
  + Option 2: changes/additions are needed to the test configuations
  + Option 3: discuss needed changes based on the draft CRs
  + Option 4: others
* Recommended WF
  + Take Option 1 as baseline, discuss changes/additions based on the draft CRs.

QC: currently we have different channels in Annex G.1, but not sure all the aspects needed are already here. If needed, we can make change for the Annex.

* Agreement:
  + Take Option 1 as baseline, discuss changes/additions based on the draft CRs.

**Sub-topic 1-14**

*HO test cases*

Draft CR in R4-2402824 proposes all the HO test cases

**Issue 1-14: HO test cases**

* Proposals
  + Option 1: Draft CR is agreeable
  + Option 2: changes are needed
  + Option 3: postpone discussion to next meeting and consider all draft CRs at the same time
  + Option 4: others
* Recommended WF
  + To be discussed

Agreement: Postpone discussion to next meeting and consider all draft CRs at the same time

**Sub-topic 1-15**

*CR split*

A possible CR split is proposed in R4-2401606

**Issue 1-11: CR split**

* Proposals
  + Option 1: Agree the CR split in the table below

|  |  |
| --- | --- |
| Requirements/Tests | Company |
| Measurement Accuracy requirements |  |
| Measurement Accuracy test cases |  |
| Handover tests | Ericsson? |
| Active TCI switch tests |  |
| Measurement procedures – intra-frequency measurement tests |  |
| Transmit timing tests |  |
| Signaling characteristics |  |

* + Option 2: others
* Recommended WF
  + Option 1

Companies are invited to volunteer on drafting some of the CRs.

Agreement: Discuss offline on the CR work split, and all draft CRs will be submitted in the next meeting.

8.26 Network energy saving for NR

8.26.2 RRM core requirements maintenance

**R4-2401327 Big CR on requirements maintenance for R18 NES**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4110 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

8.26.2.1 RRM requirements impacts

**R4-2400487 On RRM requirement impacts for NES**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2400818 RRM requirements impact due to other NES features**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2400819 38.133 CR on handover delays for NES-based CHO**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4054 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

[**R4-2403329**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403329.zip) **38.133 CR on handover delays for NES-based CHO**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4054 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2400973 Discussion on NES general issues**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the general issues for NES

**Decision: Noted.**

**R4-2401057 (Netw\_Energy\_NR-Core)CR to NES-based conditional handover requirement**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4072 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Merged.**

[**R4-2403327**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403327.zip) **(Netw\_Energy\_NR-Core)CR to NES-based conditional handover requirement**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4072 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Withdrawn.**

**R4-2401328 Discussion on requirements maintenance for R18 NES**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401329 DraftCR on maintenance for NES CHO**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

[**R4-2403328**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403328.zip) **DraftCR on maintenance for NES CHO**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401502 (Netw\_Energy\_NR-Core)Discussion on RRM requirement impacts for network energy saving**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2401504 (Netw\_Energy\_NR-Core)Draft CR for conditional handover requirements on network energy saving**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2403330 (from R4-2401504).**

[**R4-2403330**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403330.zip) **(Netw\_Energy\_NR-Core)Draft CR for conditional handover requirements on network energy saving**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2403554 (from R4-2403330).**

[**R4-2403554**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403554.zip) **(Netw\_Energy\_NR-Core)Draft CR for conditional handover requirements on network energy saving**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Endorsed.**

**R4-2401939 draft CR on L1 measurement reporting requirements for R18 NES**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Postponed.**

8.26.2.2 SSB-less SCell operation

**R4-2400488 On SSB-less SCell operation for NES**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Apple*

**Decision: Noted.**

**R4-2400546 Discussion on remaining issues SSBless Scell operation**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2400816 SSB-less operation for FR1 inter-band co-located CA**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2400817 38.133 CR on SSB-less SCell activation**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4053 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

[**R4-2403334**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403334.zip) **38.133 CR on SSB-less SCell activation**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4053 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2400847 (Netw\_Energy\_NR-Core) Discussion on SSB-less SCell operation core maintenance for NES**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2401019 Discussion on RRM requirements for inter-band SSB-less SCell operation**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401240 Discussion on UE capabilities for NES**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2401353 Discussion on SSB-less SCell operation**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401354 CR on SCell activation/deactivation requirements for inter-band SSB-less**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2403333 (from R4-2401354).**

[**R4-2403333**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403333.zip) **CR on SCell activation/deactivation requirements for inter-band SSB-less**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Huawei, HiSilicon, Nokia*

**Decision: Revised to R4-2403538 (from R4-2403333).**

[**R4-2403538**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403538.zip) **CR on SCell activation/deactivation requirements for inter-band SSB-less**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: (Rel-18)  
  
 Source: Huawei, HiSilicon, Nokia*

**Decision: Endorsed.**

**R4-2401429 Maintenance CR on NES RRM requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4130 rev Cat: F (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Revised to R4-2403332 (from R4-2401429).**

[**R4-2403332**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403332.zip) **Maintenance CR on NES RRM requirements**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4130 rev Cat: F (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Postponed.**

**R4-2401431 NR network energy saving RRM maintenance – SSB-less SCell**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2401635 Discussion on SSB-less SCell operation of Network energy saving for NR**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2401649 [Netw\_Energy\_NR-Core] Draft CR on R18 inter-band SSB-less cell**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Merged.**

**R4-2401940 Discussion on maintenance of SSB-less SCell operation for network energy saving**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2402834 On SCell activation procedures for SSB-less inter-band SCell in FR1**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On SCell activation procedures for SSB-less inter-band SCell in FR1

**Decision: Noted.**

**R4-2402835 draft CR to 38.133 On SCell activation procedures for SSB-less inter-band SCell in FR1**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

On SCell activation procedures for SSB-less inter-band SCell in FR1

**Decision: Merged.**

**[R4-2403331](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403331.zip) draft CR to 38.133 On SCell activation procedures for SSB-less inter-band SCell in FR1**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

On SCell activation procedures for SSB-less inter-band SCell in FR1

**Decision: Withdrawn.**

8.26.3 RRM performance requirements

**R4-2400547 View on RRM performance requirements on Network Energy Saving**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2400820 RRM performance requirements for network energy saving**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2400821 draftCR on TC for SSB-less SCell activation**

