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

**Maastricht, Netherlands, 19th - 23rd August, 2024**

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

**Title: RAN4 #112 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** | **AI** | **TDoc Status** | **Decision** |
| [R4-2411796](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411796.zip) | Topic summary for [112][201] Maintenance\_up\_to\_R17 | Moderator (Huawei) | other | Information | [112][200] RRM Session | 4.1 |  |  |
| [R4-2411797](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411797.zip) | Topic summary for [112][202] Maintenance\_R18 | Moderator (Apple) | other | Information | [112][200] RRM Session | 5.1 |  |  |
| [R4-2411798](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411798.zip) | Topic summary for [112][203] FR2\_multiRx | Moderator (vivo) | other | Information | [112][200] RRM Session | 5.13.4 |  |  |
| [R4-2411799](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411799.zip) | Topic summary for [112][204] NR\_RRM\_enh3 | Moderator (Apple) | other | Information | [112][200] RRM Session | 5.14.3 |  |  |
| [R4-2411800](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411800.zip) | Topic summary for [112][205] NR\_MG\_enh2 | Moderator (MediaTek) | other | Information | [112][200] RRM Session | 5.15.3 |  |  |
| [R4-2411801](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411801.zip) | Topic summary for [112][206] NR\_NTN\_enh | Moderator (Qualcomm) | other | Information | [112][200] RRM Session | 5.23.9 |  |  |
| [R4-2411802](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411802.zip) | Topic summary for [112][207] NR\_Mob\_enh2 | Moderator (MediaTek) | other | Information | [112][200] RRM Session | 5.24.3 |  |  |
| [R4-2411803](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411803.zip) | Topic summary for [112][208] NR\_MIMO\_evo\_DL\_UL | Moderator (Samsung) | other | Information | [112][200] RRM Session | 5.27.4 |  |  |
| [R4-2411804](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411804.zip) | Topic summary for [112][209] Netw\_Energy\_NR | Moderator (Huawei) | other | Information | [112][200] RRM Session | 5.29.4 |  |  |
| [R4-2411805](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411805.zip) | Topic summary for [112][210] NR\_pos\_enh2\_part1 | Moderator (Ericsson) | other | Information | [112][200] RRM Session | 6.1.3 |  |  |
| [R4-2411806](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411806.zip) | Topic summary for [112][211] NR\_pos\_enh2\_part2 | Moderator (CATT) | other | Information | [112][200] RRM Session | 6.1.3 |  |  |
| [R4-2411807](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411807.zip) | Topic summary for [112][212] NR\_pos\_enh2\_part3 | Moderator (Huawei) | other | Information | [112][200] RRM Session | 6.1.3 |  |  |
| [R4-2411808](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411808.zip) | Topic summary for [112][213] NR\_ENDC\_RF\_Ph4 | Moderator (Huawei) | other | Information | [112][200] RRM Session | 8.1.3 |  |  |
| [R4-2411809](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411809.zip) | Topic summary for [112][214] NR\_FR1\_lessthan\_5MHz\_BW\_Ph2 | Moderator (Intel) | other | Information | [112][200] RRM Session | 8.4.4 |  |  |
| [R4-2411810](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411810.zip) | Topic summary for [112][215] NonCol\_intraB\_ENDC\_NR\_CA\_Ph2 | Moderator (Huawei) | other | Information | [112][200] RRM Session | 8.5.4 |  |  |
| [R4-2411811](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411811.zip) | Topic summary for [112][216] NR\_IoT\_NTN\_req\_test\_enh | Moderator (Xiaomi) | other | Information | [112][200] RRM Session | 8.8.5 |  |  |
| [R4-2411812](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411812.zip) | Topic summary for [112][217] NR\_ATG\_enh | Moderator (CMCC) | other | Information | [112][200] RRM Session | 8.10.5 |  |  |
| [R4-2411813](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411813.zip) | Topic summary for [112][218] NR\_RRM\_Ph5\_Part1 | Moderator (Apple) | other | Information | [112][200] RRM Session | 8.15.4 |  |  |
| [R4-2411814](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411814.zip) | Topic summary for [112][219] NR\_RRM\_Ph5\_Part2 | Moderator (CATT) | other | Information | [112][200] RRM Session | 8.15.4 |  |  |
| [R4-2411815](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411815.zip) | Topic summary for [112][220] NR\_MIMO\_Ph5 | Moderator (Samsung) | other | Information | [112][200] RRM Session | 8.18.4 |  |  |
| [R4-2411816](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411816.zip) | Topic summary for [112][221] NR\_duplex\_evo | Moderator (Huawei) | other | Information | [112][200] RRM Session | 8.19.4 |  |  |
| [R4-2411817](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411817.zip) | Topic summary for [112][222] Netw\_Energy\_NR\_enh | Moderator (Ericsson) | other | Information | [112][200] RRM Session | 8.21.3 |  |  |
| [R4-2411818](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411818.zip) | Topic summary for [112][223] NR\_LPWUS | Moderator (vivo) | other | Information | [112][200] RRM Session | 8.22.5 |  |  |
| [R4-2411819](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411819.zip) | Topic summary for [112][224] NR\_Mob\_Ph4 | Moderator (Apple) | other | Information | [112][200] RRM Session | 8.23.3 |  |  |
| [R4-2411820](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411820.zip) | Topic summary for [112][225] NR\_XR\_Ph3 | Moderator (Nokia) | other | Information | [112][200] RRM Session | 8.24.3 |  |  |
| [R4-2411821](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411821.zip) | Topic summary for [112][226] NR\_NTN\_Ph3 | Moderator (CATT) | other | Information | [112][200] RRM Session | 8.25.5 |  |  |
| [R4-2411822](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411822.zip) | Topic summary for [112][227] IoT\_NTN\_Ph3 | Moderator (MediaTek) | other | Information | [112][200] RRM Session | 8.26.4 |  |  |
| [R4-2411823](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411823.zip) | Topic summary for [112][228] Reply\_LS | Moderator (Apple) | other | Information | [112][200] RRM Session | 9.3 | not used | withdrawn |
| [R4-2411824](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411824.zip) | Topic summary for [112][229] RRM\_Spec\_Improvement | Moderator (Apple) | other | Information | [112][200] RRM Session | 10.1 |  |  |

4 Up to Rel-17 maintenance for LTE and NR

The following guidance are provided for maintenance work under AI 4 ~ AI 5:

‒ For maintenance agenda AI 4 (Rel-15/16/17) and AI 5 (Rel-18), formal CRs are expected and multiple 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 5.2, AI 5.34, 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 draft CR with TEI as WI code, please inform session chair.

‒ For all the endorsed draft CRs in this bis meeting, please re-submit them in the next ordinary meeting.

‒ The contributions corresponding to incoming LS for Rel-15/16/17 are expected to be submitted in AI 9.

‒ The contributions corresponding to incoming LS for Rel-18/19 are expected to be submitted to (sub-) agenda dedicated to the individual WIs. If there is no dedicated agenda, please submit to AI 5.2 or AI 5.34 depending on whether it is spectrum related topic or non-spectrum related topic.

4.1 Moderator summary and conclusions (for Agenda 4)

Topic: [112][201] Maintenance\_up\_to\_R17

[**R4-2411796**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411796.zip) **Topic summary for [112][201] Maintenance\_up\_to\_R17**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413867**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413867.zip) **Ad-hoc minutes for [112][201] Maintenance\_up\_to\_R17**

*Type: other For: Approval  
 Source: Huawei*

**Decision: Approved.**

[**R4-2413936**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413936.zip) **LS on measurements without gap**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia*

**Decision: Return to.**

4.5 RRM requirements

NR\_newRAT

[**R4-2411270**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411270.zip) **(NR\_newRAT-Perf) CR to A.6.7.1.2.2 config 3 duplex mode**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4625 rev Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Fixed following A.6.7.1.2.2 Config 3 parameter typos.

- PDSCH Reference measurement channel

- RMSI CORESET Reference Channel

**Decision: Agreed.**

[**R4-2411271**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411271.zip) **(NR\_newRAT-Perf) CR to A.6.7.1.2.2 config 3 duplex mode**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4626 rev Cat: A (Rel-16)  
  
 Source: Anritsu Corporation*

**Abstract:**

MCC: This is CAT A CR. Fixed following A.6.7.1.2.2 Config 3 parameter typos.

- PDSCH Reference measurement channel

- RMSI CORESET Reference Channel

**Decision: Agreed.**

[**R4-2411272**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411272.zip) **(NR\_newRAT-Perf) CR to A.6.7.1.2.2 config 3 duplex mode**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4627 rev Cat: A (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

MCC: This is CAT A CR. Fixed following A.6.7.1.2.2 Config 3 parameter typos.

- PDSCH Reference measurement channel

- RMSI CORESET Reference Channel

**Decision: Agreed.**

[**R4-2411273**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411273.zip) **(NR\_newRAT-Perf) CR to A.6.7.1.2.2 config 3 duplex mode**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4628 rev Cat: A (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

MCC: This is CAT A CR. Fixed following A.6.7.1.2.2 Config 3 parameter typos.

- PDSCH Reference measurement channel

- RMSI CORESET Reference Channel

**Decision: Agreed.**

[**R4-2411395**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411395.zip) **[NR\_newRAT-Core] On active TCI state list update delay**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

[**R4-2411396**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411396.zip) **(NR\_newRAT-Core) CR on active TCI state list update delay - R15**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4658 rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Return to.**

[**R4-2411397**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411397.zip) **(NR\_newRAT-Core) CR on active TCI state list update delay - R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4659 rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Return to.**

[**R4-2411398**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411398.zip) **(NR\_newRAT-Core) CR on active TCI state list update delay - R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4660 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Return to.**

[**R4-2411399**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411399.zip) **(NR\_newRAT-Core) CR on active TCI state list update delay - R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4661 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Return to.**

[**R4-2411501**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411501.zip) **(NR\_newRAT-Core) Update measurement restriction for L1 based measurement requirement in FR2**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4679 rev Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Decision: Return to.**

[**R4-2411502**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411502.zip) **(NR\_newRAT-Core) Update measurement restriction for L1 based measurement requirement in FR2**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4680 rev Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411503**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411503.zip) **(NR\_newRAT-Core) Update measurement restriction for L1 based measurement requirement in FR2**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4681 rev Cat: A (Rel-17)  
  
 Source: MediaTek inc.*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411504**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411504.zip) **(NR\_newRAT-Core) Update measurement restriction for L1 based measurement requirement in FR2**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4682 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411574**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411574.zip) **(NR\_newRAT-Perf) CR to TS 38.133: Corrections to RRM FR2 test cases (Rel 15)**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4693 rev Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Decision: Agreed.**

[**R4-2411575**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411575.zip) **(NR\_newRAT-Perf) CR to TS 38.133: Corrections to RRM FR2 test cases (Rel 16)**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4694 rev Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2411576**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411576.zip) **(NR\_newRAT-Perf) CR to TS 38.133: Corrections to RRM FR2 test cases (Rel 17)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4695 rev Cat: A (Rel-17)  
  
 Source: Rohde & Schwarz*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2411577**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411577.zip) **(NR\_newRAT-Perf) CR to TS 38.133: Corrections to RRM FR2 test cases (Rel 18)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4696 rev Cat: A (Rel-18)  
  
 Source: Rohde & Schwarz*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2411578**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411578.zip) **(NR\_newRAT-Perf) CR to TS 38.133: Corrections to RRM FR2 conditions for PC1 (Rel 15)**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4697 rev Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Decision: Agreed.**

[**R4-2411579**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411579.zip) **(NR\_newRAT-Perf) CR to TS 38.133: Corrections to RRM FR2 conditions for PC1 (Rel 16)**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4698 rev Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2411580**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411580.zip) **(NR\_newRAT-Perf) CR to TS 38.133: Corrections to RRM FR2 conditions for PC1 (Rel 17)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4699 rev Cat: A (Rel-17)  
  
 Source: Rohde & Schwarz*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2411581**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411581.zip) **(NR\_newRAT-Perf) CR to TS 38.133: Corrections to RRM FR2 conditions for PC1 (Rel 18)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4700 rev Cat: A (Rel-18)  
  
 Source: Rohde & Schwarz*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2411952**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411952.zip) **(NR\_newRAT) NR-E-UTRAN HO requirement maintenance**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-15)  
  
 Source: Nokia*

**Decision: Noted.**

[**R4-2411953**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411953.zip) **(NR\_newRAT) NR-E-UTRAN HO requirement maintenance**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4721 rev Cat: F (Rel-15)  
  
 Source: Nokia*

**Decision: Revised to R4-2413909 (from R4-2411953).**

[**R4-2413909**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413909.zip) **(NR\_newRAT) NR-E-UTRAN HO requirement maintenance**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4721 rev Cat: F (Rel-15)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2411954**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411954.zip) **(NR\_newRAT) NR-E-UTRAN HO requirement maintenance**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4722 rev Cat: A (Rel-16)  
  
 Source: Nokia*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411955**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411955.zip) **(NR\_newRAT) NR-E-UTRAN HO requirement maintenance**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4723 rev Cat: A (Rel-17)  
  
 Source: Nokia*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Revised to R4-2413910 (from R4-2411955).**

[**R4-2413910**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413910.zip) **(NR\_newRAT) NR-E-UTRAN HO requirement maintenance**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4723 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Abstract:**

MCC: This is CAT A CR.

Update the CR category in 3GU.

**Decision: Return to.**

[**R4-2411956**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411956.zip) **(NR\_newRAT) NR-E-UTRAN HO requirement maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4724 rev Cat: A (Rel-18)  
  
 Source: Nokia*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412158**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412158.zip) **(NR\_newRAT-Perf) Correction to FR1 BFR test cases\_R15**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4752 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413911 (from R4-2412158).**

[**R4-2413911**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413911.zip) **(NR\_newRAT-Perf) Correction to FR1 BFR test cases\_R15**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4752 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412159**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412159.zip) **(NR\_newRAT-Perf) Correction to FR1 BFR test cases\_R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4753 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412160**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412160.zip) **(NR\_newRAT-Perf) Correction to FR1 BFR test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4754 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412161**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412161.zip) **(NR\_newRAT-Perf) Correction to FR1 BFR test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4755 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412162**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412162.zip) **(NR\_newRAT-Perf) Correction to PRACH RMCs\_R15**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4756 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

NCC: A revision is required due to parsing failure. Change request number wrong on CR cover for TDoc [R4-2412162](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412162.zip). Database value : 4756. CR cover value : ????.

**Decision: Revised to R4-2413912 (from R4-2412162).**

[**R4-2413912**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413912.zip) **(NR\_newRAT-Perf) Correction to PRACH RMCs\_R15**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4756 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

NCC: A revision is required due to parsing failure. Change request number wrong on CR cover for TDoc [R4-2412162](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412162.zip). Database value : 4756. CR cover value : ????.