*Type: draftCR For: Endorsement  
 38.133 v18.4.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2400848 (Netw\_Energy\_NR-Perf) Discussion on RRM performance requirements for network energy saving**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2400974 Discussion on NES test case**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the NES test case

**Decision: Noted.**

**R4-2401020 Discussion on RRM performance requirements for NR Network energy saving**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401241 Discussion on RRM performance requirements for NES**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2401330 Discussion on performance requirements for R18 NES**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401430 Test cases discussions for network energy saving RRM requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2401503 Discussion on RRM performance requirements for network energy saving**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

8.26.5 Moderator summary and conclusions

Topic: [110][232] Netw\_Energy\_NR

**R4-2400768 Topic summary for [110][232] Netw\_Energy\_NR**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403318**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403318.zip) **Ad-hoc minutes on RRM requirements for Netw\_Energy\_NR WI**

*Type: other For: Approval  
 Source: Huawei*

**Decision: Approved.**

[**R4-2403526**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403526.zip) **WF on RRM requirements for Netw\_Energy\_NR**

*Type: other For: Approval  
 Source: Huawei*

**Decision: Approved.**

**Issue 1-3-1: Intra-band NCCA**

Agreement:

Regarding FR1 intra-band NCCA with SSB-less operation, further study whether we can reuse or not the SSB-less activation delay requirement specified for FR1 inter-band CA.

The study does not impact the completion timeline of the WI.

Agreement: RRM performance impacts of CHO – Test case list

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Feature** | **Test case** | **Subclause** | **Note** | **Responsibility** |
| 2-1 | NES-based CHO | NES triggering intra-frequency target CHO delay From FR1 to FR1 | A.6.3.3.X | DCI 2-9 command is decoded **before** the RSRP condition of CHO is met |  |
| 2-2 | NES triggering inter-frequency target CHO delay From FR1 to FR1 | A.6.3.3.X | DCI 2-9 command is decoded **after** the RSRP condition of CHO is met |  |
| 2-3 | NES triggering intra-frequency target CHO delay From FR2 to FR2 | A.7.3.3.X | DCI 2-9 command is decoded **before** the RSRP condition of CHO is met |  |
| 2-6 | NES triggering inter-frequency target CHO delay From FR2 to FR1 | A.7.3.3.X | DCI 2-9 command is decoded **after** the RSRP condition of CHO is met |  |

**Issue 3-2-1: RRM performance impacts of Cell DTX/DRX**

* Further discuss:
  + Option 2: No test case for Cell DTX/DRX.
    - Not support: E///, Nokia, ZTE
  + Option 3: Define one test case for Cell DTX: FFS the details
    - Option 3a: SA event triggered reporting tests without gap under Cell DTX.
    - QC, vivo, MTK, Apple, OPPO want to check whether option 3 is feasible.

**Online session (Monday Feb 26, 2024)**

**Sub-topic 1-2 UE capability**

**Issue 1-2-1: UE capability indication for inter-band SSB-less**

* Proposals
  + Option 1: Introduce per band pair per BC UE capability (CTC, CMCC, Huawei)
  + Option 2: Introduce per BC UE capability (Ericsson, Nokia, QC)
    - Option 2a: Introduce per-BC UE capability to support SSBless SCell for FR1 inter-band CA operation when the reference cell and the SSBless Scell have the same duplex mode. Support for different duplex modes between the reference cell and the SSBless Scell is indicated as an additional UE capability. (QC)
  + Option 2: Introduce per FS UE capability (Apple, Intel, MTK, Vivo)
* Recommended WF
  + Moderator: No clear majority among companies. Before determine the granularity of the capability. Companies are invited to firstly align on what is the exact meaning behind each granularity. The following is the understanding from moderator based on contributions from companies.
    - Per band pair per BC: UE indicates support or not for each band pair within the BC.
    - Per BC: UE supports the feature for any band pair within the BC.
    - Per FS (per band per BC): For each band within the BC, UE indicates whether this band can be the reference band (or SSB-less band) when **any other bands** in the BC as the SSB-less band (reference band).
  + Recommended WF: Discuss the issue online.

Apple: For per FS, agree with the understanding from Moderator. For A+B+C, A is the reference, one bit to support A+B and A+C.

Intel, HW: for one band pair, no need to differentiate which one is the reference and which one is the SSB-less. For per band pair, for A+B+C, UE report 3 bits for A+B, A+C, B+C.

vivo: different understanding on per FS with Apple, also ok with per band pair per BC.

Apple: Not to differentiate A+B and B+A w.r.t. the reference and SSB-less band. Consider the fallback for per band pair per BC.

QC: This is baseband feature. With the conditions defined in RAN4, the exact frequency bands do not matter, and only duplex mode need to be considered. Per BC + support of different duplex modes.

E///: Dynamic UE capability, UE report based on the configured reference band. Similar to the capability for NCSG to reduce the capability overhead.

Nokia: per BC. For A+B+C, ok with UE to report 3 bits for A+B, A+C, B+C.

Apple: Motivation for per FS: for A+B+C, when B is close to A and C, per band per BC is supported for band B in A+B+C, but not supported for band A in A+B+C.

Agreement:

* Not consider dynamic UE capabilitiy.
* Further discuss the following options:
  + - Option 1: Per band pair per BC: UE indicates support or not for each band pair within the BC. (HW, vivo, Intel, CMCC)
      * Example: for A+B+C, UE report the capabilities for A+B, A+C, B+C separately.
    - Option 2: Per BC: UE report one capability for one BC. (Nokia, E///, ZTE, QC, HW, Apple, Intel, OPPO, CMCC, CATT)
      * Example: for A+B+C, UE report one capability, indicate the support of SSB-less operation for A+B, B+A, A+C, C+A, B+C, C+B. [UE can support separate capability for BC A+B.]
      * Option 2a: UE report one capability for one BC + one separate capability on different uplex modes.
    - Option 3: Per FS (per band per BC): For each band within the BC. UE indicates whether this band can be the reference band (or SSB-less band) when **any other bands** in the BC as the SSB-less band (or reference band). (vivo, Apple, ZTE, QC, OPPO)

**Issue 1-2-2: UE capability indication for A-TRS based inter-band SSB-less SCell activation**

* Proposals
  + Option 1: Define a per band UE capability: whether ATRS based inter-band SSB-less SCell activation is supported. (CTC, CMCC, Huawei, Nokia)
  + Option 2: Do not define additional capability for A-TRS based inter-band SSB-less SCell activation. AperiodicCSI-RS-FastScellActivation-r17 already cover. (QC)
  + Option 3: Send LS to RAN2 informing the agreements on both TRS and A-TRS based SCell activation for inter-band SSB-less operation, and ask RAN2 to check: (Nokia)
    - if existing fast SCell activation mechanism can be applied to periodic TRS based SSB-less SCell activation, and
    - if existing UE capability *aperiodicCSI-RS-FastScellActivation* can be reused for A-TRS based SSB-less operation.
* Recommended WF:
  + Agree on option 1.

**Sub-topic 3-1 Performance part related to SSB-less**

*Sub-topic description*

*Open issues and candidate options before meeting:*

**Issue 3-1-1: Test case list for FR1 inter-band SSB-less activation/deactivation**

* Proposals
  + Option 1: Separate test cases for TRS based and A-TRS based FR1 inter-band SSB-less activation need to be defined. (CTC, CMCC, Ericsson, Huawei, Intel, Nokia)
    - Option 1a: (Vivo)
      * It is suggested to define TC only for NR-SA mode.
      * It is suggested to also consider TC for intra-band contiguous SSB-less SCell operation.
      * It is suggested to focus on TC for TRS-based solution first, and further consider the TC for A-TRS based operation after RAN4 concludes the UE features.
* Recommended WF
  + Moderator: Views among companies are aligned to have test cases for TRS-based bad A-TRS based SSB-less activation. The test case list is suggested as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Feature** | **Test case** | **Subclause** | **Responsibility** |
| 1-1 | Inter-band SSB-less SCell activation | NR-SA: TRS based inter-band SSB-less SCell activation delay | A.6.5.3.X |  |
| 1-2 | NR-SA: A-TRS based inter-band SSB-less SCell activation delay | A.6.5.3.X |  |

* + The work split is to be discussed during the meeting after the TC list is stable.

**Sub-topic 3-2 Performance part related to other objectives**

**Issue 3-2-2: RRM performance impacts of CHO – Test case list**

* Proposals
  + Option 1: Introduce both intra and inter-frequency NES-based conditional handover. (CMCC, Ericsson, Huawei, Nokia, QC, Vivo)
    - Option 1a: Define two cases where the DCI 2-9 command comes before or after TEvent\_DU + Tidentify\_intra\_with\_index. (Nokia)
    - Option 1b: FFS whether to define two cases w.r.t when DCI 2\_9 is decoded. (Ericsson, QC, CMCC)
    - Option 1c: RAN4 to define test case for NES-based conditional handover as below, which is based on the principle that whether UE successfully decodes DCI 2-X command occurs is before or after than the condition of CHO is met. (Vivo)
      * TC1: Intra-frequency conditional handover from FR1 to FR1 (UE successfully decodes DCI 2-X command occurs later than the condition of CHO is met)
      * TC2: Inter-frequency conditional handover from FR1 to FR1 (UE successfully decodes DCI 2-X command occurs earlier than the condition of CHO is met)
      * TC3: Intra-frequency conditional handover from FR2 to FR2 (UE successfully decodes DCI 2-X command occurs later than the condition of CHO is met)
      * TC4: Inter-frequency conditional handover from FR2 to FR2 (UE successfully decodes DCI 2-X command occurs earlier than the condition of CHO is met)
    - Option 1d: (Intel)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Item of core requirements** | **Type of test cases** | **Frequency range of serving cell** | **Subclause** | **Responsibility** | **Note** |
| 2-1 | NES triggering intra-frequency target CHO delay | CHO from FR1 to FR1 | FR1 | A.6.3.3.X |  |  |
| 2-2 | CHO from FR2 to FR2 | FR2 | A.7.3.3.X |  |  |
| 2-3 | NES triggering inter-frequency target CHO delay within FR | CHO from FR1 to FR1 | FR1 | A.6.3.3.X |  |  |
| 2-4 | CHO from FR2 to FR2 | FR2 | A.7.3.3.X |  |  |
| 2-5 | NES triggering inter-frequency target CHO delay across FR | CHO from FR1 to FR2 | FR1 and FR2 | A.7.3.3.X |  |  |

* + Option 2: No additional test case for CHO enhancement, as no change on delay requirement. (MTK)
* Recommended WF:
  + Define test case for NES-based CHO in following table.
    - FFS whether to define TC for FR1 to FR2 and FR2 to FR1
    - FFS whether to consider two cases when DCI 2-9 command is decoded before or after than the condition of CHO is met.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Feature** | **Test case** | **Subclause** | **Responsibility** |
| 2-1 | NES-based CHO | NES triggering intra-frequency target CHO delay From FR1 to FR1 | A.6.3.3.X |  |
| 2-2 | NES triggering inter-frequency target CHO delay From FR1 to FR1 | A.6.3.3.X |  |
| 2-3 | NES triggering intra-frequency target CHO delay From FR2 to FR2 | A.7.3.3.X |  |
| 2-4 | NES triggering inter-frequency target CHO delay From FR2 to FR2 | A.7.3.3.X |  |

**Topic #1: Core: SSB-less SCell operation**

**Issue 1-3-1: Intra-band NCCA**

* Proposals
  + Option 1: (Intel)
    - Together with the specification of inter-band cases, RAN4 specifies requirements also for intra-band non-contiguous CA.
    - Activation requirements specified for inter-band CA SSB-less SCell also apply to intra-band non-contiguous CA SSB-less SCell activation.
    - As with inter-band CA, the UE uses the same capability signaling and feature group to indicate the capability for SSB-less intra-band non-contiguous CA activation requirements.
* Recommended WF
  + Discuss the issue in this meeting.