**Decision: Return to.**

[**R4-2412163**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412163.zip) **(NR\_newRAT-Perf) Correction to PRACH RMCs\_R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4757 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412164**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412164.zip) **(NR\_newRAT-Perf) Correction to PRACH RMCs\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4758 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412165**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412165.zip) **(NR\_newRAT-Perf) Correction to PRACH RMCs\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4759 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412187**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412187.zip) **(NR\_newRAT-Perf) CR on TC for BWP switching R16 (Cat F)**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4779 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

[**R4-2412188**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412188.zip) **(NR\_newRAT-Perf) CR on TC for BWP switching R17 (Cat A)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4780 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2412189**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412189.zip) **(NR\_newRAT-Perf) CR on TC for BWP switching R18 (Cat A)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4781 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2412224**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412224.zip) **(NR\_newRAT-Core) Corrections on measurement restriction for RLM, BFD and CBD R15**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4798 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413913 (from R4-2412224).**

[**R4-2413913**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413913.zip) **(NR\_newRAT-Core) Corrections on measurement restriction for RLM, BFD and CBD R15**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4798 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412225**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412225.zip) **(NR\_newRAT-Core) Corrections on measurement restriction for RLM, BFD and CBD R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4799 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412226**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412226.zip) **(NR\_newRAT-Core) Corrections on measurement restriction for RLM, BFD and CBD R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4800 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413914 (from R4-2412226).**

[**R4-2413914**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413914.zip) **(NR\_newRAT-Core) Corrections on measurement restriction for RLM, BFD and CBD R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4800 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412227**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412227.zip) **(NR\_newRAT-Core) Corrections on measurement restriction for RLM, BFD and CBD R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4801 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413088**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413088.zip) **(NR\_newRAT-Core) CR on SCell activation in FR2\_R15**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4898 rev Cat: F (Rel-15)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413088](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413088.zip). Database value : NR\_newRAT-Core. CR cover value : [NR\_newRAT-Core]. Please check the WI code and match to database value on the CR coversh

**Decision: Revised to R4-2413893 (from R4-2413088).**

[**R4-2413893**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413893.zip) **(NR\_newRAT-Core) CR on SCell activation in FR2\_R15**

*Type: CR For: Agreement  
 38.133 v15.26.0 CR-4898 rev Cat: F (Rel-15)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413088](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413088.zip). Database value : NR\_newRAT-Core. CR cover value : [NR\_newRAT-Core]. Please check the WI code and match to database value on the CR coversh

**Decision: Return to.**

[**R4-2413093**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413093.zip) **(NR\_newRAT-Core) CR on SCell activation in FR2\_R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4903 rev Cat: A (Rel-16)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413094**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413094.zip) **(NR\_newRAT-Core) CR on SCell activation in FR2\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4904 rev Cat: A (Rel-17)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413095**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413095.zip) **(NR\_newRAT-Core) CR on SCell activation in FR2\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4905 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NR\_redcap

[**R4-2411274**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411274.zip) **(NR\_redcap-Perf) CR to A.16.7.1.3 and A.16.7.1.4 for typo correction**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4629 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Fixed typos in A.16.7.1.3 and A.16.7.1.4.

**Decision: Revised to R4-2413915 (from R4-2411274).**

[**R4-2413915**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413915.zip) **(NR\_redcap-Perf) CR to A.16.7.1.3 and A.16.7.1.4 for typo correction**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4629 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Fixed typos in A.16.7.1.3 and A.16.7.1.4.

**Decision: Return to.**

[**R4-2411275**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411275.zip) **(NR\_redcap-Perf) CR to A.16.7.1.3 and A.16.7.1.4 for typo correction**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4630 rev Cat: A (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

Fixed typos in A.16.7.1.3 and A.16.7.1.4. MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411276**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411276.zip) **(NR\_redcap-Perf) CR to 1x1 antenna configuration in FR1**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4631 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Removed antenna correlation definition (Low) in 1x1 case.

**Decision: Agreed.**

[**R4-2411277**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411277.zip) **(NR\_redcap-Perf) CR to 1x1 antenna configuration in FR1**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4632 rev Cat: A (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

Removed antenna correlation definition (Low) in 1x1 case. MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2411309**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411309.zip) **(NR\_redcap-Perf) CR to A.16.6.2.9 Table A.16.6.2.9.1-2 T2**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4633 rev Cat: F (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

Part of the previously agreed CR ([R4-2320134](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2320134.zip)) content was not captured in the specification.

T2 in Table A.16.6.2.9.1-2 should be 1.5 s instead of 1 s.

Correction is necessary only in Rel-18 spec. Rel-17 spec has been already correctly updated in the previous version.

**Decision: Agreed.**

[**R4-2411345**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411345.zip) **(NR\_redcap-Core) CR to 38.133 on eDRX requirements in IDLE mode for RedCap UE**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4634 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411345](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411345.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Revised to R4-2413881 (from R4-2411345).**

[**R4-2413881**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413881.zip) **(NR\_redcap-Core) CR to 38.133 on eDRX requirements in IDLE mode for RedCap UE**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4634 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411345](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411345.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Return to.**

[**R4-2411346**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411346.zip) **(NR\_redcap-Core) CR to 38.133 on eDRX requirements in IDLE mode for RedCap UE**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4635 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411346](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411346.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Revised to R4-2413880 (from R4-2411346).**

[**R4-2413880**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413880.zip) **(NR\_redcap-Core) CR to 38.133 on eDRX requirements in IDLE mode for RedCap UE**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4635 rev Cat: A (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411346](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411346.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Return to.**

[**R4-2411751**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411751.zip) **(NR\_redcap-Core) CR to TS 38.133 specification corrections for NR Redcap**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4713 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Agreed.**

[**R4-2411752**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411752.zip) **(NR\_redcap-Core) CR to TS 38.133 specification corrections for NR Redcap**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4714 rev Cat: A (Rel-18)  
  
 Source: CMCC*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2411957**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411957.zip) **( NR\_Redcap-Core) CR correcting and clarifying the handover interruption time requirements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4725 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2413916 (from R4-2411957).**

[**R4-2413916**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413916.zip) **( NR\_Redcap-Core) CR correcting and clarifying the handover interruption time requirements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4725 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2411958**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411958.zip) **(NR\_Redcap-Core) CR correcting and clarifying the handover interruption time requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4726 rev Cat: A (Rel-18)  
  
 Source: Nokia*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412174**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412174.zip) **(NR\_redcap-Perf) Correction to FR1 RedCap BFR test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4768 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

[**R4-2412175**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412175.zip) **(NR\_redcap-Perf) Correction to FR1 RedCap BFR test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4769 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2412176**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412176.zip) **(NR\_redcap-Perf) Correction to FR2 RedCap RLM test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4770 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

[**R4-2412177**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412177.zip) **(NR\_redcap-Perf) Correction to FR2 RedCap RLM test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4771 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2412393**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412393.zip) **(NR\_redcap-Core)Correction on higher priority search with eDRX**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4814 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation, Sanechips*

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

[**R4-2412394**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412394.zip) **(NR\_redcap-Core)Correction on higher priority search with eDRX**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4815 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

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

[**R4-2412398**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412398.zip) **CR to 38.133: Correction to priority level of relaxed inter-RAT measurements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4816 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Current requirements require the UE to measure on inter-RAT E-UTRAN layers of higher, equal or lower priorivty at least every 1 hour under some conditions.

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

[**R4-2413213**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413213.zip) **CR to 38.133: Correction to priority level of relaxed inter-RAT measurements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4921 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Current requirements require the UE to measure on inter-RAT E-UTRAN layers of higher, equal or lower priorivty at least every 1 hour under some conditions.

**Decision: Agreed.**

[**R4-2412399**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412399.zip) **CR to 38.133: Correction to priority level of relaxed inter-RAT measurements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4817 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Current requirements require the UE to measure on inter-RAT E-UTRAN layers of higher, equal or lower priority at least every 1 hour under some conditions. MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2412908**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412908.zip) **(NR\_redcap-Core)Correction on higher priority search with eDRX**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4875 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation, Sanechips*

**Decision: Agreed.**

[**R4-2412909**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412909.zip) **(NR\_redcap-Core)Correction on higher priority search with eDRX**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4876 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Decision: Return to.**

[**R4-2413206**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413206.zip) **(NR\_redcap-Perf) Formal CR to Rel-17 TS 38.133: on RedCap Perf maintenance**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4919 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

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

[**R4-2413464**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413464.zip) **(NR\_redcap-Perf) Formal CR to Rel-17 TS 38.133: on RedCap Perf maintenance**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4952 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Return to.**

[**R4-2413207**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413207.zip) **(NR\_redcap-Perf) Formal CR to Rel-18 TS 38.133: on RedCap Perf maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4920 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413381**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413381.zip) **(NR\_redcap-Perf) Correction CR for RedCap TCs (R17)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4942 rev Cat: F (Rel-17)  
  
 Source: Qualcomm*

**Decision: Agreed.**

[**R4-2413382**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413382.zip) **(NR\_redcap-Perf) Correction CR for RedCap TCs (R18)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4943 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

LTE\_NR\_DC\_CA\_enh

[**R4-2411363**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411363.zip) **(LTE\_NR\_DC\_CA\_enh-Core) CR on IDLE mode CA/DC measurements**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4640 rev Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411363](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411363.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Revised to R4-2413937 (from R4-2411363).**

[**R4-2413937**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413937.zip) **(LTE\_NR\_DC\_CA\_enh-Core) CR on IDLE mode CA/DC measurements**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4640 rev Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411363](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411363.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Return to.**

[**R4-2411364**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411364.zip) **(LTE\_NR\_DC\_CA\_enh-Core) CR on IDLE mode CA/DC measurements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4641 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411364](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411364.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Revised to R4-2413938 (from R4-2411364).**

[**R4-2413938**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413938.zip) **(LTE\_NR\_DC\_CA\_enh-Core) CR on IDLE mode CA/DC measurements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4641 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411364](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411364.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Return to.**

[**R4-2411365**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411365.zip) **(LTE\_NR\_DC\_CA\_enh-Core) CR on IDLE mode CA/DC measurements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4642 rev Cat: A (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

LTE\_NR\_DC\_enh2

[**R4-2411961**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411961.zip) **(LTE\_NR\_DC\_enh2-Core) Alignment of RAN4 requirements with RAN2 procedures**

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

**Decision: Noted.**

[**R4-2411962**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411962.zip) **(LTE\_NR\_DC\_enh2-Core) CR on alignment of RAN4 requirements with RAN2 procedures**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4729 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2413918 (from R4-2411962).**

[**R4-2413918**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413918.zip) **(LTE\_NR\_DC\_enh2-Core) CR on alignment of RAN4 requirements with RAN2 procedures**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4729 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2411963**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411963.zip) **(LTE\_NR\_DC\_enh2-Core) Alignment of RAN4 requirements with RAN2 procedures**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4730 rev Cat: A (Rel-18)  
  
 Source: Nokia*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412281**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412281.zip) **CR to add interruption requirement due to RLM/BFD measurement for deactivated PScell**

*Type: CR For: Agreement  
 36.133 v17.13.0 CR-7332 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR add the missing requirement for interruption due to RLM\_BFD measurement for deactivated Pscell

**Decision: Postponed.**

[**R4-2412282**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412282.zip) **CR to add interruption requirement due to RLM/BFD measurement for deactivated PScell**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7333 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR add the missing requirement for interruption due to RLM\_BFD measurement for deactivated Pscell

**Decision: Withdrawn.**

[**R4-2412283**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412283.zip) **Test case maintenance E-UTRAN – NR interruptions during measurements on deactivated NR PSCell**

*Type: CR For: Agreement  
 36.133 v17.13.0 CR-7334 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR update test case value according to the core requirement.

**Decision: Postponed.**

[**R4-2412284**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412284.zip) **Test case maintenance E-UTRAN – NR interruptions during measurements on deactivated NR PSCell**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7335 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR update test case value according to the core requirement.

**Decision: Withdrawn.**

NR\_Mob\_enh

[**R4-2411366**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411366.zip) **(NR\_Mob\_enh-Core) CR on abbreviation of DAPS**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4643 rev Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411366](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411366.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Revised to R4-2413908 (from R4-2411366).**

[**R4-2413908**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413908.zip) **(NR\_Mob\_enh-Core) CR on abbreviation of DAPS**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4643 rev Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411366](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411366.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Return to.**

[**R4-2411367**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411367.zip) **(NR\_Mob\_enh-Core) CR on abbreviation of DAPS**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4644 rev Cat: A (Rel-17)  
  
 Source: CATT*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411368**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411368.zip) **(NR\_Mob\_enh-Core) CR on abbreviation of DAPS**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4645 rev Cat: A (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NR\_MG\_enh

[**R4-2411369**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411369.zip) **(NR\_MG\_enh-Core) CR on Rel-17 gap enhancements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4646 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411369](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411369.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Revised to R4-2413919 (from R4-2411369).**

[**R4-2413919**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413919.zip) **(NR\_MG\_enh-Core) CR on Rel-17 gap enhancements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4646 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411369](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411369.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Return to.**

[**R4-2411370**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411370.zip) **(NR\_MG\_enh-Core) CR on Rel-17 gap enhancements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4647 rev Cat: A (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411427**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411427.zip) **CR for minimum requirement at transitions - R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4667 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Return to.**

[**R4-2411428**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411428.zip) **CR for minimum requirement at transitions - R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4668 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411486**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411486.zip) **[NR\_MG\_enh-Core] Discussion on Rel-17 NCSG pattern**

*Type: discussion For: Discussion  
 Source: OPPO, CATT*

**Decision: Noted.**

[**R4-2411523**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411523.zip) **(NR\_MG\_enh-Core) CR on Rel-17 NCSG pattern (Rel-17 spec)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4685 rev Cat: F (Rel-17)  
  
 Source: OPPO, CATT*

MCC: Title was updated in 3GU.

**Decision: Revised to R4-2413888 (from R4-2411523).**

[**R4-2413888**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413888.zip) **(NR\_MG\_enh-Core) CR on Rel-17 NCSG pattern (Rel-17 spec)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4685 rev Cat: F (Rel-17)  
  
 Source: OPPO, CATT*

MCC: Title was updated in 3GU.

**Decision: Return to.**

[**R4-2411524**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411524.zip) **(NR\_MG\_enh-Core) CR on Rel-17 NCSG pattern (Rel-18 spec)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4686 rev Cat: A (Rel-18)  
  
 Source: OPPO, CATT*

**Abstract:**

MCC: This is CAT A CR.

MCC: Title was updated in 3GU.

**Decision: Return to.**

[**R4-2411778**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411778.zip) **(NR\_MG\_enh-Perf) Maintenance CR for MGE perf part**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4717 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc*

**Decision: Return to.**

[**R4-2411779**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411779.zip) **(NR\_MG\_enh-Perf) Maintenance CR for MGE perf part**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4718 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412509**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412509.zip) **(NR\_MG\_enh-Core) Remaining issues on R17 NCSG**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the remaining issues on R17 NCSG

**Decision: Noted.**

[**R4-2412510**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412510.zip) **(NR\_MG\_enh-Core) CR on 38.133 MG enh on NCSG**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4835 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This core part CR for MG enh on NCSG

**Decision: Revised to R4-2413920 (from R4-2412510).**

[**R4-2413920**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413920.zip) **(NR\_MG\_enh-Core) CR on 38.133 MG enh on NCSG**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4835 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This core part CR for MG enh on NCSG

**Decision: Return to.**

[**R4-2412597**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412597.zip) **(NR\_MG\_enh-Core) CR on 38.133 MG enh on NCSG-r18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4842 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This core part Cat A CR for MG enh on NCSG. MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412628**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412628.zip) **(NR\_MG\_enh-Core) Discussion on remaining issues in Rel-17 MGE**

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

**Decision: Noted.**

[**R4-2412629**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412629.zip) **(NR\_MG\_enh-Core) CR on Rel-17 MGE core requirements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4846 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413921 (from R4-2412629).**

[**R4-2413921**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413921.zip) **(NR\_MG\_enh-Core) CR on Rel-17 MGE core requirements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4846 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412630**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412630.zip) **(NR\_MG\_enh-Core) CR on Rel-17 MGE core requirements R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4847 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413191**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413191.zip) **(NR\_MG\_enh-Core) CR scheduling restriction on interRAT E-UTRAN measurement with NCSG (Cat-F Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4914 rev Cat: F (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Return to.**

[**R4-2413192**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413192.zip) **(NR\_MG\_enh-Core) CR scheduling restriction on interRAT E-UTRAN measurement with NCSG (Cat-A Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4915 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413307**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413307.zip) **(NR\_MG\_enh-Core) CR 38.133 Corrections to Pre-MG activation/deactivation R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4926 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2413922 (from R4-2413307).**

[**R4-2413922**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413922.zip) **(NR\_MG\_enh-Core) CR 38.133 Corrections to Pre-MG activation/deactivation R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4926 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2413308**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413308.zip) **(NR\_MG\_enh-Core) CR 38.133 Corrections to Pre-MG activation/deactivation R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4927 rev Cat: A (Rel-18)  
  
 Source: Nokia*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NR\_NTN\_solutions

[**R4-2411371**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411371.zip) **(NR\_NTN\_solutions-Perf) CR on Rel-17 NTN core and accuracy requirements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4648 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411371](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411371.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Revised to R4-2413923 (from R4-2411371).**

[**R4-2413923**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413923.zip) **(NR\_NTN\_solutions-Perf) CR on Rel-17 NTN core and accuracy requirements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4648 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411371](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411371.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Return to.**

[**R4-2411372**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411372.zip) **(NR\_NTN\_solutions-Perf) CR on Rel-17 NTN core and accuracy requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4649 rev Cat: A (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411461**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411461.zip) **(NR\_NTN\_solutions-Core) CR on update field name of NTN features for NGSO**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4675 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

[**R4-2411462**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411462.zip) **(NR\_NTN\_solutions-Core) CR on update field name of NTN features for NGSO**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4676 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2411611**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411611.zip) **CR on maintenance of RRM performance requirements in NR\_NTN\_solutions WI\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4701 rev Cat: F (Rel-17)  
  
 Source: Xiaomi*

**Abstract:**

MCC: A revision is needed due to parsing failure. Change request number wrong on CR cover for TDoc [R4-2411611](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411611.zip). Database value : 4701. CR cover value : .