**Issue 1-1-1: Power difference conditions**

*For* ***reception******power difference*** *conditions, following agreements were reached in RAN4#109 R4-2321562*

|  |
| --- |
| **Online session (Thursday Nov 16, 2023)**  *Agreement:*   * + *The requirements apply provided that [EPRE] difference at UE side is less than [9] dB.*     - *EPRE difference is based on power difference between TRS symbol on SSB-less SCell and SSB symbol on reference cell*     - *Capture in the WF that RAN4 assumes that UE carries out pre-compensation for AGC considering [BW difference and carrier frequency difference].*     - *Further discuss whether/how to capture the EPRE after pre-compensation in the spec.* |

* Proposals
  + Option 1: keep “EPRE after pre-compensation for AGC” in the spec text. (Apple, Ericsson, Huawei, Nokia, Vivo, ZTE)
    - Option 1a: RAN4 to agree that EPRE side condition for reference cell and SSB less SCell as [12] dB. (Ericsson, Nokia)
    - Option 1b: RAN4 to agree that the EPRE should be defined as the power per RE at the antenna connector as averaged over the respective SSB and TRS bandwidth and then normalized to the SCS. (Ericsson)
    - Option 1c: The EPRE difference at UE side is smaller than or equal to [9] dB, where, EPRE difference is the power difference between TRS/A-TRS symbol on the SSB-less SCell and SSB symbol on the reference serving cell*, which excludes the uncertainty of power difference that caused by non-ideal UE compensation for AGC considering BW difference and carrier frequency difference between SSB-less SCell and the reference serving cell*. (Vivo)
    - Option 1d: The side condition of power difference can be captured as “post-power difference”, which is interpreted as the power difference between TRS/A-TRS symbol on the SSB-less SCell and SSB symbol on the reference serving cell after the compensation for AGC. (ZTE)
  + Option 2: No need to further clarify EPRE comparison whether it is performed after AGC. No need to capture in spec. (QC)
* Recommended WF
  + Moderator: Majority (6/7) supports keep the EPRE after per-compensation with different proposals on how to descript the pre-compensation.
  + Recommended WF:
    - Keep “after the compensation for AGC” in the spec
    - FFS whether to extend 9dB to 12dB
    - FFS whether to exclude non-ideal UE compensation for AGC
    - Detailed wording to be discussed in the CR.

9 Rel-18 on-going work Items for LTE

9.4 IoT (Internet of Things) NTN (non-terrestrial network) enhancements

9.4.3 RRM core requirements maintenance

[**R4-2403576**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403576.zip) **Big CR on Core maintenance for IoT-NTN enhancements**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR- rev Cat: F  
  
 Source: MediaTek*

**Decision: Withdrawn.**

[**R4-2403578**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403578.zip) **Big CR on Core maintenance for IoT-NTN enhancements**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7315 rev Cat: F  
  
 Source: MediaTek*

**Decision: Agreed.**

**R4-2400849 (IoT\_NTN\_enh-Core) CR to TS 36.133 Correction of Cat-M1 conditional HO for IOT-NTN**

*Type: CR For: Endorsement  
 36.133 v18.4.0 CR-7290 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Abstract:**

The CR number is missing on the CR coversheet. Parsing Failure: Change request number wrong on CR cover for TDoc R4-2400849. Database value : 7290. CR cover value : -.This formal CR is for endorsement due to the CR coversheet misalignment.

**Decision: Endorsed.**

[**R4-2403501**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403501.zip) **(IoT\_NTN\_enh-Core) CR to TS 36.133 Correction of Cat-M1 conditional HO for IOT-NTN**

*Type: CR For: Endorsement  
 36.133 v18.4.0 CR-7290 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Abstract:**

The CR number is missing on the CR coversheet. Parsing Failure: Change request number wrong on CR cover for TDoc R4-2400849. Database value : 7290. CR cover value : -.This formal CR is for endorsement due to the CR coversheet misalignment.

**Decision: Withdrawn.**

**R4-2401014 Discussion on RRM core requirements maintenance for IoT NTN enhancement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401316 DraftCR on maintenance for R18 NB-IoT NTN**

*Type: draftCR For: Endorsement  
 36.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

[**R4-2403502**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403502.zip) **DraftCR on maintenance for R18 NB-IoT NTN**

*Type: draftCR For: Endorsement  
 36.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2401955 Discussions on RRM requirements for IoT NTN enhancements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

A new Rel-18 work item (WI) on IoT NTN enhancements was approved [1]. RAN4 continued to discuss the RRM impact of this WI which were summarized in [2]. In this contribution, we provide discuss and provide our view on those.

**Decision: Noted.**

**R4-2401956 (IoT\_NTN\_enh-Core) Draft CR to 38.133: IoT NTN RRC re-establishment requirements during discontinuous coverage**

*Type: draftCR For: Endorsement  
 36.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR on RRC re-establishment requriements during discontinous coverage.

**Decision: Postponed.**

[**R4-2403503**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403503.zip) **(IoT\_NTN\_enh-Core) Draft CR to 38.133: IoT NTN RRC re-establishment requirements during discontinuous coverage**

*Type: draftCR For: Endorsement  
 36.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR on RRC re-establishment requriements during discontinous coverage.

**Decision: Withdrawn.**

**R4-2402205 draftCR on IDLE mode requirements for eMTC over NTN**

*Type: draftCR For: Endorsement  
 36.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

[**R4-2403504**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403504.zip) **draftCR on IDLE mode requirements for eMTC over NTN**

*Type: draftCR For: Endorsement  
 36.133 v18.4.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2402699 Discussion on mobility requirements for IoT NTN enhancements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402700 CR on 36.133 Applicability of measurement requirements for NBIoT in Connected Mode**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7312 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2403505 (from R4-2402700).**

**[R4-2403505](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403505.zip) CR on 36.133 Applicability of measurement requirements for NBIoT in Connected Mode**

*Type: CR For: Agreement  
 36.133 v18.4.0 CR-7312 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

9.4.4 RRM performance requirements

**R4-2400850 (IoT\_NTN\_enh-Perf) Discussion on RRM test cases for IOT NTN enhancement**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2401015 Discussion on RRM performance requirements for IoT NTN enhancement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision: Noted.**

**R4-2401317 Discussion on performance requirements for IoT NTN enhancement**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2401957 Discussions on RRM performance requirements for IoT NTN enhancements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the performance part of IoT NTN enhancements.