**Decision: Revised to R4-2413924 (from R4-2411611).**

[**R4-2413924**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413924.zip) **CR on maintenance of RRM performance requirements in NR\_NTN\_solutions WI\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4701 rev Cat: F (Rel-17)  
  
 Source: Xiaomi*

**Abstract:**

MCC: A revision is needed due to parsing failure. Change request number wrong on CR cover for TDoc [R4-2411611](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411611.zip). Database value : 4701. CR cover value : .

**Decision: Return to.**

[**R4-2411612**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411612.zip) **CR on maintenance of RRM performance requirements in NR\_NTN\_solutions WI\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4702 rev Cat: A (Rel-18)  
  
 Source: Xiaomi*

**Abstract:**

MCC: A revision is needed due to parsing failure. Change request number wrong on CR cover for TDoc [R4-2411612](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411612.zip). Database value : 4702. CR cover value : .

Change request Work Item wrong on CR cover for TDoc [R4-2411612](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411612.zip). Database value : NR\_NTN\_solutions-Per

**Decision: Revised to R4-2413925 (from R4-2411612).**

[**R4-2413925**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413925.zip) **CR on maintenance of RRM performance requirements in NR\_NTN\_solutions WI\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4702 rev Cat: A (Rel-18)  
  
 Source: Xiaomi*

**Abstract:**

MCC: A revision is needed due to parsing failure. Change request number wrong on CR cover for TDoc [R4-2411612](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411612.zip). Database value : 4702. CR cover value : .

Change request Work Item wrong on CR cover for TDoc [R4-2411612](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411612.zip). Database value : NR\_NTN\_solutions-Per

**Decision: Return to.**

[**R4-2411745**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411745.zip) **(NR\_NTN\_solutions-Core) CR to TS 38.133 specification corrections for NR NTN**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4707 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Revised to R4-2413926 (from R4-2411745).**

[**R4-2413926**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413926.zip) **(NR\_NTN\_solutions-Core) CR to TS 38.133 specification corrections for NR NTN**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4707 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Return to.**

[**R4-2411746**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411746.zip) **(NR\_NTN\_solutions-Core) CR to TS 38.133 specification corrections for NR NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4708 rev Cat: A (Rel-18)  
  
 Source: CMCC*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411747**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411747.zip) **(NR\_NTN\_solutions-Core) CR to TS 38.133 measurement procedure related corrections for NR NTN**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4709 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Revised to R4-2413927 (from R4-2411747).**

[**R4-2413927**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413927.zip) **(NR\_NTN\_solutions-Core) CR to TS 38.133 measurement procedure related corrections for NR NTN**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4709 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Return to.**

[**R4-2411748**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411748.zip) **(NR\_NTN\_solutions-Core) CR to TS 38.133 measurement procedure related corrections for NR NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4710 rev Cat: A (Rel-18)  
  
 Source: CMCC*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411749**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411749.zip) **(NR\_NTN\_solutions-Perf) CR to TS 38.133 measurement accuracy related corrections for NR NTN**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4711 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Revised to R4-2413928 (from R4-2411749).**

[**R4-2413928**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413928.zip) **(NR\_NTN\_solutions-Perf) CR to TS 38.133 measurement accuracy related corrections for NR NTN**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4711 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Return to.**

[**R4-2411750**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411750.zip) **(NR\_NTN\_solutions-Perf) CR to TS 38.133 measurement accuracy related corrections for NR NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4712 rev Cat: A (Rel-18)  
  
 Source: CMCC*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412631**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412631.zip) **(NR\_NTN\_solutions-Core) CR on Rel-17 NTN measurement requirements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4848 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

[**R4-2412632**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412632.zip) **(NR\_NTN\_solutions-Core) CR on Rel-17 NTN measurement requirements R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4849 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2413051**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413051.zip) **Modify the NR NTN RRC Re-establishment requirements\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4891 rev Cat: F (Rel-17)  
  
 Source: ZTECorporation,Sanechips*

*Moved to AI 4.5.*

**Decision:** The document was **not treated**.

[**R4-2413052**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413052.zip) **Modify the NR NTN RRC Re-establishment requirements\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4892 rev Cat: A (Rel-18)  
  
 Source: ZTECorporation,Sanechips*

**Abstract:**

MCC: This is CAT A CR.

**Decision:** The document was **not treated**.

NR\_pos

[**R4-2412626**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412626.zip) **(NR\_pos-Perf) CR on report mapping for R16 positioning**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4844 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412627**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412627.zip) **(NR\_pos-Perf) CR on report mapping for R16 positioning R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4845 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NR\_pos\_enh

[**R4-2411373**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411373.zip) **(NR\_pos\_enh-Perf) CR on R17 positioning test cases in RRC\_INACTIVE state**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4650 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411373](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411373.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Revised to R4-2413929 (from R4-2411373).**

[**R4-2413929**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413929.zip) **(NR\_pos\_enh-Perf) CR on R17 positioning test cases in RRC\_INACTIVE state**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4650 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411373](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411373.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Return to.**

[**R4-2411374**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411374.zip) **(NR\_pos\_enh-Perf) CR on R17 positioning test cases in RRC\_INACTIVE state**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4651 rev Cat: A (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NR\_CSIRS\_L3meas

[**R4-2411424**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411424.zip) **CR on RSRP Measurement Report Mapping - R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4664 rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Return to.**

[**R4-2411425**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411425.zip) **CR on RSRP Measurement Report Mapping - R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4665 rev Cat: A (Rel-17)  
  
 Source: Apple*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2411426**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411426.zip) **CR on RSRP Measurement Report Mapping - R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4666 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412169**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412169.zip) **(NR\_CSIRS\_L3meas-Perf) Correction to CSI-RS L3 measurement test cases\_R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4763 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413930 (from R4-2412169).**

[**R4-2413930**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413930.zip) **(NR\_CSIRS\_L3meas-Perf) Correction to CSI-RS L3 measurement test cases\_R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4763 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412170**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412170.zip) **(NR\_CSIRS\_L3meas-Perf) Correction to CSI-RS L3 measurement test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4764 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412171**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412171.zip) **(NR\_CSIRS\_L3meas-Perf) Correction to CSI-RS L3 measurement test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4765 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NR\_UE\_pow\_sav\_enh

[**R4-2411558**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411558.zip) **(NR\_UE\_pow\_sav\_enh-Core) Clarification to RLM/BFD relaxation with short DRX**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4687 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

MCC: Title was updated in 3GU.

**Decision: Revised to R4-2413886 (from R4-2411558).**

[**R4-2413886**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413886.zip) **(NR\_UE\_pow\_sav\_enh-Core) Clarification to RLM/BFD relaxation with short DRX**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4687 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

MCC: Title was updated in 3GU.

**Decision: Return to.**

[**R4-2411559**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411559.zip) **(NR\_UE\_pow\_sav\_enh-Core) Clarification to RLM/BFD relaxation with short DRX Cat.A**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4688 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

MCC: This is CAT A CR.

MCC: Title was updated in 3GU.

**Decision: Return to.**

[**R4-2412515**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412515.zip) **(NR\_UE\_pow\_sav\_enh-Core)Discussion on maintenance of RRM requirements for RLM and BFD relaxation**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

LTE\_NR\_MUSIM

[**R4-2411959**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411959.zip) **(LTE\_NR\_MUSIM-Core) CR on MUSIM clarification**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4727 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2413931 (from R4-2411959).**

[**R4-2413931**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413931.zip) **(LTE\_NR\_MUSIM-Core) CR on MUSIM clarification**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4727 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2411960**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411960.zip) **(LTE\_NR\_MUSIM-Core) CR on MUSIM clarification**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4728 rev Cat: A (Rel-18)  
  
 Source: Nokia*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412633**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412633.zip) **(LTE\_NR\_MUSIM-Core) CR on Rel-17 MUSIM core requirements**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4850 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

NR\_eMIMO

[**R4-2413089**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413089.zip) **(NR\_eMIMO-Core) CR on candidate beam detection\_R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4899 rev Cat: F (Rel-16)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413089](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413089.zip). Database value : NR\_eMIMO-Core. CR cover value : [NR\_eMIMO-Core]. Please check the WI code and match to the database value on the CR cover

**Decision: Revised to R4-2413892 (from R4-2413089).**

[**R4-2413892**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413892.zip) **(NR\_eMIMO-Core) CR on candidate beam detection\_R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4899 rev Cat: F (Rel-16)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413089](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413089.zip). Database value : NR\_eMIMO-Core. CR cover value : [NR\_eMIMO-Core]. Please check the WI code and match to the database value on the CR cover

**Decision: Return to.**

[**R4-2413096**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413096.zip) **(NR\_eMIMO-Core) CR on candidate beam detection\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4906 rev Cat: A (Rel-17)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413097**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413097.zip) **(NR\_eMIMO-Core) CR on candidate beam detection\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4907 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NR\_feMIMO

[**R4-2411990**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411990.zip) **(NR\_feMIMO-Perf)Correction of test configurations for Rel-17 FeMIMO**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4738 rev Cat: F (Rel-17)  
  
 Source: Samsung*

**Decision: Return to.**

[**R4-2411991**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411991.zip) **(NR\_feMIMO-Perf)Correction of test configurations for Rel-17 FeMIMO**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4739 rev Cat: A (Rel-18)  
  
 Source: Samsung*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413091**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413091.zip) **(NR\_FeMIMO-Core) CR on TRP specific candidate beam detection\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4901 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413091](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413091.zip). Database value : NR\_FeMIMO-Core. CR cover value : [ NR\_FeMIMO-Core]. Please check the WI code and match to the database value on the CR co

**Decision: Revised to R4-2413890 (from R4-2413091).**

[**R4-2413890**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413890.zip) **(NR\_FeMIMO-Core) CR on TRP specific candidate beam detection\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4901 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413091](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413091.zip). Database value : NR\_FeMIMO-Core. CR cover value : [ NR\_FeMIMO-Core]. Please check the WI code and match to the database value on the CR co

**Decision: Return to.**

[**R4-2413100**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413100.zip) **(NR\_FeMIMO-Core) CR on TRP specific candidate beam detection\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4910 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[NR\_HST\_FR1\_enh](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=890258)

[**R4-2412048**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412048.zip) **Corrections of the propagation conditions for cell reselection with highSpeedMeasInterFreq-r17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4748 rev Cat: F (Rel-17)  
  
 Source: Qualcomm Technologies Ireland*

**Abstract:**

Defining the Doppler for the active cell leads to an abrupt change in Doppler after reselection since the active cell has changed.

**Decision: Postponed.**

NR\_HST\_FR2

[**R4-2412018**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412018.zip) **(NR\_HST\_FR2) CR to 38.133 on HST FR2 RRM Performance Corrections**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4740 rev Cat: F (Rel-18)  
  
 Source: Nokia, Samsung*

**Abstract:**

A CR to Rel-18 TS 38.133 for NR\_HST\_FR2\_perf to align with the changes that were already implemented in Rel-17 TS at RAN4#111 in [R4-2410224](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2410224.zip).

**Decision: Revised to R4-2413932 (from R4-2412018).**

[**R4-2413932**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413932.zip) **(NR\_HST\_FR2) CR to 38.133 on HST FR2 RRM Performance Corrections**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4740 rev Cat: F (Rel-18)  
  
 Source: Nokia, Samsung*

**Abstract:**

A CR to Rel-18 TS 38.133 for NR\_HST\_FR2\_perf to align with the changes that were already implemented in Rel-17 TS at RAN4#111 in [R4-2410224](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2410224.zip).

**Decision: Return to.**

[**R4-2412019**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412019.zip) **(NR\_HST\_FR2) CR to 38.133 with corrections and missing RRM parameters**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4741 rev Cat: F (Rel-17)  
  
 Source: Nokia*

**Decision: Revised to R4-2413917 (from R4-2412019).**

[**R4-2413917**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413917.zip) **(NR\_HST\_FR2) CR to 38.133 with corrections and missing RRM parameters**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4741 rev Cat: F (Rel-17)  
  
 Source: Nokia, Samsung*

Add sourcing company in 3GU.

**Decision: Return to.**

[**R4-2412020**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412020.zip) **(NR\_HST\_FR2) CR to 38.133 with corrections and missing RRM parameters**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4742 rev Cat: A (Rel-18)  
  
 Source: Nokia, Sasmsung*

**Abstract:**

MCC: This is CAT A CR.

Add sourcing company in 3GU.

**Decision: Return to.**

[**R4-2412856**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412856.zip) **(NR\_HST\_FR2-Perf) CR on defining testing missing parameter of intra-frequency measurement in idle mode for PC6**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4865 rev Cat: F (Rel-17)  
  
 Source: Samsung*

**Decision: Merged.**

[**R4-2412857**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412857.zip) **(NR\_HST\_FR2-Perf) CR on defining testing missing parameter of intra-frequency measurement in idle mode for PC6**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4866 rev Cat: A (Rel-18)  
  
 Source: Samsung*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Withdrawn.**

NR\_RRM\_enh

[**R4-2412025**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412025.zip) **(NR\_RRM\_enh-Core) Discussion on Rel 16 no-gap reporting**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

[**R4-2412401**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412401.zip) **(NR\_RRM\_enh) CR to 38.133: Correction to NR SRS carrier based switching test cases**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4818 rev Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

This CR contains update to interruption requirements for SRS carrier based switching.

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

[**R4-2412402**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412402.zip) **(NR\_RRM\_enh) CR to 38.133: Correction to NR SRS carrier based switching test cases**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4819 rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR contains update to interruption requirements for SRS carrier based switching.

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

[**R4-2412403**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412403.zip) **(NR\_RRM\_enh) CR to 38.133: Correction to NR SRS carrier based switching test cases**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4820 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR contains update to interruption requirements for SRS carrier based switching.

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

[**R4-2413090**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413090.zip) **(NR\_RRM\_enh-Core) CR on multiple SCell activation in FR2\_R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4900 rev Cat: F (Rel-16)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413090](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413090.zip). Database value : NR\_RRM\_enh-Core. CR cover value : [NR\_RRM\_enh-Core]. Please check the WI code and match to the database value on the CR c

**Decision: Revised to R4-2413891 (from R4-2413090).**

[**R4-2413891**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413891.zip) **(NR\_RRM\_enh-Core) CR on multiple SCell activation in FR2\_R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4900 rev Cat: F (Rel-16)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413090](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413090.zip). Database value : NR\_RRM\_enh-Core. CR cover value : [NR\_RRM\_enh-Core]. Please check the WI code and match to the database value on the CR c

**Decision: Return to.**

[**R4-2413098**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413098.zip) **(NR\_RRM\_enh-Core) CR on multiple SCell activation in FR2\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4908 rev Cat: A (Rel-17)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413099**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413099.zip) **(NR\_RRM\_enh-Core) CR on multiple SCell activation in FR2\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4909 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413214**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413214.zip) **(NR\_RRM\_enh-Perf) CR to 38.133: Correction to NR SRS carrier based switching test cases**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4922 rev Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

This CR contains update to interruption requirements for SRS carrier based switching.

**Decision: Revised to R4-2413958 (from R4-2413214).**

[**R4-2413958**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413958.zip) **(NR\_RRM\_enh-Perf) CR to 38.133: Correction to NR SRS carrier based switching test cases**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4922 rev Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

This CR contains update to interruption requirements for SRS carrier based switching.

**Decision: Return to.**

[**R4-2413215**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413215.zip) **(NR\_RRM\_enh-Perf) CR to 38.133: Correction to NR SRS carrier based switching test cases**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4923 rev Cat: A (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR contains update to interruption requirements for SRS carrier based switching. MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413216**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413216.zip) **(NR\_RRM\_enh-Perf) CR to 38.133: Correction to NR SRS carrier based switching test cases**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4924 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This CR contains update to interruption requirements for SRS carrier based switching. MCC: This is CAT A CR.

**Decision: Return to.**

NR\_RRM\_enh2

[**R4-2412140**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412140.zip) **(NR\_RRM\_enh2-Core) Correction CR to multiple SCell activation with PUCCH SCell**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4749 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

MCC: Title was updated in 3GU.

**Decision: Revised to R4-2413887 (from R4-2412140).**

[**R4-2413887**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413887.zip) **(NR\_RRM\_enh2-Core) Correction CR to multiple SCell activation with PUCCH SCell**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4749 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

MCC: Title was updated in 3GU.

**Decision: Return to.**

[**R4-2412141**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412141.zip) **(NR\_RRM\_enh2-Core) correction CR to multiple SCell activation with PUCCH SCell Cat.A**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4750 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

MCC: This is CAT A CR.

MCC: Title was updated in 3GU.

**Decision: Return to.**

[**R4-2412179**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412179.zip) **(NR\_RRM\_enh2-Core) Discussion on maintenance for R17 RRM enhancement - PUCCH SCell**

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

**Decision: Noted.**

[**R4-2412180**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412180.zip) **(NR\_RRM\_enh2-Core) CR on PUCCH SCell activation with multiple SCells R17 (Cat F)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4773 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412181**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412181.zip) **(NR\_RRM\_enh2-Core) CR on PUCCH SCell activation with multiple SCells R18 (Cat A)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4774 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412182**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412182.zip) **(NR\_RRM\_enh2-Perf) CR on TC maintenance for PUCCH Scell activation R17 (Cat F)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4775 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412183**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412183.zip) **(NR\_RRM\_enh2-Perf) CR on TC maintenance for PUCCH Scell activation R18 (Cat A)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4776 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2412184**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412184.zip) **(NR\_RRM\_enh2-Core) Discussion on maintenance for R17 RRM enhancement -SRS AS**

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

**Decision: Noted.**

[**R4-2412185**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412185.zip) **(NR\_RRM\_enh2-Core) CR on SRS AS interruption requirements R17 (Cat F)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4777 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

[**R4-2412186**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412186.zip) **(NR\_RRM\_enh2-Core) CR on SRS AS interruption requirements R18 (Cat A)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4778 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Withdrawn.**

[**R4-2412513**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412513.zip) **(NR\_RRM\_enh2-Core)CR on SRS antenna switching interruption requirements in R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4836 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification version number wrong on CR cover for TDoc [R4-2412513](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412513.zip). Database value : 17.14.0. CR cover value : 18.6.0. Please check the specification version number as this is a major failure on the CR c

**Decision: Revised to R4-2413933 (from R4-2412513).**

[**R4-2413933**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413933.zip) **(NR\_RRM\_enh2-Core)CR on SRS antenna switching interruption requirements in R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4836 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification version number wrong on CR cover for TDoc [R4-2412513](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412513.zip). Database value : 17.14.0. CR cover value : 18.6.0. Please check the specification version number as this is a major failure on the CR c

**Decision: Return to.**

[**R4-2412514**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412514.zip) **(NR\_RRM\_enh2-Core)CR on SRS antenna switching interruption requirements(R18 mirror)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4837 rev Cat: A (Rel-18)  
  
 Source: vivo*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413092**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413092.zip) **(NR\_RRM\_enh2-Core) CR on fast SCell activation in FR2\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4902 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413092](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413092.zip). Database value : NR\_RRM\_enh2-Core. CR cover value : [NR\_RRM\_enh2-Core]. Please check the WI code and match to the database value on the CR

**Decision: Revised to R4-2413889 (from R4-2413092).**

[**R4-2413889**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413889.zip) **(NR\_RRM\_enh2-Core) CR on fast SCell activation in FR2\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4902 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413092](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413092.zip). Database value : NR\_RRM\_enh2-Core. CR cover value : [NR\_RRM\_enh2-Core]. Please check the WI code and match to the database value on the CR

**Decision: Return to.**

[**R4-2413101**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413101.zip) **(NR\_RRM\_enh2-Core) CR on fast SCell activation in FR2\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4911 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NR\_SmallData\_INACTIVE

[**R4-2412026**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412026.zip) **(NR\_SmallData\_INACTIVE) Discussion on SDT R17 test parameters**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

[**R4-2413383**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413383.zip) **(NR\_SmallData\_INACTIVE-Perf) CR FR2 CG-SDT test (R17)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4944 rev Cat: F (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Return to.**

[**R4-2413384**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413384.zip) **(NR\_SmallData\_INACTIVE-Perf) CR FR2 CG-SDT test (R18)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4945 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NR\_RF\_FR1

[**R4-2412166**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412166.zip) **(NR\_RF\_FR1-Perf) Correction to Rel-16 UL Tx switching test cases\_R16**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4760 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

[**R4-2412167**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412167.zip) **(NR\_RF\_FR1-Perf) Correction to Rel-16 UL Tx switching test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4761 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

[**R4-2412168**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412168.zip) **(NR\_RF\_FR1-Perf) Correction to Rel-16 UL Tx switching test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4762 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

NR\_RF\_FR1\_enh

[**R4-2412172**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412172.zip) **(NR\_RF\_FR1\_enh-Perf) Correction to Rel-17 UL Tx switching test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4766 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

[**R4-2412173**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412173.zip) **(NR\_RF\_FR1\_enh-Perf) Correction to Rel-17 UL Tx switching test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4767 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Agreed.**

NR\_unlic

[**R4-2412845**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412845.zip) **CR to 38.133 on Gradual timing adjustment**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4863 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This maintenance CR was \_endorsed\_ at RAN4#111, as [R4-2409057](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2409057.zip), but not approved since the corresponding type A CR was missing.

Editorial change of ‘upling’ to ‘uplink’.

**Decision: Revised to R4-2413934 (from R4-2412845).**

[**R4-2413934**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413934.zip) **CR to 38.133 on Gradual timing adjustment**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4863 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This maintenance CR was \_endorsed\_ at RAN4#111, as [R4-2409057](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2409057.zip), but not approved since the corresponding type A CR was missing.

Editorial change of ‘upling’ to ‘uplink’.

**Decision: Return to.**

[**R4-2412846**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412846.zip) **(NR\_unlic-Core) CR to 38.133 on Gradual timing adjustment**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4864 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

MCC: This is CAT A CR. Shadow CR. Cat F CR, R17, was \_endorsed\_ at RAN4#111, as [R4-2409057](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2409057.zip), but not approved since the corresponding type A CR was missing.

Editorial change of ‘upling’ to ‘uplink’.

**Decision: Return to.**

[**R4-2413369**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413369.zip) **(NR\_unlic-Perf) CR for NR-U TC correction – Clause A.10 (R16)**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4930 rev Cat: F (Rel-16)  
  
 Source: Qualcomm*

**Decision: Revised to R4-2413935 (from R4-2413369).**

[**R4-2413935**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413935.zip) **(NR\_unlic-Perf) CR for NR-U TC correction – Clause A.10 (R16)**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4930 rev Cat: F (Rel-16)  
  
 Source: Qualcomm*

**Decision: Return to.**

[**R4-2413370**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413370.zip) **(NR\_unlic-Perf) CR for NR-U TC correction - Clause A.10 (R17)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4931 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413371**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413371.zip) **(NR\_unlic-Perf) CR for NR-U TC correction - Clause A.10 (R18)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4932 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413372**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413372.zip) **(NR\_unlic-Perf) CR for NR-U TC correction – Clause A.11 (R16)**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4933 rev Cat: F (Rel-16)  
  
 Source: Qualcomm*

**Decision: Return to.**

[**R4-2413373**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413373.zip) **(NR\_unlic-Perf) CR for NR-U TC correction - Clause A.11 (R17)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4934 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413374**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413374.zip) **(NR\_unlic-Perf) CR for NR-U TC correction - Clause A.11 (R18)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4935 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413375**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413375.zip) **(NR\_unlic-Perf) CR for NR-U TC correction – Clause A.12 (R16)**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4936 rev Cat: F (Rel-16)  
  
 Source: Qualcomm*

**Decision: Return to.**

[**R4-2413376**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413376.zip) **(NR\_unlic-Perf) CR for NR-U TC correction - Clause A.12 (R17)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4937 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413377**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413377.zip) **(NR\_unlic-Perf) CR for NR-U TC correction - Clause A.12 (R18)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4938 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413378**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413378.zip) **(NR\_unlic-Perf) CR for NR-U TC correction – A.13 (R16)**

*Type: CR For: Agreement  
 38.133 v16.20.0 CR-4939 rev Cat: F (Rel-16)  
  
 Source: Qualcomm*

**Decision: Return to.**

[**R4-2413379**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413379.zip) **(NR\_unlic-Perf) CR for NR-U TC correction - Clause A.13 (R17)**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4940 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413380**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413380.zip) **(NR\_unlic-Perf) CR for NR-U TC correction - Clause A.13 (R18)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4941 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NB\_IOT

[**R4-2413170**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413170.zip) **(NB\_IOT-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-F Rel-13)**

*Type: CR For: Agreement  
 36.133 v13.23.0 CR-7337 rev Cat: F (Rel-13)  
  
 Source: Qualcomm Incorporated*

**Decision: Return to.**

[**R4-2413171**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413171.zip) **(NB\_IOT-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-14)**

*Type: CR For: Agreement  
 36.133 v14.23.0 CR-7338 rev Cat: A (Rel-14)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413172**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413172.zip) **(NB\_IOT-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-15)**

*Type: CR For: Agreement  
 36.133 v15.21.1 CR-7339 rev Cat: A (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413173**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413173.zip) **(NB\_IOT-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-16)**

*Type: CR For: Agreement  
 36.133 v16.20.0 CR-7340 rev Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413174**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413174.zip) **(NB\_IOT-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-17)**

*Type: CR For: Agreement  
 36.133 v17.13.0 CR-7341 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413175**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413175.zip) **(NB\_IOT-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-18)**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7342 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NB\_IOTenh

[**R4-2413176**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413176.zip) **(NB\_IOTenh-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-F Rel-14)**

*Type: CR For: Agreement  
 36.133 v14.23.0 CR-7343 rev Cat: F (Rel-14)  
  
 Source: Qualcomm Incorporated*

**Decision: Return to.**

[**R4-2413177**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413177.zip) **(NB\_IOTenh-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-15)**

*Type: CR For: Agreement  
 36.133 v15.21.1 CR-7344 rev Cat: A (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413178**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413178.zip) **(NB\_IOTenh-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-16)**

*Type: CR For: Agreement  
 36.133 v16.20.0 CR-7345 rev Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413179**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413179.zip) **(NB\_IOTenh-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-17)**

*Type: CR For: Agreement  
 36.133 v17.13.0 CR-7346 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413180**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413180.zip) **(NB\_IOTenh-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-18)**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7347 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

NB\_IOTenh2

[**R4-2413181**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413181.zip) **(NB\_IOTenh2-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-F Rel-15)**

*Type: CR For: Agreement  
 36.133 v15.21.1 CR-7348 rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Return to.**

[**R4-2413182**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413182.zip) **(NB\_IOTenh2-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-16)**

*Type: CR For: Agreement  
 36.133 v16.20.0 CR-7349 rev Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413183**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413183.zip) **(NB\_IOTenh2-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-17)**

*Type: CR For: Agreement  
 36.133 v17.13.0 CR-7350 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

[**R4-2413184**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413184.zip) **(NB\_IOTenh2-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT (Cat-A Rel-18)**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7351 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

MCC: This is CAT A CR.

**Decision: Return to.**

4.8 Rel-15/16/17 TEI

**R4-2411510 CR 38.133 Addressing incomplete Rel-17 requirements in section 8**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4683 rev Cat: F (Rel-17)  
  
 Source: BeammWave*

**Abstract:**

There are Release-17 features with TBDs and FFSs in section 8 of the specification. It is desirable to remove those TBDs and FFSs since this release has been frozen for some time now.

**Decision: Revised to R4-2413939 (from R4-2411510).**

[**R4-2413939**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413939.zip) **CR 38.133 Addressing incomplete Rel-17 requirements in section 8**

*Type: CR For: Agreement  
 38.133 v17.14.0 CR-4683 rev Cat: F (Rel-17)  
  
 Source: BeammWave*

**Abstract:**

There are Release-17 features with TBDs and FFSs in section 8 of the specification. It is desirable to remove those TBDs and FFSs since this release has been frozen for some time now.

**Decision: Return to.**

**R4-2411511 CR 38.133 Addressing incomplete Rel-17 requirements in section 8**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4684 rev Cat: A (Rel-18)  
  
 Source: BeammWave*

**Abstract:**

There are Release-17 features with TBDs and FFSs in section 8 of the specification. It is desirable to remove those TBDs and FFSs since this release has been frozen for some time now. MCC: This is CAT A CR.

**Decision: Return to.**

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

The following guidance are provided for maintenance work under AI 4 ~ AI 5:

‒ For maintenance agenda AI 4 (Rel-15/16/17) and AI 5 (Rel-18), formal CRs are expected and multiple 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 5.2, AI 5.34, 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 draft CR with TEI as WI code, please inform session chair.

‒ For all the endorsed draft CRs in this bis meeting, please re-submit them in the next ordinary meeting.

‒ The contributions corresponding to incoming LS for Rel-15/16/17 are expected to be submitted in AI 9.

‒ The contributions corresponding to incoming LS for Rel-18/19 are expected to be submitted to (sub-) agenda dedicated to the individual WIs. If there is no dedicated agenda, please submit to AI 5.2 or AI 5.34 depending on whether it is spectrum related topic or non-spectrum related topic.

5.1 Moderator summary and conclusions (for sub-AIs under AI 5 without specific agenda for moderator summary)

Topic: [112][202] Maintenance\_R18

[**R4-2411797**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411797.zip) **Topic summary for [112][202] Maintenance\_R18**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413868**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413868.zip) **Ad-hoc minutes for [112][202] Maintenance\_R18**

*Type: other For: Approval  
 Source: Apple*

**Decision: Approved.**

**Online session (Wednesday Aug 21, 2024)**

Topic #5: on performance requirements for RTK/PPP positioning for NR

* where/when to handle this topic
  + Rel-18 TEI = Work can start right now (R&S)
  + Rel-19 WI = Need to be raised in the plenary, chances are not high (QC & E/// - if we will do it)
  + Rel-19 TEI = Work will probably start next year (QC & E/// - if we will do it)
* Workscope:
  + RTK / PPP
  + posSIB
  + NR/LTE
  + Requirements
  + Simulations

E///: Rel-19 TEI or WI depending on how large the scope wil be.

Topic #4: [NR\_FR1\_lessthan\_5MHz\_BW](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=941112)

HW:

**Proposal 1: Update the test requirements in A.6.1.1.9.3 to include the additional time for PBCH/MIB reading, i.e. the 2 SMTC samples, in TSI-NR.**

**Proposal 2: RAN4 to take simulation results in Table 1 into account for defining SNR levels for RLM/BFD test cases.**

**Table 1: Simulation results for Qin and Qout levels with PDCCH for less than 5MHz operation**

|  |  |  |
| --- | --- | --- |
|  | SNR (dB) @ 10% BLER | SNR (dB) @ 2% BLER |
| OOS parameters with 12 RB | -4.00 | N/A |
| IS parameters with 12 RB | N/A | 2.14 |
| OOS parameters with 15 RB | -6.60 | N/A |
| IS parameters with 15 RB | N/A | -1.82 |

E///:

1. RAN4 to agree following thresholds for the BFD test

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | | Unit | Test 1 | | | | |
|  | |  | T1 | T2 | T3 | T4 | T5 |
| SNR\_SSB of set q0 | Config 1 | dB | 5 | -3 | -12 | -12 | -12 |
| SNR\_SSB of set q1 | Config 1 | dB | -10 | -10 | 10 | 10 | 10 |
| SSB\_RP of set q1 | Config 1 | dBm/SCS kHz | -108 | -108 | -88 | -88 | -88 |

1. RAN4 to agree following thresholds for the RLM test

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Test 1** | | | | |
|  | |  | **T1** | **T2** | **T3** | **T4** | **T5** |
| SNR on RLM-RS | Config 1 | dB | 1 | -9 | -15 | -4.5 | -1 |
|  | Config 2 |  | 1 | -7 | -15 | -4.5 | 3 |

E///: Take the average of the E/// and HW proposals, with [].