**Decision: Noted.**

**R4-2402701 Performance Considerations for IoT NTN enhancements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

9.4.6 Moderator summary and conclusions

Topic: [110][233] IoT\_NTN\_enh

**R4-2400769 Topic summary for [110][233] IoT\_NTN\_enh**

*Type: other For: Information  
 Source: Moderator (MediaTek)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403296**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403296.zip) **WF on R18 IoT NTN RRM requirements**

*Type: other For: Approval  
 Source: MediaTek*

**Decision: Approved.**

**Online session (Monday Feb 26, 2024)**

**Issue 2-1-1: Test case principle**

Background:

* R5 RRM test cases for baseline requirement in R18 IoT NTN will mainly focus on NB-IoT NTN. (R5-237674)

***WF 1****: TS 36.521-4 (v18.0.0) will mainly focus on NB-IoT NTN. Once there is clear industry commercialization deployment plan for eMTC NTN in the future, eMTC NTN could be well covered and polished in the future released versions for TS 36.521-4 .*

Proposals:

* Proposal 1 (MTK): The R4 RRM test cases for R18 IoT NTN enh WI in TS 36.133 will mainly focus on NB-IoT NTN, and once there is clear industry commercialization deployment plan for eMTC NTN in the future, eMTC NTN could be well covered and polished in the future released versions for TS 36.133.

Recommended WF:

* Discuss proposal

MTK: will we define test for eMTC NTN enhancement in RAN4 RRM?

E///: both eMTC and IoT NTN should be covered.

Nokia: if we don’t do now, it seems we will never do that. Support to have eMTC test.

MTK: worry about the workload for the performance part.

E///: we can try to minimize the test case number.

CMCC: RAN5 may not have time. We can compromise to P1 only if we don’t have enough time. No harm to introduce test for eMTC. Ok to minimize the test case number.

Agreement:

Discuss the test cases for both IoT NTN and eMTC NTN in RAN4 RRM.

**Issue 2-2-3: For NB/eMTC, NGSO test configuration**

Proposals:

* Proposal 1 (MTK, Ericsson, Nokia): RAN4 to introduce NGSO configuration for the existing intra-frequency test cases.
* Proposal 1a (CMCC): Both GSO test configuration and NGSO test configuration should be supported for all the test cases.

Recommended WF: Proposal 1a.

Agreement:

* Both GSO test configuration and NGSO test configuration should be supported for the test cases.

**Issue 2-3-1: For NB/eMTC, test cases for time/location-based triggering of cell reselection in IDLE mode**

Proposals:

* Proposal 1: (CMCC)

*For NB1 UE*

|  |  |
| --- | --- |
| *Cell re-selection* | *Time-based measurement initiation to HD – FDD Intra frequency case for UE Category NB1 Standalone mode in normal coverage* |
| *Location-based measurement initiation to HD – FDD Intra frequency case for UE Category NB1 Standalone mode in normal coverage* |
| *Time-based measurement initiation to HD – FDD Inter frequency case for UE Category NB1 Standalone mode in normal coverage* |
| *Location-based measurement initiation to HD – FDD Inter frequency case for UE Category NB1 Standalone mode in normal coverage* |

*For Cat-M1 UE*

|  |  |
| --- | --- |
| *Cell re-selection* | *Time-based measurement initiation to E-UTRAN FDD – FDD Intra frequency case for Cat-M1 UE in normal coverage* |
| *Location-based measurement initiation to E-UTRAN FDD – FDD Intra frequency case for Cat-M1 UE in normal coverage* |
| *Time-based measurement initiation to E-UTRAN HD – FDD Intra frequency case for Cat-M1 UE in normal coverage* |
| *Location-based measurement initiation to E-UTRAN HD – FDD Intra frequency case for Cat-M1 UE in normal coverage* |
| *Time-based measurement initiation to E-UTRAN FDD – FDD Inter frequency case for Cat-M1 UE in normal coverage* |
| *Location-based measurement initiation to E-UTRAN FDD – FDD Inter frequency case for Cat-M1 UE in normal coverage* |
| *Time-based measurement initiation to E-UTRAN HD – FDD Inter frequency case for Cat-M1 UE in normal coverage* |
| *Location-based measurement initiation to E-UTRAN HD – FDD Inter frequency case for Cat-M1 UE in normal coverage* |

* Proposal 2: (Huawei)

|  |  |
| --- | --- |
| **Requirements** | **NB/eMTC** |
| IDLE: Time-based measurement triggering | NB/eMTC |
| IDLE: Location-based measurement triggering | NB/eMTC |

* Proposal 3 (Ericsson): to introduce tests to verify **location**-based triggering of neighbour cell measurements to verify following core requirements:
  + 4.6A.2.2, intra-frequency measurements in normal coverage for NB1,
  + 4.6A.2.4, intra-frequency measurements in enhanced coverage for NB1,
  + 4.6A.2.5, inter-frequency measurements in normal coverage for NB1,
  + 4.6A.2.6, inter-frequency measurements in enhanced coverage for NB1
  + 4.7A.2.1.2, intra-frequency measurements in normal coverage for M1
  + 4.7A.2.1.3, inter-frequency measurements in normal coverage for M1,
  + 4.7A.2.2.2, intra-frequency measurements in enhanced coverage for M1
  + 4.7A.2.2.3, inter-frequency measurements in enhanced coverage for M1

Recommended WF:

* Based on Proposal 1, half of tests are interleaved with enhanced coverage.
* Further discuss the following tests.

Agreement:

For NB-IoT,

|  |  |  |
| --- | --- | --- |
| Cell Re-Selection  (A.13.1.1) | HD – FDD **Intra** frequency case for UE Category NB1 in normal coverage, **time**-based triggering | NB-IDLE-1T |
| HD – FDD **Intra** frequency case for UE Category NB1 in **[enhanced]** coverage, **location**-based triggering | NB-IDLE-1D |
| HD – FDD Inter frequency case for UE Category NB1 in **[enhanced]** coverage, time-based triggering | NB-IDLE-2T |
| HD – FDD Inter frequency case for UE Category NB1 in normal coverage, location-based triggering | NB-IDLE-2D |