HW: First decide on the Qin and Qout based on simulation results, then derive the SNR levels for the test.

E///: Take the average for Qin and Qout of the E/// and HW proposals, and derive the SNR levels for the test with [].

QC: we need to check the margin added in Rel-15. We need to follow the Rel-15 approach. Come back in the next meeting.

Nokia: Ok with QC proposal. Will bring our simulation results in the next meeting.

5.7 Support of intra-band non-collocated EN-DC/NR-CA deployment

**R4-2412142 Correction CR to intra-band non-collocated NRCA**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4751 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2413157 MTTD/MRTD requirement for type 2 UE**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4913 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Return to.**

[**R4-2413087**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413087.zip) **CR on SCell addition interruption\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4897 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413087](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413087.zip). Database value : TEI18. CR cover value : [TEI18]. Please check the WI code and match to the database value on the CR coversheet.

**Decision: Revised to R4-2413879 (from R4-2413087).**

[**R4-2413879**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413879.zip) **CR on SCell addition interruption\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4897 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413087](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413087.zip). Database value : TEI18. CR cover value : [TEI18]. Please check the WI code and match to the database value on the CR coversheet.

Session Chair: to change the WI code.

**Decision: Return to.**

5.8 Air-to-ground network for NR

5.8.3 RRM core and performance requirements

[**R4-2411347**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411347.zip) **(NR\_ATG-Perf) CR on test case for R18 ATG performance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4636 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Agreed.**

[**R4-2411753**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411753.zip) **(NR\_ATG-Core) CR to TS 38.133 corrections of measurement requirement for ATG**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4715 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Agreed.**

[**R4-2412228**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412228.zip) **CR on core requirements maintenance for R18 ATG**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4802 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413941 (from R4-2412228).**

[**R4-2413941**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413941.zip) **CR on core requirements maintenance for R18 ATG**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4802 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2413084**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413084.zip) **CR on R18 ATG measurement**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4894 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413084](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413084.zip). Database value : NR\_ATG-Core. CR cover value : [NR\_ATG-Core]. Please check the WI code and match to the database value on the CR coversheet.

**Decision: Revised to R4-2413896 (from R4-2413084).**

**[R4-2413896](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413896.zip) CR on R18 ATG measurement**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4894 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413084](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413084.zip). Database value : NR\_ATG-Core. CR cover value : [NR\_ATG-Core]. Please check the WI code and match to the database value on the CR coversheet.

**Decision: Return to.**

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

5.9.2 RRM performance requirements

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

5.11.3 RRM core and performance requirements

[**R4-2411443**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411443.zip) **(NR\_FR1\_lessthan\_5MHz\_BW-Perf) test case of FR1 intra-frequency handover for less than 5MHz**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4674 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

[**R4-2412427**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412427.zip) **CR for Less Than 5MHz Performance part**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4824 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Revised to R4-2413942 (from R4-2412427).**

[**R4-2413942**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413942.zip) **CR for Less Than 5MHz Performance part**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4824 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2412639**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412639.zip) **Discussion on remaining issues in R18 less than 5MHz**

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

**Decision: Noted.**

[**R4-2412640**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412640.zip) **CR on RRM core requirements for less than 5MHz BW**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4855 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413943 (from R4-2412640).**

[**R4-2413943**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413943.zip) **CR on RRM core requirements for less than 5MHz BW**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4855 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412641**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412641.zip) **CR on TCs for less than 5MHz operation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4856 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

[**R4-2412788**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412788.zip) **CR introducing test case for Radio Link Monitoring In-sync Test for FR1 PCell with 3MHz Channel Bandwidth configured with SSB-based RLM RS in DRX mode**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4862 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2412996**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412996.zip) **Discussion on performance part for NR in less than 5 MHz bandwidth**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on performance part for NR in less than 5 MHz bandwidth

**Decision: Noted.**

[**R4-2412997**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412997.zip) **CR to TS 38.133 on test case maintenance for NR\_FR1\_lessthan\_5MHz\_BW**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4877 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to TS 38.133 on test case maintenance for NR\_FR1\_lessthan\_5MHz\_BW

**Decision: Revised to R4-2413944 (from R4-2412997).**

**[R4-2413944](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413944.zip) CR to TS 38.133 on test case maintenance for NR\_FR1\_lessthan\_5MHz\_BW**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4877 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to TS 38.133 on test case maintenance for NR\_FR1\_lessthan\_5MHz\_BW

**Decision: Return to.**

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

5.12.3 RRM core and performance requirements

[**R4-2411465**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411465.zip) **CR on RLM test cases for NB-IoT over NTN**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

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

[**R4-2411466**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411466.zip) **CR on downlink channel quality reporting accuracy test for NB-IoT over NTN**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

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

[**R4-2411794**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411794.zip) **CR on RLM test cases for NB-IoT over NTN**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7328 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2413945 (from R4-2411794).**

[**R4-2413945**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413945.zip) **CR on RLM test cases for NB-IoT over NTN**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7328 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Return to.**

[**R4-2411795**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411795.zip) **CR on downlink channel quality reporting accuracy test for NB-IoT over NTN**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7329 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Return to.**

[**R4-2412190**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412190.zip) **(LTE\_NBIOT\_eMTC\_NTN\_req-Core) Discussion on PUR requirements for IoT NTN**

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

**Decision: Noted.**

[**R4-2412191**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412191.zip) **CR on maintenance for R18 IoT NTN**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7331 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413946 (from R4-2412191).**

[**R4-2413946**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413946.zip) **CR on maintenance for R18 IoT NTN**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7331 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412400**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412400.zip) **(LTE\_NBIOT\_eMTC\_NTN\_req-Core) CR to 38.133 Update to GNSS gap configuration for IoT NTN**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7336 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Requirements are referring to gap used for GNSS reacquisition. But this is a placeholder and needs to be updated.

**Decision: Return to.**

[**R4-2413185**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413185.zip) **(LTE\_NBIOT\_eMTC\_NTN\_req-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT NTN (Cat-F Rel-18)**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7352 rev Cat: F (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2413947 (from R4-2413185).**

**[R4-2413947](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413947.zip) (LTE\_NBIOT\_eMTC\_NTN\_req-Perf) CR on RSRP-ThresholdsNPRACH-InfoList for NB-IoT NTN (Cat-F Rel-18)**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7352 rev Cat: F (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Return to.**

5.13 Requirement for NR FR2 multi-Rx chain DL reception

5.13.1 RRM core requirements

[**R4-2411400**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411400.zip) **On RRM core requirement maintenance for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision:** The document was **not treated**.

[**R4-2411401**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411401.zip) **CR on multi-RX core performance maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4662 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision:** The document was **not treated**.

[**R4-2411477**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411477.zip) **(NR\_FR2\_multiRX\_DL-Core) Discussion on core requirement for FR2 multi-Rx**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision:** The document was **not treated**.

[**R4-2411630**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411630.zip) **Discussion on core part maintenance for Multi-RX**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision:** The document was **not treated**.

[**R4-2411780**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411780.zip) **Discussion on core part maintenance for multi-Rx UEs**

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

**Decision:** The document was **not treated**.

[**R4-2411781**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411781.zip) **Remove CBD RRM requirement for scheduling and measurement restriction relaxation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4719 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision:** The document was **not treated**.

[**R4-2411984**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411984.zip) **CR on BFD and CBD for multi-RX operation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4734 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision:** The document was **not treated**.

[**R4-2412027**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412027.zip) **On Rel-18 Multi-Rx core part maintenance**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412192**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412192.zip) **Discussion on RRM core requirements maintenance for FR2 multi-RX**

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

**Decision:** The document was **not treated**.

[**R4-2412193**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412193.zip) **CR on TCI state switching requirements maintenance for R18 FR2 multi-RX**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4782 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

[**R4-2412194**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412194.zip) **CR on measurement restriction requirements maintenance for R18 FR2 multi-RX**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4783 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

[**R4-2412243**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412243.zip) **Remaining issues for FR2 multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision:** The document was **not treated**.

[**R4-2412244**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412244.zip) **CR on measurement restriction requirements for multi-Rx**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4807 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision:** The document was **not treated**.

[**R4-2412492**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412492.zip) **CR for Rel-18 multi-Rx TCI state switching delay**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4828 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412998**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412998.zip) **On remaining core requirements issues for multi-rx**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On remaining core requirements issues for multi-rx

**Decision:** The document was **not treated**.

[**R4-2412999**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412999.zip) **CR to TS 38.133 on core requirement maintenance for NR FR2 multi-Rx**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4878 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to TS 38.133 on core requirement maintenance for NR FR2 multi-Rx

**Decision:** The document was **not treated**.

[**R4-2413074**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413074.zip) **Discussion on maintenance of RRM core part for simultaneous DL reception from different directions**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision:** The document was **not treated**.

[**R4-2413085**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413085.zip) **CR on R18 multi-Rx L1 measurement**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4895 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413085](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413085.zip). Database value : NR\_FR2\_multiRX\_DL-Core. CR cover value : [NR\_FR2\_multiRX\_DL-Core]. Please check the WI code and match to the database value on the CR coversheet.

**Decision: Revised to R4-2413895 (from R4-2413085).**

[**R4-2413895**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413895.zip) **CR on R18 multi-Rx L1 measurement**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4895 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413085](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413085.zip). Database value : NR\_FR2\_multiRX\_DL-Core. CR cover value : [NR\_FR2\_multiRX\_DL-Core]. Please check the WI code and match to the database value on the CR coversheet.

**Decision: Return to.**

[**R4-2413086**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413086.zip) **CR on R18 multi-Rx link recovery procedures**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4896 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413086](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413086.zip). Database value : NR\_FR2\_multiRX\_DL-Core. CR cover value : [NR\_FR2\_multiRX\_DL-Core]. Please check the WI code and match to the database value on the CR coversheet.

**Decision: Revised to R4-2413894 (from R4-2413086).**

[**R4-2413894**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413894.zip) **CR on R18 multi-Rx link recovery procedures**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4896 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413086](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413086.zip). Database value : NR\_FR2\_multiRX\_DL-Core. CR cover value : [NR\_FR2\_multiRX\_DL-Core]. Please check the WI code and match to the database value on the CR coversheet.

**Decision: Return to.**

[**R4-2413202**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413202.zip) **Discussion on multi-Rx remaining issues**

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

**Decision:** The document was **not treated**.

5.13.2 RRM performance requirements

[**R4-2411402**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411402.zip) **On RRM performance requirement maintenance for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision:** The document was **not treated**.

[**R4-2411403**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411403.zip) **CR on multi-Rx RRM performance requirement maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4663 rev Cat: F (Rel-18)  
  
 Source: Apple*

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

[**R4-2411478**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411478.zip) **CR on clean up TC for TRP specific BFD for multi-Rx**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4677 rev Cat: F (Rel-18)  
  
 Source: OPPO*

**Decision:** The document was **not treated**.

[**R4-2411782**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411782.zip) **Applicability for the test case of L1-RSRP group-based beam reporting**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4720 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision:** The document was **not treated**.

[**R4-2412028**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412028.zip) **On multi-Rx RRM performance part**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412195**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412195.zip) **CR on TC maintenance for Rel-18 Multi-Rx**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4784 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

[**R4-2412245**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412245.zip) **CR on test cases for m-DCI based TCI dual states switch for multi-Rx**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4808 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision:** The document was **not treated**.

[**R4-2412493**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412493.zip) **CR for Rel-18 multi-Rx performance part maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4829 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2413000**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413000.zip) **maintenance of RRM performance for multi-rx**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

maintenance of RRM performance for multi-rx

**Decision:** The document was **not treated**.

[**R4-2413001**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413001.zip) **CR to TS 38.133 on maintenance of multi-rx TC**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4879 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to TS 38.133 on maintenance of multi-rx TC

**Decision:** The document was **not treated**.

[**R4-2413201**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413201.zip) **CR on L1-RSRP measurement accuracy requirements for multi-Rx**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4916 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision:** The document was **not treated**.

[**R4-2413459**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413459.zip) **CR on multi-RX performance requirement maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4950 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision:** The document was **not treated**.

5.13.4 Moderator summary and conclusions

Topic: [112][203] FR2\_multiRx

[**R4-2411798**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411798.zip) **Topic summary for [112][203] FR2\_multiRx**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413869**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413869.zip) **Ad-hoc minutes for [112][203] FR2\_multiRx**

*Type: other For: Approval  
 Source: vivo*

**Decision: Return to.**

**Online session (Wednesday Aug 21, 2024)**

Issue 1-1: Measurement restriction relaxation requirements

Agreement:

For FR2-1, there is no measurement restriction allowed for UE supporting [TBD - multi-rx capability], according to the conditions described in clause 3.6.x, and the UE is required to measure both the CSI-RS for RLM and the other CSI-RS for RLM, BFD or L1-RSRP measurement, while meeting requirements in clause 8.1.3.2, provided the following conditions are met:

-     Both CSI-RSs are not in any CSI-RS resource set with repetition ON, and

-     One CSI-RS has same QCL source as either

* + the active TCI state of a PDSCH scheduled in the same OFDM symbol or
  + the QCL source based on the default QCL assumption to be applied in the same OFDM symbol according to 38.214 clause 5.1.5, and

-     the other CSI-RS has same QCL source as either

* + the active TCI state of a PDSCH scheduled in the same OFDM symbol or
  + the QCL source based on the default QCL assumption to be applied in the same OFDM symbol according to 38.214 clause 5.1.5, and

-     Resources of the active TCI states of the two PDSCHs, ~~and~~ or QCL sources of the default QCL assumption, or the active TCI state of PDSCH and QCL source of the default QCL assumption have been reported as a resource group in Rel-17 group-based RSRP report.

Agree on the above proposal: QC, HW, Nokia, vivo, E///

Agree with the direction and have a coffee break working on the wording: vivo

Remove the requirement in Rel-18: MTK, Samsung

Issue 1-3: Scheduling restriction relaxation requirements

Agreement: For mDCI case:

* 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.

Issue 1-4: DCI based dual TCI state switch delay for m-DCI

Agreement: this issue is closed.

Issue 1-5: DCI based dual TCI state switch delay for s-DCI

* Proposals
  + Option 1: (Huawei)
    - Remove the following requirements.
      * For sDCI, If TCI state switching is from dual TCI states to single TCI state and the target TCI state is one of the source TCI states, there is no TCI state switching delay allowed, provided that UE is configured with group-based RSRP report (groupBasedBeamReporting-r17).”
* Recommended WF
  + Proponent is encouraged to offline with companies firstly.

HW: This is to correct the error.

Issue 1-8: MRTD for multi-Rx

In TS38.133 v18.6.0, the MRTD requirements for multi-Rx operation in FR2-1 is specified as follows.

A UE supporting [*FG 30-1 or 30-2*] shall be capable of handling at least a relative receive timing difference between slot timing of different TCI states on the same carrier at the UE receiver as shown in Table 7.6.8-3.

Table 7.6.8-3: Maximum receive timing difference requirement for UE supporting multi-RX

|  |  |
| --- | --- |
| Frequency Range | Maximum receive timing difference |
| FR2-1 | CP lengthnote 1 |
| Note 1: CP length dependency on SCS is FFS | |

The FFS part should be addressed.

* Proposals
  + Option 1: (Apple)
    - The MRTD is smaller than the CP length corresponding to MAX (SSB SCS, data SCS).
      * It is more challenging to maintain MRTD < CP length of 240kHz SCS from network deployment perspective.

HW: We need to discuss min or max. In addition, this is a generic issue, not only for this WI.

Agreement: Remove “Note 1: CP length dependency on SCS is FFS” from the Table.

Issue 2-1: 3AoAs setup 6

In TS38.133 v18.6.0, the 3 AoAs setup 6 is specified with brackets as follows.

**A.3.15.6 Setup 6:** **3 AoAs for simultaneous reception with different QCL Type-D**

There are 3 active probes in the test and the DL signals and noise are transmitted from the three active probes.

Out of the three AoA, one AoA [(AoA1)] is aligned to a direction 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 UE power class 3 and other 2 AoAs [(AoA2, AoA3)] are from the set of [qualified AoA pairs] according to the spherical coverage requirement for simultaneous reception from multiple directions as defined in clause 7.3K.3 of TS 38.101-2 for power class 3 supporting simultaneous reception from multiple directions.

The relative angular offset between the directions of the AoA pair is based on the UE’s declared [AoA separation and UE] orientation as defined in clause 7.3K.3 of TS 38.101-2 and [shall not be changed for each test iteration].

* Proposals
  + P1: (Apple)
    - [qualified AoA pairs] is replaced with “the AoA pairs, i.e., (AoA1, AoA2), that can support 2 AoA reception.
  + P2: (Ericsson)
    - Specify the AoA numbering and their description in the test set up.
  + P3: (Nokia)
    - The UE positioning shall be such that the UE passes both spherical coverage requirements.
* Recommended WF
  + Discuss if the proposals are agreeable.

Agreement:

* [qualified AoA pairs] is replaced with “the AoA pairs, i.e., (AoA1, AoA2), that can support 2 AoA reception [simultaneously].”
* Specify the AoA numbering and their description in the test set up.
* The UE positioning shall be such that the UE passes both spherical coverage requirements.
  + FFS whether and how to capture it in RAN4 spec.

5.14 Even Further RRM enhancement for NR and MR-DC

5.14.1 RRM core requirements

[**R4-2411442**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411442.zip) **On RRM core requirements maintenance for Scell activation enhancement**

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

**Decision: Noted.**

[**R4-2411479**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411479.zip) **(NR\_RRM\_enh3-Core) On the improvement of SCG activation delay in FR1+FR1 NR-DC**

*Type: other For: Approval  
 Source: OPPO*

**Decision: Noted.**

[**R4-2411560**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411560.zip) **Maintenance 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.**

[**R4-2411561**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411561.zip) **38.133 CR on multilple SCell activation with L3 reporting**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4689 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2414021 (from R4-2411561).**

[**R4-2414021**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414021.zip) **38.133 CR on multilple SCell activation with L3 reporting**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4689 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Return to.**

[**R4-2411964**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411964.zip) **Discussion on FR1-FR1 SCG activation**

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

**Decision: Noted.**

[**R4-2411965**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411965.zip) **CR on FR1-FR1 SCG activation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4731 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Revised to R4-2414022 (from R4-2411965).**

[**R4-2414022**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414022.zip) **CR on FR1-FR1 SCG activation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4731 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2412123**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412123.zip) **Discussion on RRM core requirements maintenance for SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

[**R4-2412196**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412196.zip) **Discussion on Core requirements maintenance for R18 eFeRRM SCell activation**

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

**Decision: Noted.**

[**R4-2412197**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412197.zip) **CR on maintenance for R18 eFeRRM SCell activation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4785 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

[**R4-2412516**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412516.zip) **CR on R18 FR2 SCell activation delay reduction**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4838 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request number wrong on CR cover for TDoc [R4-2412516](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412516.zip). Database value : 4838. CR cover value : 4837. Please check this failure as it is major due to wrong CR number on CR coversheet.

**Decision: Revised to R4-2414023 (from R4-2412516).**

[**R4-2414023**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414023.zip) **CR on R18 FR2 SCell activation delay reduction**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4838 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request number wrong on CR cover for TDoc [R4-2412516](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412516.zip). Database value : 4838. CR cover value : 4837. Please check this failure as it is major due to wrong CR number on CR coversheet.

**Decision: Return to.**

[**R4-2412599**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412599.zip) **Discussion on maintenance of RRM requirements for R18 RRM\_enh3**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2413002**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413002.zip) **Discussion on remaining open issues for FR2 SCell activation enhancements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on remaining open issues for FR2 SCell activation enhancements

**Decision: Noted.**

[**R4-2413072**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413072.zip) **Discussion on the core maintenance of SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

5.14.2 RRM performance requirements

[**R4-2411562**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411562.zip) **Performance requirement 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.**

[**R4-2411563**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411563.zip) **CR on FR2 unknown SCell activation with FG31-1 in FR1+FR2 and FR2+FR2 scenarios**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4690 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

[**R4-2412198**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412198.zip) **CR on TC maintenance for R18 eFeRRM SCell activation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4786 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

[**R4-2412285**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412285.zip) **(NR\_RRM\_enh3\_Perf) CR to TS38.133 for FR1-FR1 NRDC SCG activation test case update**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4810 rev Cat: D (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This is editory CR to remove bracets. MCC: A revision is needed due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2412285](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412285.zip). Database value : NR\_RRM\_enh3-Perf. CR cover value : NR\_RRM\_enh3\_perf. Please check WI code to match database value.

**Decision: Revised to R4-2414024 (from R4-2412285).**

[**R4-2414024**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414024.zip) **(NR\_RRM\_enh3\_Perf) CR to TS38.133 for FR1-FR1 NRDC SCG activation test case update**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4810 rev Cat: D (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This is editory CR to remove bracets. MCC: A revision is needed due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2412285](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412285.zip). Database value : NR\_RRM\_enh3-Perf. CR cover value : NR\_RRM\_enh3\_perf. Please check WI code to match database value.

Session Chair: the content of R4-2412285 is agreeable. Revised to correct cover sheet error.

**Decision: Return to.**

[**R4-2413003**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413003.zip) **Discussion on performance part of FR2 SCell activation enhancement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on performance part of FR2 SCell activation enhancement

**Decision: Noted.**

[**R4-2413004**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413004.zip) **Draft CR to TS 38.133 on performance requirements for eFeRRM**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4880 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to TS 38.133 on performance requirements for eFeRRM

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

[**R4-2413435**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413435.zip) **Draft CR to TS 38.133 on performance requirements for eFeRRM**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4947 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to TS 38.133 on performance requirements for eFeRRM. MCC: The author states this formal CR should be a draftCR. This need to be addressed by RRM session chair.

**Decision: Revised to R4-2414025 (from R4-2413435).**

**[R4-2414025](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414025.zip) Draft CR to TS 38.133 on performance requirements for eFeRRM**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4947 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to TS 38.133 on performance requirements for eFeRRM. MCC: The author states this formal CR should be a draftCR. This need to be addressed by RRM session chair.

**Decision: Return to.**

5.14.3 Moderator summary and conclusions

Topic: [112][204] NR\_RRM\_enh3

[**R4-2411799**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411799.zip) **Topic summary for [112][204] NR\_RRM\_enh3**

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

**Abstract:**

Topic summary in RRM session

**Decision: Revised to R4-2413866 (from R4-2411799).**

[**R4-2413866**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413866.zip) **Topic summary for [112][204] NR\_RRM\_enh3**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2414020**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414020.zip) **WF for NR\_RRM\_enh3**

*Type: other For: Approval  
 Source: Apple*

**Decision: Return to.**

**Online session (Monday Aug 19, 2024)**

|  |
| --- |
| Agreement in last RAN4 meeting:  **Applicability of multiple SCell activation with L3 reporting on FR1 and FR2 band**   * + For FR1, L3 reporting based multiple SCell activation requirements are applicable to unknown target SCell activation when there is no contiguous active serving cell or there is no contiguous known SCell(s) to the unknown to-be-activated SCell on the FR1 band.     - This condition will be added section 8.3.18.   + For FR2, L3 reporting based multiple SCell activation requirements are applicable to unknown target SCell activation when there is no active serving cell or there is no known SCell(s) on the same band.     - This condition will be added section 8.3.18. |

**Issue 1-1-1: Requirement for the case when NOT all the unknown to-be-activated SCells have L3 report on FR1 band (some have L3 report but others not)**

* Option 1 (Nokia):
  + For multiple SCell activation on the same FR1 band, the applicability condition “all to-be-activated SCells are unknown” shall be changed to “at least one to-be-activated SCell is unknown”.
  + RAN4 to discuss if to consider the case where not all the unknown to-be-activated SCells are reported in the L3 reporting and cell detection is still needed on some of the unknown SCells on the same FR1 band.
  + If the case above is agreed to be discussed, N1 needs to be counted for the cell detection on the unknown SCells which were not reported and non-contiguous to any of the reported unknown SCells. Otherwise, it shall be clarified in applicability conditions that all the unknown SCells requiring cell detection are reported in L3 reporting.
* Option 2 (Huawei):
  + For FR1 target SCell, the requirements can be updated as follows:
    - For FR1 target SCell, Tactivation\_time\_multiple\_scells is:
      * 3ms + max (4ms + [TL3 report]+ Tuncertainty\_SP + 3ms+ THARQ, max(TFirstSSB\_MAX\_multiple\_scells + TSMTC\_MAX\_multiple\_scells, 4ms + [TL3 report]+ Tuncertainty\_MAC + 3ms + THARQ) + TFineTiming + 2ms ), if the semi-persistent CSI-RS is used for CSI reporting
      * 3ms + max (4ms + [TL3 report]+ Tuncertainty\_RRC + TRRC\_delay, max(TFirstSSB\_MAX\_multiple\_scells + TSMTC\_MAX\_multiple\_scells, 4ms + [TL3 report]+ Tuncertainty\_MAC + THARQ) + TFineTiming + 2ms), if the periodic CSI-RS is used for CSI reporting
    - if on the same band UE also has at least one parallel to-be-activated SCell which is FR1 unknown SCell without valid L3-RSRP report after SCell activation. TFirstSSB\_MAX\_multiple\_scells, TSMTC\_MAX\_multiple\_scells is defined in 8.3.7; if on the same band, UE does not have any parallel to-be-activated SCell which is FR1 unknown SCell without valid L3-RSRP report after SCell activation, requirements in 8.3.17 apply.
* Option 3 (ZTE):
  + For multi-SCell activation, classify the unknown to-be-activated SCell(s) without L3 reporting into two types:
    - Type 1: The unknown to-be-activated SCell(s) without L3 reporting and not contiguous to any active serving cell or any known SCell in FR1; ~~or the unknown to-be-activated SCell(s) without L3 reporting and not in the same band with any active serving cell or any known SCell in FR2.~~
    - Type 2: The unknown to-be-activated SCell(s) without L3 reporting ~~who does not meet Type 1.~~ (is contiguous to e.g., active serving cell )
  + For Type 1, apply legacy single or multiple unknown SCell activation procedure to them, depend on the number of such cell.
  + For Type 2, they are not the target audience for R18 L3 reporting based requirements, keep legacy strategy for them.
* Recommended WF:
  + Moderator: firstly to discuss the question in option 1 and option 3: whether or not to consider the case where not all the unknown to-be-activated SCells are reported in the L3 reporting and cell detection is still needed on some of the unknown SCells on the same FR1 band?
  + If logic in option 3 can be used, then can discuss the details in option 2.

Agreement:

* + Not define RAN4 requirement for the case where not all the unknown to-be-activated SCells are reported in the L3 reporting and cell detection is still needed on some of the unknown SCells on the same FR1 band.

**Issue 1-1-4: FR1 SCell activation enhancement with one SSB transmitted in ssb-PositionInBurst.**

* Option 1 (vivo):
  + RAN4 also consider applying enhancements of L3 reporting during SCell activation in FR1 to the case when only one SSB is transmitted in *ssb-PositionInBurst*.
  + RAN4 further extend the requirement applicability of 8.3.17 and 8.3.18 to the scenarios in FR1 where only one SSB is considered. If only one SSB is considered, Tuncertainty\_MAC, Tuncertainty\_SP, Tuncertainty\_RRC and TRRC\_delay are counted as zero, and the 3ms MAC CE decoding delay for TCI state activation is removed, i.e. the overall delay Tactivation\_time is 7ms + TL3,report+ THARQ + TFineTiming + 2ms.
* Option 2 (Ericsson):
  + No need to apply L3 based SCell activation when the single SSB is present.
* Option 3 (ZTE):
  + The L3 reporting based requirements can also be applied to the cases in FR1: 1) Only one SSB is transmitted in ssb-PositionInBurst; 2) The TCI state indication at the same time with unknown SCell activation command.
* Recommended WF
  + TBA
* Agreement:
  + SCell activation with L3 reporting does not apply when the single SSB is present.

**Issue 1-1-5: FR1 SCell activation enhancement considering the measurement period**

* Option 1 (Apple, Nokia, ZTE, MTK, Qualcomm):
  + Like the legacy FR1 known SCell activation, SCell activation delay requirement with L3 report shall be differentiated according to measurement period below or above 2400ms, and decide if AGC refinement or T/F tracking is needed.
    - The SCell activation delay with L3 reporting shall be extended only if the measurement period is larger than 2400ms and the AGC refinement is performed after L3 reporting. (Nokia, ZTE)
      * Follow the principle of legacy requirement on how long it will be extended.
    - E/// and Huawei have concern on option 1.
* Option 2 (CTC, Ericsson, vivo, Huawei):
  + It may not be needed to differentiate the requirements for FR1 SCell activation enhancement with L3 report according to measurement period. Do not consider additional AGC sample for the measurement period more than 2400ms for L3 measurement based SCell activation.
  + Apple: we don’t want to change UE behavior for defining the minimal requirement.
  + Nokia: we agree with Apple.
* Recommended WF
  + TBA

Session Chair: Proponent of option 1 to work on the details, and conclude this issue in the 2nd round.

**Issue 1-2-1: whether to enhance Tsearch for RACH based PSCell activation**

* Option 1 (OPPO, MTK, vivo, Apple, Huawei):
  + For RACH based PSCell activation, it is not necessary to improve the delay requirements for RACH-based PSCell activation. Keep the same Tsearch for all cases, including that UE is configured with bfd-and-RLM with value true and without detecting RLF or BFD.
* Option 2 (Nokia, E///):
  + In general, a UE which has not detected neither BFD nor RLF on the deactivated PSCell while deactivated, need no additional search time at PSCell activation (Tsearch = 0ms).
  + A UE which has detected either BFD or RLF on the deactivated PSCell is allowed search time at PSCell activation.
* Recommended WF:
  + TBA

OPPO: it is not a typical scenario for RACH based PSCell activation, and no need for enhancement.

Nokia: to make the activation faster. 24 is too big. Network need to know the UE behaviour.

**Issue 1-2-3: DRX application and PDCCH monitoring of PSCell immediately after SCG activation**

* Option 1 (Nokia):
  + UE shall start monitoring PDCCH on the activated PSCell immediately after the SCG activation delay. It means “The UE shall apply no DRX immediately after Tactivation\_time.” (excerpt from [R4-2411964](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_112/Docs/R4-2411964.zip))
* Option 2 (vivo):
  + UE starts to monitor PDCCH with/without DRX applying once upper layers indicate that SCG is activated
* Option 3 (vivo):
  + UE won’t monitor PDCCH during SCG activation procedure and starts to monitor PDCCH with/without DRX applying after SCG activation delay (i.e., Tactivation\_time specified in TS38.133)
* Proposal (Nokia, vivo): For activation of SCG, RAN4 to send LS to RAN2 clarifying the UE behavior on PDCCH monitoring
* Recommended WF:
  + Discuss the options as well as the proposal.

OPPO: it is not clear from RAN2 spec perspective. The impact of option 1 is to change RAN2 spec only.

Apple: Agree that the impact of option 1 is to change RAN2 spec only. RAN2 has its own agreement.

vivo: Clarify the UE behavior during SCG activation.

HW: option 1 is optimization. “During SCG activation” is only considered in RAN4.

MTK: Share the same view as Huawei. This is RAN2 responsibility.

QC: RAN2 procedure is quite clear, and UE is not expected to monitor the PDCCH outside DRX-on duration.

Nokia: We are not proposing anything for during the Scell activation. Just to clarify the PDCCH monitoring immediately after Tactivation\_time, so that the network can know clear on when to schedule the UE.

**Issue 2-1: missing TCs for FG31-1**

* Option 1 (Nokia):
  + To specify the test cases for TC#1 in the other agreed CA/EN-DC modes:
    - (1) FR1 PCell+FR2 target SCell and
    - (2) FR2 PCell+FR2 inter-band target SCell.
* Recommended WF
  + Option 1 is agreeable?

**Issue 2-2: SR transmission in the FG31-1 test case for L3 report**

* Proposal 1 (Ericsson):
  + RAN4 to include SR transmission in the test case for L3 report based fast SCell activation test case.
* Recommended WF
  + TBA

5.15 Further enhancements on NR and MR-DC measurement gaps and measurements without gaps

5.15.1 RRM core requirements

[**R4-2411375**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411375.zip) **CR on Rel-18 gap enhancements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4652 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411375](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411375.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision:** The document was **not treated**.