For eMTC, discuss the down-selection from the following list:

|  |  |  |
| --- | --- | --- |
| Cell Re-Selection  (A.14.1.1) | E-UTRAN FDD – FDD Intra frequency case for Cat-M1 UE in normal coverage, time-based triggering | M-IDLE-1T |
| E-UTRAN FDD – FDD Intra frequency case for Cat-M1 UE in **[enhanced]**  coverage, location-based triggering | M-IDLE-1D |
| E-UTRAN HD – FDD Intra frequency case for Cat-M1 UE in **[enhanced]**  coverage, time-based triggering | M-IDLE-2T |
| E-UTRAN HD – FDD Intra frequency case for Cat-M1 UE in normal coverage, location-based triggering | M-IDLE-2D |
| E-UTRAN FDD – FDD Inter frequency case for Cat-M1 UE in **[enhanced]** coverage, time-based triggering | M-IDLE-3T |
| E-UTRAN FDD – FDD Inter frequency case for Cat-M1 UE in normal coverage, location-based triggering | M-IDLE-3D |
| E-UTRAN HD – FDD Inter frequency case for Cat-M1 UE in normal coverage, time-based triggering | M-IDLE-3T |
| E-UTRAN HD – FDD Inter frequency case for Cat-M1 UE in **[enhanced]**  coverage, location-based triggering | M-IDLE-3D |

QC: Do we need tests to cover all the configurations like CA

**Issue 2-3-3: For eMTC, test cases for time/location-based CHO**

Proposals:

* Proposal 1: RAN4 to define test cases for location/time-based CHO (CMCC, Huawei, Ericsson, Nokia)
* Proposal 1a: Introduce following test cases to verify the new features, only unknown case for time/location only-based CHO for eMTC over NTN is covered in order to limit the test number. (CMCC)

CMCC: time and RSRP based conditioned HO are not covered in the list.

Agreement:

* Further discuss the down-selection from the following TCs for eMTC location/time-based CHO
* Change some of the “Time/location only-based conditional handover” tests to “time/location and RSRP based conditioned HO”

|  |  |
| --- | --- |
| E-UTRAN FDD-FDD Intra frequency Time only-based conditional handover for Cat-M1 UEs in CEModeA [for unknown target cell] | M1-2-11 |
| E-UTRAN FDD-FDD Intra frequency Location only-based conditional handover for Cat-M1 UEs in CEModeA [for unknown target cell] | M1-2-12 |
| E-UTRAN HD-FDD Intra frequency Time only-based conditional handover for Cat-M1 UEs in CEModeA [for unknown target cell] | M1-2-13 |
| E-UTRAN HD-FDD Intra frequency Location only-based conditional handover for Cat-M1 UEs in CEModeA [for unknown target cell] | M1-2-14 |
| E-UTRAN FDD-FDD Inter frequency Time only-based conditional handover for Cat-M1 UEs in CEModeA [for unknown target cell] | M1-2-15 |
| E-UTRAN FDD-FDD Inter frequency Location only-based conditional handover for Cat-M1 UEs in CEModeA [for unknown target cell] | M1-2-16 |
| E-UTRAN HD-FDD Inter frequency Time only-based conditional handover for Cat-M1 UEs in CEModeA [for unknown target cell] | M1-2-17 |
| E-UTRAN HD-FDD Inter frequency Location only-based conditional handover for Cat-M1 UEs in CEModeA [for unknown target cell] | M1-2-18 |

**Issue 2-2-1: For NB/eMTC, inter-frequency tests with neighbour cells**

Proposals:

* Proposal 1: Define test cases which are suspended in Rel-17 due to lack of neighbour cell assistant information. (CMCC, Huawei, MTK, Ericsson, Nokia)

Agreement:

* Define test cases which are suspended in Rel-17 due to lack of neighbour cell assistant information.
* Define the following TCs for NB-IoT inter-frequency tests with neighbour cells

|  |  |  |
| --- | --- | --- |
| Cell Re-Selection  (A.13.1.1) | HD – FDD **Inter frequency** case for UE Category NB1 in normal coverage | NB-1-1 |
| RRC Re-establishment  (A.13.3.1) | HD-FDD **Inter-frequency** RRC Re-establishment for UE category NB1 in Standalone mode under normal coverage | NB-3-1 |

* Define the following TC for NB inter-frequency tests with neighbour cells

|  |  |  |
| --- | --- | --- |
| RRC Re-establishment  (A.13.3.1) | A.13.3.1.2x HD-FDD Inter-frequency RRC Re-establishment for UE category NB1 in Standalone mode under enhanced coverage | NB-3-2 |

* Discuss the down-selection from the following TCs for eMTC inter-frequency tests with neighbour cells

|  |  |  |
| --- | --- | --- |
| Cell re-selection  (A.14.1.1) | E-UTRAN FDD – FDD Inter frequency case for Cat-M1 UE in normal coverage | M-1-1 |
| E-UTRAN HD – FDD Inter frequency case for Cat-M1 UE in normal coverage | M-1-2 |
| Handover  (A.14.2.1) | E-UTRAN FDD inter frequency handover for Cat-M1 UEs in CEModeA | M-2-1 |
| E-UTRAN HD-FDD inter frequency handover for Cat-M1 UEs in CEModeA | M-2-2 |
| E-UTRAN FDD inter frequency handover for Cat-M1 UEs in CEModeB | M-2-3 |
| E-UTRAN HD-FDD inter frequency handover for Cat-M1 UEs in CEModeB | M-2-4 |
| E-UTRAN FDD inter frequency **conditional** handover for Cat-M1 UEs in CEModeA | M-2-5 |
| E-UTRAN HD-FDD inter frequency **conditional** handover for Cat-M1 UEs in CEModeA | M-2-6 |
| RRC re-establishment  (A.14.3.1) | E-UTRAN FD-FDD Inter-frequency RRC Re-establishment for Cat-M1 UE in CEModeA | M-3-1 |
| E-UTRAN HD-FDD Inter-frequency RRC Re-establishment for Cat-M1 UE in CEModeA | M-3-2 |
| UE measurement procedure in RRC-CONNECTED  (A.14.5.2) | E-UTRAN FDD-FDD Inter-frequency event triggered reporting under [fading propagation or AWGN] conditions in asynchronous cells for UE category M1 with discontinuous MPDCCH monitoring in CEModeA | M-5-1 |
| E-UTRAN FDD-FDD Inter-frequency event triggered reporting under [fading propagation or AWGN]conditions in asynchronous cells for UE category M1 in CEModeA when **DRX is used** | M-5-2 |
| E-UTRAN **HD**-FDD Inter-frequency event triggered reporting under [fading propagation or AWGN]conditions in asynchronous cells for UE category M1 with discontinuous MPDCCH monitoring in CEModeA | M-5-3 |
| E-UTRAN **HD**-FDD Inter-frequency event triggered reporting under [fading propagation or AWGN] conditions in asynchronous cells for UE category M1 in CEModeA when **DRX is used** | M-5-4 |
| E-UTRAN FDD-FDD inter-frequency event triggered reporting under [fading propagation or AWGN]conditions in asynchronous cells for UE category M1 with discontinuous MPDCCH monitoring in CEModeB | M-5-5 |
| E-UTRAN HD-FDD inter-frequency event triggered reporting under [fading propagation or AWGN] conditions in asynchronous cells for UE category M1 with discontinuous MPDCCH monitoring in CEModeB | M-5-6 |
| E-UTRAN FDD-FDD Inter-frequency event triggered reporting under [fading propagation or AWGN] conditions in asynchronous cells with **burst gap** | M-5-7 |