[**R4-2411376**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411376.zip) **Discussion on maintenance issues for Rel-18 gap enhancements**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision:** The document was **not treated**.

[**R4-2411429**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411429.zip) **Discussion of R18 gap core requirements maintenance**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision:** The document was **not treated**.

[**R4-2411430**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411430.zip) **CR for R18 gap core requirements maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4669 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision:** The document was **not treated**.

[**R4-2411487**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411487.zip) **CR on concurrent gaps with NCSG**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4678 rev Cat: F (Rel-18)  
  
 Source: OPPO*

**Decision:** The document was **not treated**.

[**R4-2411615**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411615.zip) **draftCR on maintenance of interruprion requirements for inter-RAT NR measurement without gap (case a-1)**

*Type: draftCR For: Endorsement  
 36.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Xiaomi*

**Decision:** The document was **not treated**.

[**R4-2411987**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411987.zip) **(NR\_MG\_enh2-Core) Discussion on open issues for measurements without gaps**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision:** The document was **not treated**.

[**R4-2412029**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412029.zip) **Remaining issues for MG\_enh2 RRM core requirements**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412030**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412030.zip) **CR correction of interruption requirements for needForInterruptions-R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4743 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412031**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412031.zip) **CR correction of requirements for measurements without gaps with interruptions**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4744 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412032**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412032.zip) **CR correction of interruption requirements for inter-RAT measurement without gaps**

*Type: CR For: Agreement  
 36.133 v18.6.0 CR-7330 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412289**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412289.zip) **On remaining issues for further enhancements on NR and MR-DC measurement gaps**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision:** The document was **not treated**.

[**R4-2412424**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412424.zip) **CR on concurrent gap**

*Type: CR For: Approval  
 38.133 v18.6.0 CR-4823 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision:** The document was **not treated**.

[**R4-2412500**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412500.zip) **(NR\_MG\_enh2-Core) Remaining issues on MG enh**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the requirement for MG enh

**Decision:** The document was **not treated**.

[**R4-2412501**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412501.zip) **(NR\_MG\_enh2-Core) CR on 38.133 MG enh2 on Pre-MGs Core**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4831 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This core part CR for MG enh on Pre-MGs

**Decision:** The document was **not treated**.

[**R4-2412502**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412502.zip) **(NR\_MG\_enh2-Core) CR on 38.133 MG enh2 on NCSGs Core**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4832 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This core part CR for MG enh on NCSGs

**Decision:** The document was **not treated**.

[**R4-2412634**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412634.zip) **On remaining issues in core requirements for R18 MGE**

*Type: LS out For: Approval  
 to RAN2  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: This is a discussion paper on remaining issues in core requirements for Rel-18 MGE. It also have attached in the Annex a draft LS on configuration of needForGapsConfigNR and needForGapNCSG-ConfigNR. A formal LS out would be required as this is a discussion paper with draft LS in annex.

**Decision:** The document was **not treated**.

[**R4-2412635**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412635.zip) **CR on RRM requirements for con-MG + pre-MG**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4851 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

[**R4-2412636**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412636.zip) **CR on requirements for inter-RAT LTE measurement without gap**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4852 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

[**R4-2413071**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413071.zip) **Discussion on core the maintenance for Case 2**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision:** The document was **not treated**.

[**R4-2413073**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413073.zip) **Discussion on measurement without gaps for UEs reporting NeedForGapsInfoNR**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision:** The document was **not treated**.

[**R4-2413193**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413193.zip) **(NR\_MG\_enh2-Core) Remaining issues on R18 NFG**

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

**Decision:** The document was **not treated**.

[**R4-2413205**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413205.zip) **Draft CR on concurrent Pre-MG dynamic collision**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4918 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

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

[**R4-2413309**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413309.zip) **CR 38.133 Corrections to Case 1 requirements for NR\_MG\_enh2**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4928 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2413310**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413310.zip) **CR 38.133 Corrections to Case 2 requirements for NR\_MG\_enh2**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4929 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2413463**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413463.zip) **CR on concurrent Pre-MG dynamic collision**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4951 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision:** The document was **not treated**.

5.15.2 RRM performance requirements

[**R4-2411985**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411985.zip) **CR on concurrent gap with Pre-MG and network-controlled activation/deactivation (A.6.6.22.2)**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4735 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision:** The document was **not treated**.

[**R4-2412033**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412033.zip) **CR TC for inter-RAT NR measurements without gaps with interruption**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4745 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412637**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412637.zip) **CR on TCs for Case 1**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4853 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

[**R4-2412638**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412638.zip) **CR on TCs for NFG**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4854 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

5.15.3 Moderator summary and conclusions

Topic: [112][205] NR\_MG\_enh2

[**R4-2411800**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411800.zip) **Topic summary for [112][205] NR\_MG\_enh2**

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

**Abstract:**

Topic summary in RRM session

**Decision:** The document was **not treated**.

[**R4-2413870**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413870.zip) **Ad-hoc minutes for [112][205] NR\_MG\_enh2**

*Type: other For: Approval  
 Source: MediaTek*

**Decision: Return to.**

**Online session (Monday Aug 19, 2024)**

**Topic #4: NeedForGap**

**Issue 4-1-1: Misalignment between DRX-on duration and SMTC for NFG measurements**

* Background (agreement):
  + - Interruption ratio requirement not based on DRX-on duration
    - Not define the interruption location
* Proposals
  + Option 1:
    - Option 1a: vivo
      * + Interruptions are always allowed **outside DRX ON duration** and it is according to Tcycle,i.
    - Option 1b: Nokia, E///
      * + Interruptions are **not allowed during** DRX ON duration.
    - Option 1c: ZTE
      * + For the case of DRX cycle **larger than 320ms**, interruptions are not allowed when DRX cycle is larger than 320ms.
    - Option 1d: ZTE
      * + For the case of DRX cycle **not larger than 320ms**, interruptions are not allowed in the DRX ON duration, excluding the time extended due to drx-inactivityTimer.
    - Option 1e: HW
      * + Interruption is not allowed during DRX ON duration, if there is **no SMTC occasion within a time period** starting [4ms] before the starting point of the DRX ON duration and ending [4ms] after the ending point of the DRX ON duration.
  + Option 2: QC
    - * Interruption due to measurement without gap is allowed when UE is in DRX regardless of DRX cycle.
  + Recommended WF
    - Discuss the options.

QC: the option 1 conflicts with the agreement in the last meeting. No further optimization

Apple: Follow the agreement in the last meeting. This is not an open issue.

ZTE: Companies have different understanding on whether the agreement in previous meeting apply for “Misalignment between DRX-on duration and SMTC for NFG measurements”.

E///: The agreement in previous meeting is for “alignment” case. The NFG is introduced to limit the interruption.

CMCC: We support option 1. The agreement in previous meeting is for “alignment” case.

Nokia: The agreement in previous meeting is for “alignment” case.

If option 1 will be considered:

* Whether to exclude the time extended due to drx-inactivityTimer
  + Yes (exclude): vivo, Nokia
* Whether to consider [4ms] time margin
  + Yes: vivo, Nokia
* Whether to differentiate the DRX cycle below or beyond 320ms

Session Chair: Further discuss the two options:

* + Option 1: Nokia, E///, HW, vivo, CMCC, ZTE, Xiaomi
    - Interruptions are not allowed during DRX ON duration.
    - Exclude the time extended due to drx-inactivityTimer
    - Consider [4ms] time margin as in option 1e.
  + Option 1a: Xiaomi, CATT, ZTE, Nokia, E///, CMCC
    - Interruptions are not allowed during DRX ON duration.
  + Option 2: QC, Apple
    - Interruption due to measurement without gap is allowed when UE is in DRX regardless of DRX cycle.

**Issue 4-1-3: Interruption requirements for Tcycle,i when DRX cycle is configured and aligned with SMTC occasions**

* Proposals
  + Option 1: vivo, E///, QC
    - * For DRX, the interruption ratio is defined based on
    - Tcycle,i = max (80ms, DRX cycle) x CSSFoutside\_gap,i, for DRX cycle > 320ms
    - Tcycle,i = max (80ms, SMTC period, DRX cycle) x 1.5 x CSSFoutside\_gap,i, for DRX cycle ≤ 320ms
  + Recommended WF
    - Option 1 is agreeable.

**Issue 4-2-1: Interruption requirements in 8.2.2.2.19 apply also for NR-DC, EN-DC, and NE-DC**

* Background:
  + the NFG signalling is used in NR SA only, as shown below:

|  |
| --- |
| **From 38.331**:  – *NeedForGapsInfoNR*  The IE *NeedForGapsInfoNR* indicates whether measurement gap is required for the UE to perform SSB based measurements on an NR target band while NR-DC or NE-DC is not configured. |

* Proposals
  + Option 1: CMCC
    - * Yes.
        + ***except SA, it is proposed that interruption requirements in 8.2.2.2.19 apply also for EN-DC***.
        + According to RAN2 spec, R16 signalling doesn’t support NR-DC or **NE-DC**, which means they are applied to SA and **EN-DC**.
  + Option 2: Nokia, vivo, QC, MTK, HW
    - * No,
        + NFG requirements are applicable for NR SA only.

CMCC: we can further check with RAN2 colleague.

Tentative agreement

* NFG requirements are applicable for NR SA only.

**Issue 4-3-2: NFG and NCSG capabilities**

* Previous Agreements
  + No need to establish the mapping between UE’s indication for NeedForGaps and NCSG.
* Proposals
  + Option 1: vivo, MTK, HW
    - * NeedForGaps and NCSG are not expected to be enabled/configured for the same UE at the same time.
      * Option 1a: Capture in RAN2 (Nokia, HW)
      * Option 1b: Capture in RAN4, i.e., no RAN4 requirement if both are configured (Apple, HW, vivo)
  + Option 2: E///, ZTE
    - * From NW’s perspective, it’s possible to enable both NCSG and NFG reporting for the same UE at the same time.

MTK: what’s the consequence (network decision) if go with option 2.

E///: we want to enable both features.

ZTE: We don’t want to restrict how the network to request the reporting. The capability reporting is semi-static. Network can enable the two features.

Apple: There is no indication for NFG at UE side.

Intel: What’s the spec impact for option 1. We have concern on option 1a.

HW: To ZTE, there is no dynamic reporting for the two features.

Moderator: the issue is only about reporting. We already had agreement not to configure at the same time.

**Issue 4-4-1: Relations between nr-NeedForGap-Reporting-r16 and nr-NeedForInterruptionReport-r18 and UE behaviours**

* Previous agreements

|  |
| --- |
| **Issue 1-1-2: Scenario 2, NR measurements without gaps**  **Tentative agreements**   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 NeedForInterruption:       1. Optional since R17    2. FFS the UE behavior if the Rel-18 UE does not support NeedForInterruptionNR-r18 |

* Proposals
  + Option 1: CMCC
    - A Rel-18 UE indicating support of nr-NeedForGap-Reporting-r16 shall also indicate support of nr-NeedForInterruptionReport-r18.
  + Option 2: E///, ZTE, HW, vivo
    - When a Rel-18 UE only supports Rel-16 NFG capability but not supports Rel-18 NFI capability, the UE’s behaviour is the same as Rel-16 UE.
    - Option 2a: E///, ZTE, vivo
      * When a Rel-18 UE supports both Rel-16 NFG and Rel-18 NFI capabilities, but NW doesn’t configure Rel-18 needForInterruptionConfigNR, the UE’s behaviour is the same as Rel-16 UE.
  + Option 3: E///, HW
    - In Rel-18, UE is allowed to optionally report Rel-18 NFI capability for both interRAT-NeedForIntrNR-r18 and NeedForInterruptionNR-r18.
  + Recommended WF
    - Discuss the options.

Agreement:

* + In Rel-18, UE is allowed to optionally report Rel-18 NFI capability for both interRAT-NeedForIntrNR-r18 and NeedForInterruptionNR-r18.
    - When a Rel-18 UE only supports Rel-16 NFG capability but not supports Rel-18 NFI capability, the UE’s behaviour is the same as Rel-16 UE.

**Topic #5: Inter-RAT without gaps**

**Issue 5-2-1: Overlap between Effective measurement window and SMTC/SSB**

* ***Background***
  + Previous Agreements
    - For case b-2, when EMW is configured overlapped with SMTC/SSB/CSI-RS measurement with scheduling restrictions, inter-RAT LTE measurement will be dropped.
    - For case b-1 and b-2, when EMW is partially overlapped with MG (EMW periodicity < MGRP), the EMW occasion colliding physically with MG will be dropped.

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Description automatically generated

* Proposals to: For case b-1 and b-2 inter-RAT LTE measurement causing scheduling restriction, when EMW periodicity is smaller than MGRP,
  + Option 1: E///, QC
    - RAN4 to update the legacy agreements as: after considering EMW dropping rule if EMW is colliding with SMTC/SSB/CSI-RS, when the remaining EMW is fully overlapping with MG, the inter-RAT meas will be performed within MG.
  + Option 1a: HW
    - RAN4 to update the legacy agreements as: after considering EMW dropping rule if EMW **outside MG** is colliding with SMTC/SSB/CSI-RS, when the remaining EMW is fully overlapping with MG, the inter-RAT meas will be performed within MG.
* Recommended WF
  + Discuss the options.

**Issue 5-2-2: Overlap between Effective measurement window and MG**

* ***Background***
  + Agreements
    - For case b-1 and b-2, when EMW is partially overlapped with MG (EMW periodicity < MGRP), the EMW occasion colliding physically with MG will be dropped.
    - Note: The proximity rule in Rel-17 does not apply in this case.
* Agreement for down-selection: For case b-1 and b-2 inter-RAT LTE measurement causing scheduling restriction, when EMW periodicity is larger than MGRP and all EMW are covered by measurement gaps,
  + ~~Option 1: inter-RAT LTE measurement will be dropped.~~
  + ~~Option 2: No UE behaviour is specified.~~
* Proposals to: For case b-1 and b-2 inter-RAT LTE measurement causing scheduling restriction, when EMW periodicity is larger than MGRP and all EMW are covered by measurement gaps,
  + Option 3: E///, MTK
    - apply legacy gap-based measurement requirements, i.e. RAN4 requirements should NOT be defined based on EMW.
  + Option 4: vivo, HW
    - UE measurement requirements are based on EMW-RP.
* Recommended WF
  + Discuss the options.

**Issue 5-2-5: Scaling factor for case a-1: Nfreq definition**

* ***Background***
  + The principles are different between NR MO outside gap and LTE inter-frequency without MG, where all inter-frequency MOs, regardless if they are measured with or without MG, are counted in the same Nfreq.
* Proposals
  + Option 1: E///, HW
    - total number of LTE and NR MOs that are measured outside MG (same principle as LTE SA).
      * Option 1a: MTK
        + total number of inter-frequency LTE and NR MOs (same principle as LTE SA).
  + Option 2: HW
    - number of NR MOs that are measured outside MG (same principle as NR SA).
* Recommended WF
  + Discuss the options.

5.16 Completion of specification support for bandwidth part operation without restriction in NR

[**R4-2411431**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411431.zip) **Discussion of R18 BWP wor maintenance**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

[**R4-2411432**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411432.zip) **CR for BWP wor maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4670 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Revised to R4-2413948 (from R4-2411432).**

**[R4-2413948](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413948.zip) CR for BWP wor maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4670 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Return to.**

5.16.1 RRM core and performance requirements

[**R4-2411966**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411966.zip) **CR clarifying and correcting the handover interruption time requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4732 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Revised to R4-2413949 (from R4-2411966).**

[**R4-2413949**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413949.zip) **CR clarifying and correcting the handover interruption time requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4732 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2412241**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412241.zip) **CR on core part for BWP operation without restriction**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4805 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Merged.**

[**R4-2412242**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412242.zip) **CR on test cases for BWP operation without restriction**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4806 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2413951 (from R4-2412242).**

[**R4-2413951**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413951.zip) **CR on test cases for BWP operation without restriction**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4806 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Return to.**

[**R4-2412503**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412503.zip) **(NR\_BWP\_wor-Core) CR on 38.133 BWP operation without restriction Core**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4833 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This core part CR for BWP without restriction Core

**Decision: Revised to R4-2413950 (from R4-2412503).**

[**R4-2413950**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413950.zip) **(NR\_BWP\_wor-Core) CR on 38.133 BWP operation without restriction Core**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4833 rev Cat: F (Rel-18)  
  
 Source: Ericsson, vivo*

**Abstract:**

This core part CR for BWP without restriction Core

Update the sourcing company in 3GU.