|  |  |  |
| --- | --- | --- |
| Measurement Performance Requirements  (A.14.6.1) | FD-FDD RSRP Inter frequency case for Cat-M1 UE in CEModeA | M-6-1 |
| HD-FDD RSRP Inter frequency case for Cat-M1 UE in CEModeA | M-6-2 |
| FD-FDD RSRP Inter frequency case for Cat-M1 UE in CEModeB | M-6-3 |
| HD-FDD RSRP Inter frequency case for Cat-M1 UE in CEModeB | M-6-4 |

Issue 2-1-3: propagation channel for eMTC

Proposals:

* Proposal 1 (CMCC): Revise the propagation condition to AWGN for the existing tests of intra-frequency event triggered reporting for Cat-M1 UE (A.14.5 in TS36.133).
* Proposal 2 (CMCC): For the new test cases which to be introduced, set AWGN as propagation condition.

Recommended WF: Discuss proposals.

E///: do we also change the IoT NTN or specific to eMTC?

MTK: the same change for IoT NTN

Agreement:

Propagation channel for eMTC and NB-IoT NTN:

* Revise the propagation condition to AWGN for the existing tests of intra-frequency event triggered reporting for Cat-M1 UE (A.14.5 in TS36.133).
* For the new test cases which to be introduced, set AWGN as propagation condition.

Issue 2-2-4: For NB-IoT, neighbour cell measurement in CONNNECTED mode

Proposals:

* Proposal 1 (MTK): For NB-IoT, introduce test cases for neighbour cell measurement in CONNNECTED mode.
* Proposal 2 (Nokia): Do not introduce test cases for NB-IoT measurement procedures in RRC\_Connected

Recommended WF: Discuss proposals

MTK: ok with Proposal 2.

HW: The reason for proposal 2?

Nokia: We can go either way. The motivation for P2 is to reduce the number of test case.

E///: skip inter-frequency and keep the intra-frequency.

HW: We prefer to test both. This is the basic feature.

E///: ok with HW suggestion.

QC: ok to introduce the tests. Try to understand the importance of this feature.

Nokia: we should reduce the test case number in general.

Agreement:

Test both inter-frequency and intra-frequency.

Issue 2-3-2: For NB/eMTC, test cases for time/location-based triggering of neighbour cell measurements in CONNECTED mode

Proposals:

* Proposal 1: (CMCC)

|  |  |
| --- | --- |
| **Requirements** | **NB/eMTC** |
| CONN: Location-based measurement triggering | NB/eMTC |
| CONN: Time-based measurement triggering | NB/eMTC |

* Proposal 2: (Huawei)

|  |  |
| --- | --- |
| **Requirements** | **NB/eMTC** |
| CONN: Location-based measurement triggering | **NB**/eMTC |
| CONN: Time-based measurement triggering | **eMTC** |

* Proposal 3: (Ericsson)

|  |  |
| --- | --- |
| **Requirements** | **NB/eMTC** |
| CONN: Location-based measurement triggering | NB |
| CONN: Time-based measurement triggering | NB/eMTC |

Recommended WF:

* Further discuss the following TCs

Agreement:

For NB/eMTC, test cases for time/location-based triggering of neighbour cell measurements in CONNECTED mode

For NB-IoT,

|  |  |  |
| --- | --- | --- |
| Measurement Procedure | HD-FDD **Intra**-frequency neighbour cell measurement for UE category NB1 in standalone mode under normal coverage, time-based triggering | NB-CONN-1T |
| HD-FDD **Intra**-frequency neighbour cell measurement for UE category NB1 in standalone mode under normal coverage, location-based triggering | NB-CONN-1D |
| HD-FDD **Inter**-frequency neighbour cell measurement for UE category NB1 in standalone mode under normal coverage, time-based triggering | NB-CONN-2T |
| HD-FDD **Inter**-frequency neighbour cell measurement for UE category NB1 in standalone mode under normal coverage, location-based triggering | NB-CONN-2D |

For eMTC, discuss the down-selection based on the following test, and replace “fading propagation” by “AWGN”

|  |  |  |
| --- | --- | --- |
| Measurement Procedure  (A.14.5.1) | E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells for Cat-M1 UE in CEModeA, time-based triggering | M-CONN-1T |
| E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells for Cat-M1 UE in CEModeA, location-based triggering | M-CONN-1D |
| E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells for Cat-M1 UE in CEModeA, time-based triggering | M-CONN-2T |
| E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells for Cat-M1 UE in CEModeA, location-based triggering | M-CONN-2D |
| E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells for UE category M1 with discontinuous MPDCCH monitoring in CEModeA, time-based triggering | M-CONN-3T |
| E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells for UE category M1 with discontinuous MPDCCH monitoring in CEModeA, location-based triggering | M-CONN-3D |
| E-UTRAN HD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells for UE category M1 with discontinuous MPDCCH monitoring in CEModeA, time-based triggering | M-CONN-4T |
| E-UTRAN HD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells for UE category M1 with discontinuous MPDCCH monitoring in CEModeA, location-based triggering | M-CONN-4D |

12 Liaison output to other groups and related issues

12.1 R18 related

12.1.1 LS on combination of HST and RRM relaxation (R2-2311435)

**R4-2400404 Discussion on RAN2 LS on combination of HST and RRM relaxation**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2400405 Reply LS on combination of HST and RRM relaxation**

*Type: LS out For: Approval  
 to RAN2  
 Source: Apple*

**Decision: Revised to R4-2403532 (from R4-2400405).**

[**R4-2403532**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403532.zip) **Reply LS on combination of HST and RRM relaxation**

*Type: LS out For: Approval  
 to RAN2  
 Source: Apple*

**Decision: Approved.**

**R4-2400406 CR on combination of HST and RRM relaxation - R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4006 rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Revised to R4-2403533 (from R4-2400406).**

[**R4-2403533**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403533.zip) **CR on combination of HST and RRM relaxation - R16**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4006 rev Cat: F (Rel-16)  
  
 Source: Apple, Nokia*

**Decision: Agreed.**

**R4-2400407 CR on combination of HST and RRM relaxation - R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4007 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2403534 (from R4-2400407).**

[**R4-2403534**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403534.zip) **CR on combination of HST and RRM relaxation - R17**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4007 rev Cat: F (Rel-17)  
  
 Source: Apple, Nokia*

**Decision: Agreed.**

**R4-2400408 CR on combination of HST and RRM relaxation - R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4008 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Revised to R4-2403535 (from R4-2400408).**

[**R4-2403535**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403535.zip) **CR on combination of HST and RRM relaxation - R18**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4008 rev Cat: F (Rel-18)  
  
 Source: Apple, Nokia*

**Decision: Agreed.**

**R4-2401234 Discussion on combination of HST and RRM relaxation**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2402566 Discussion on Combination of HST and RRM Relaxation**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2402567 CR to 38.133 CatF R16 on Combination of HST and RRM Relaxation**

*Type: CR For: Agreement  
 38.133 v16.18.0 CR-4238 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

**R4-2402568 CR to 38.133 CatA R17 on Combination of HST and RRM Relaxation**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4239 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2402569 CR to 38.133 CatA R17 on Combination of HST and RRM Relaxation**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4240 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2402817 On HST RRM relaxation**

*Type: discussion For: Approval  
 Source: QUALCOMM Europe Inc. - Spain*

**Decision: Noted.**

12.1.2 Others

**R4-2401899 Discussion on the necessity of defining the missing testing parameter for PC6 and reply LS**

*Type: LS out For: Approval  
 to RAN5  
 Source: Samsung*

**Abstract:**

Session Chair: Treat this under email thread [234].

**Decision: Noted.**

12.2 R17 related

12.2.2 Others

**R4-2402570 On LS Reply to RAN5 on Missing Parameters**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Session Chair: Treat this under email thread [234].

**Decision: Noted.**

**R4-2402571 CR to 38.133 CatF R17 on PC1,5,6 RRM Parameters for RAN5**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4241 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Session Chair: Treat this under email thread [234].

**Decision: Revised to R4-2403474 (from R4-2402571).**

[**R4-2403474**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403474.zip) **CR to 38.133 CatF R17 on PC1,5,6 RRM Parameters for RAN5**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4241 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Session Chair: Treat this under email thread [234].

**Decision: Revised to R4-2403553 (from R4-2403474).**

[**R4-2403553**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403553.zip) **CR to 38.133 CatF R17 on PC1,5,6 RRM Parameters for RAN5**

*Type: CR For: Agreement  
 38.133 v17.12.0 CR-4241 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Session Chair: Treat this under email thread [234].

**Decision: Agreed.**

**R4-2402572 CR to 38.133 CatA R18 on PC1,5,6 RRM Parameters for RAN5**

*Type: CR For: Agreement  
 38.133 v18.4.0 CR-4242 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Session Chair: Treat this under email thread [234].

**Decision: Agreed.**

12.3 R15, R16 related

12.3.1 Reply LS on update for “interBandMRDC-WithOverlapDL-Bands-r16” in 38.306 (R2-2309218)

12.3.3 Others

**R4-2401607 Missing Parameters for FR2 RRM Testing of Different Power Classes**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Abstract:**

Session Chair: Treat this under email thread [234].

**Decision: Noted.**

12.4 Moderator summary and conclusions

Topic: [110][234] Reply\_LS

**R4-2400770 Topic summary for [110][234] Reply\_LS**

*Type: other For: Information  
 Source: Moderator (Apple)*

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2403446**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403446.zip) **Ad-hoc minutes on Reply\_LS**

*Type: other For: Approval  
 Source: Samsung*

**Decision: Approved.**

[**R4-2403473**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_110/Inbox/R4-2403473.zip) **Reply LS on defining the missing relative angular offsets and UE gain-related parameters for different power classes**

*Type: LS out For: Approval  
 To RAN5 (Response to: R5-237837)  
 Source: Nokia*

**Decision: Postponed.**

**Online session (Wednesday Feb 28, 2024)**

**Topic #1: LS on combination of HST and RRM relaxation (R2-2311435)**

**Issue 1-1-1: whether and how to clarify UE measurement behavior when both HST and relaxed RRM measurement criteria are enabled?**

* Proposals
  + Proposal 1: (Appel, Nokia)

Clarify that UE is allowed to enable relaxed measurement when both HST flag and low mobility evaluation are enabled. This has no negative impact on UE in high mobility mode, since the relaxed measurement criteria are unlikely to be met for them.

* + Proposal 2: (Qualcomm, China Telecom)

Do not define requirements for HST RRM relaxation cases.

* Recommended WF

Nokia: add a note for clarification. No change on the requirement.

E///: We supoprt P2. The configuration of HST and RRM relaxation does not conflict. The note is not needed.

QC: We support P2. Possible from RAN2 signaling, and no requirement in RAN4.

Apple: We prefer option 1. No new requirements proposed. Just clarification on the applicability of the requirements when both flags are configured.

Tentative Agreement (to be comfirmed in the 2nd round):

* In RAN4 understanding, the configuration of both FR1 HST and relaxed RRM measurements criteria is allowed.
* If the relaxlation criteria is fulfilled, it is up to UE implementation to apply the existing FR1 HST or RRM relaxlation requirement, and no additional RAN4 requirement to be defined.
* Work offline on the CR to capture the above agreement.