**Decision: Return to.**

[**R4-2412504**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412504.zip) **(NR\_BWP\_wor-Perf) CR to 38.133 Test case of L1-RSRP for Option C**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4834 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

The test case of NES Cell DTX

**Decision: Agreed.**

[**R4-2412642**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412642.zip) **CR on HO TCs for option C**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4857 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

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

5.17.1 RRM core and performance requirements

[**R4-2412216**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412216.zip) **Correction on test case of Cell reselection to FR2 inter-frequency NR case**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4795 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

5.20 Multi-carrier enhancements for NR

5.20.2 RRM core and performance requirements

[**R4-2412178**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412178.zip) **(NR\_MC\_enh-Perf) Correction to Rel-18 UL Tx switching test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4772 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification version number wrong on CR cover for TDoc [R4-2412178](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412178.zip). Database value : 18.6.0. CR cover value : 17.14.0.

**Decision: Revised to R4-2413940 (from R4-2412178).**

[**R4-2413940**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413940.zip) **(NR\_MC\_enh-Perf) Correction to Rel-18 UL Tx switching test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4772 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification version number wrong on CR cover for TDoc [R4-2412178](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412178.zip). Database value : 18.6.0. CR cover value : 17.14.0.

**Decision: Return to.**

[**R4-2412215**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412215.zip) **Update DCI based BWP switch delay on multiple CCs in multi-carrier enhancement**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4794 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

[**R4-2412246**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412246.zip) **CR to correct RRM requirements for DCI based BWP switching on multiple CCs for multi-carrier enh**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4809 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Merged.**

[**R4-2412385**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412385.zip) **Discussion on RRM requirements for multi-carrier enhancements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2412391**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412391.zip) **draftCR on implementation of two-band Tx switching with dual TAG**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Decision: Return to.**

[**R4-2412995**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412995.zip) **DL interruption for Tx switching**

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

**Decision: Noted.**

5.22 NR sidelink evolution

5.22.2 RRM core and performance requirements

[**R4-2413385**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413385.zip) **(NR\_SL\_enh2-Core) CR 38.133 Clarification on V2X and SL bands**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4946 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR 38.133 Clarification on V2X and SL bands

**Decision: Revised to R4-2413953 (from R4-2413385).**

**[R4-2413953](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413953.zip) (NR\_SL\_enh2-Core) CR 38.133 Clarification on V2X and SL bands**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4946 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR 38.133 Clarification on V2X and SL bands

**Decision: Return to.**

5.23 NR NTN enhancement

5.23.6 RRM core requirements

[**R4-2411377**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411377.zip) **CR on Rel-18 NR NTN core requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4653 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411377](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411377.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision:** The document was **not treated**.

[**R4-2411446**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411446.zip) **On R18 NTN RRM core requirements**

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

**Decision:** The document was **not treated**.

[**R4-2411614**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411614.zip) **draftCR on L3-RSRP measurement requirements maintenance in above 10 GHz scenario**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Xiaomi*

**Decision:** The document was **not treated**.

[**R4-2411756**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411756.zip) **(NR\_NTN\_enh-Core) CR to TS 38.133 specification corrections of for NR NTN enh**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4716 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision:** The document was **not treated**.

[**R4-2412238**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412238.zip) **( NR\_NTN\_enh-Core) Formal CR on interruption time in handover delay for NR SAN FR2-NTN – NR SAN FR2-NTN Handover**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4803 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Update and correct some items

**Decision:** The document was **not treated**.

[**R4-2412239**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412239.zip) **( NR\_NTN\_enh-Core) Formal CR on measurements of inter-frequency NR cells with NTN carrier NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4804 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Update and correct some items

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

[**R4-2412661**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412661.zip) **Discussion on remaining issues in R18 NTN core requirements**

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

**Decision:** The document was **not treated**.

[**R4-2412662**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412662.zip) **CR on Rx-Tx measurement requirements for NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4858 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

[**R4-2412663**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412663.zip) **CR on requirements for satellite switch with re-sync**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4859 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

[**R4-2412862**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412862.zip) **CR to 38.133 for introducing Measurement Accuracy Requirements for FR2-NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4871 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412863**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412863.zip) **CR to 38.133 on Measurement Procedures Requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4872 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412864**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412864.zip) **CR to 38.133 on applicability rules for hard satellite switching**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4873 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2413047**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413047.zip) **Modify NR NTN cell re-selection measurement in RRC CONNECTED state**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4887 rev Cat: F (Rel-18)  
  
 Source: ZTECorporation,Sanechips*

**Decision:** The document was **not treated**.

[**R4-2413048**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413048.zip) **Modify NR NTN cell re-selection measurement in RRC IDLEINACTIVE state**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4888 rev Cat: F (Rel-18)  
  
 Source: ZTECorporation,Sanechips*

**Decision:** The document was **not treated**.

[**R4-2413049**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413049.zip) **Supplement the NR NTN cell re-selection requirements in RRC IDLE state**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4889 rev Cat: F (Rel-18)  
  
 Source: ZTECorporation,Sanechips*

**Decision:** The document was **not treated**.

[**R4-2413050**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413050.zip) **Supplement the NR NTN cell re-selection requirements in RRC INACTIVE state**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4890 rev Cat: F (Rel-18)  
  
 Source: ZTECorporation,Sanechips*

**Decision:** The document was **not treated**.

[**R4-2413204**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413204.zip) **( NR\_NTN\_enh-Core) Formal CR on measurements of inter-frequency NR cells with NTN carrier**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4917 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Update and correct some items

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

[**R4-2413218**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413218.zip) **(NR\_NTN\_enh-Core) Formal CR on measurements of inter-frequency NR cells with NTN carrier**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4925 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Update and correct some items

**Decision:** The document was **not treated**.

5.23.7 RRM performance requirements

[**R4-2411378**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411378.zip) **CR on Rel-18 NR NTN performance requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4654 rev Cat: B (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is needed due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411378](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411378.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision:** The document was **not treated**.

[**R4-2411447**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411447.zip) **On R18 NTN RRM performance requirements**

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

**Decision:** The document was **not treated**.

[**R4-2411463**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411463.zip) **Discussion on the performance requirement for NR NTN enhancement below 10GHz**

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

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

[**R4-2411685**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411685.zip) **(NR\_NTN\_enh-Core) CR to remove redundant sub-clauses in NTN IDLE/INACTIVE mode**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4703 rev Cat: F (Rel-18)  
  
 Source: LG Electronics Inc.*

**Decision:** The document was **not treated**.

[**R4-2412115**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412115.zip) **Discussion on RRM maintenance for Rel-18 NTN enhancement**

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

**Decision:** The document was **not treated**.

[**R4-2412410**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412410.zip) **Correction on test cases for Rel-18 NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4822 rev Cat: F (Rel-18)  
  
 Source: Samsung*

**Decision:** The document was **not treated**.

[**R4-2412664**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412664.zip) **Discussion on remaining issues in R18 NTN perf requirements**

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

**Decision:** The document was **not treated**.

[**R4-2412665**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412665.zip) **CR on measurement accuracy requirements for FR2-NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4860 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

[**R4-2412666**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412666.zip) **CR on AoA setup for FR2-NTN test**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4861 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

[**R4-2412858**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412858.zip) **CR to 38.133 on test cases for L3-RSRP Measurement Accuracy in FR2-NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4867 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412859**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412859.zip) **CR to 38.133 on test case for L1-RSRP measurement procedures on FR2-NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4868 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412860**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412860.zip) **CR to 38.133 on correction of parameters test cases for L1-RSRP Measurement Accuracy in FR2-NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4869 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412861**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412861.zip) **CR to 38.133 on Derivation of Side conditions for NTN measurement performance on FR2-NTN**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4870 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

5.23.9 Moderator summary and conclusions

Topic: [112][206] NR\_NTN\_enh

[**R4-2411801**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411801.zip) **Topic summary for [112][206] NR\_NTN\_enh**

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

**Abstract:**

Topic summary in RRM session

**Decision:** The document was **not treated**.

**Online session (Monday Aug 19, 2024)**

**Issue 4-1: TN to NTN cell reselection**

**Views from companies**

* For NTN incapable UE, if both TN and NTN carriers are broadcasted for neighbour cells measurement in IDLE/Inactive mode
  + Option 1 (Apple): If the target NTN carriers include the ones on band n255 or n254, the existing TN-to-TN cell reselection requirements are not applied. In the future release, if more overlapped bands between TN and NTN are introduced besides n254/255, this applicability requirement shall be revisited.
  + Option 2 (Huawei): the existing TN-to-TN cell reselection requirements apply
* (Apple) For TN to NTN cell re-selection requirement when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ, if UE is configured by network to have at least one high priority carrier which contains NTN cells, the requirements for GNSS ON shall be applied.

Whether the UE can differentiate the TN and NTN bands:

ZTE: The band number is optional to be provided by the network.

Samsung: The IE is conditionally mandatory is SIB4.

Apple: We can check with RAN2 first.

Session Chair: If the band number is (conditionally) mandatory to be provided by the network, the following can be agreed:

* For NTN incapable UE, if both TN and NTN carriers are broadcasted for neighbour cells measurement in IDLE/Inactive mode, the existing TN-to-TN cell reselection requirements apply.

Discussion:

* For TN to NTN cell re-selection requirement when Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ, if UE is configured by network to have at least one high priority carrier which contains NTN cells, the requirements for GNSS ON shall be applied (Apple, Nokia, CMCC, Samsung)

QC: mandating UE behavior will impact UE implementation.

Huawei: share the concern as QC.

**Issue 5-2: NTN to NTN Satellite switching without PCI change**

**Views from companies**

* (Huawei) RAN4 to clarify that the ending point of satellite switch with re-sync is the time point when UE is ready to receive DL channels/signals or transmit UL channels/signals from/to the target satellite, and to remove TIU in the delay/interruption time.

**Moderator’s WF:**

* RAN4 to clarify that the ending point of satellite switch with re-sync is the time point when UE is ready to receive DL channels/signals or transmit UL channels/signals from/to the target satellite, and to remove TIU in the delay/interruption time.

Nokia: Not agree with the proposal. Can add some condition for the existing requirement.

CMCC: OK with the core part update. Discuss further for the test case. Two test cases for RACH-based and RACH-less. The test case will also be impacted if consider this proposal. Do we need to differentiate the RACH-based and RACH-less?

QC, Huawei: this is to align with RAN2 spec.

**Issue 6-2-2: (FR2-NTN) Rx beam gain**

**Views from companies**

* For the minimum SSB\_RP condition for electronic steering antenna,
  + RAN4 to confirm Y (gain difference between fine and rough beams) = 0
    - Apple, Samsung, Huawei
* (Apple) Remove the bracket for the following 1dB relaxation:
  + The existing absolute measurement accuracy requirement and relative measurement accuracy requirement of TN FR2 (including intra-frequency and inter-frequency) can be applied for NTN UE above 10GHz with 1dB relaxation
* Gmin FR2-NTN
  + Samsung:
    - 27.3dBi for NTN VSAT type 3
    - 33.7dBi for other VSAT types
  + Huawei
    - 25dB for VSAT type 3
    - 33dB for other VSAT types
* Gmax FR2-NTN
  + Samsung: depends on typical implementation of antennas
  + Huawei: 50dB for all VSAT types
* (Apple) The lower bound of Rx beam gain
  + 30dB for NTN VSAT type 3
  + 41dB for other VSAT types
  + VSAT vendor to claim the upper bound of the Rx beam gain
* (Huawei) For RLM for FR2-NTN, RAN4 to discuss the following options
  + Option 1: update core requirements (PDCCH parameters, evaluation period) as for R17 RedCap
  + Option 2: update the SNR levels in TCs with new Qout/Qin and measurement accuracy

**Agreement:**

* For the minimum SSB\_RP condition for electronic steering antenna,
  + RAN4 to confirm Y (gain difference between fine and rough beams) = 0
* Remove the bracket for the following 1dB relaxation:
  + The existing absolute measurement accuracy requirement and relative measurement accuracy requirement of TN FR2 (including intra-frequency and inter-frequency) can be applied for NTN UE above 10GHz with 1dB relaxation
* For RLM for FR2-NTN, RAN4 to discuss the following options
  + Option 1: update core requirements (PDCCH parameters, evaluation period) as for R17 RedCap, or,
  + Option 2: update the SNR levels in TCs with new Qout/Qin and measurement accuracy
* Gmin
  + Option 1:
    - 27.3dBi for NTN VSAT type 3
    - 33.7dBi for other VSAT types
  + Option 2:
    - 25dB for VSAT type 3
    - 33dB for other VSAT types
  + Option 3:
    - 30dB for NTN VSAT type 3
    - 41dB for other VSAT types
* Gmax
  + Option 1: depends on typical implementation of antennas
  + Option 2: 50dB for all VSAT types
* Note: If anything above inconsistent with RF requirement is identified, RAN4 to make updates to those aspects accordingly.
* Note: NTN FR2 VSAT classes specified in table 9.2.1.0-1 of TS38.101-5
  + NTN VSAT type 1: Fixed VSAT communicating with GSO and LEO with mechanical steering antenna
  + NTN VSAT type 2: Fixed VSAT communicating with GSO and LEO with electronic steering antenna
  + NTN VSAT type 3: Fixed VSAT communicating only with LEO with electronic steering antenna
  + NTN VSAT type 4: Mobile VSAT communicating with GSO with mechanical steering antenna
  + NTN VSAT type 5: Mobile VSAT communicating with GSO with electronic steering antenna

**Issue 6-2-3: (FR2-NTN) UL timing accuracy**

**Views from companies**

* (Huawei) RAN4 to define as 65.536 Tc and 196.608 Tc for fixed and mobile VSAT.
* (Huawei) For FR2-NTN UL timing test, the test requirement for Case 3 is same as that for Case 1.

**Moderator’s WF:**

* For FR2-NTN UL timing test, RAN4 to define as 65.536 Tc and 196.608 Tc for Fixed VSAT and Mobile VSAT, respectively.
  + Note:
    - In R17 TC, 327.68 Tc corresponds to 25m distance error (half of the max GNSS error that was assumed in core requirement definition)
    - 65.536 Tc corresponds to 5m distance error (half of the max GNSS error that was assumed in core requirement definition)
    - 196.608 Tc corresponds to 15m distance error (half of the max GNSS error that was assumed in core requirement definition)
* For FR2-NTN UL timing test, the test requirement for Case 3 is same as that for Case 1.
  + Note:
    - Case-1: Stationary UE for GSO
    - Case-2: Stationary UE for LEO
    - Case-3: Mobile UE for GSO

**Agreement:**

* For FR2-NTN UL timing test, RAN4 to define as 65.536 Tc and 196.608 Tc for Fixed VSAT and Mobile VSAT, respectively.
* For FR2-NTN UL timing test, the test requirement for Case 3 is same as that for Case 1.
  + With the same test configuration (including the AWGN channel condition) for case 1 and 3.

**Issue 3-5: Other impact on RRM**

**Views from companies**

* RAN4 to clarify that UE is only required to measure PRS from the serving cell for PRS measurement for NW verified location.
  + Huawei

**Moderator’s WF**:

* RAN4 to clarify that UE is only required to measure PRS from the serving cell for PRS measurement for NW verified location.

**Issue 5-2-S: Soft’ Satellite switch**

**Views from companies**

* (Apple) Not consider PDD reporting between serving and target satellites involved in the satellite switching without PCI change.
* (Apple) To enhance scheduling restriction in soft satellite switching, consider modifying the capability rule such that: if UE indicates to support soft satellite switching without PCI change, it also means UE supports both simultaneousRxDataSSB-DiffNumerology and parallelMeasurementWithoutRestriction-r17

**Moderator’s WF: The below seems to be already confirmed/agreed by RAN2**

* RAN4 to not consider PDD reporting between serving and target satellites involved in the satellite switching without PCI change.

**Moderator’s WF: Further discussion**

* To enhance scheduling restriction in soft satellite switching, consider modifying the capability rule such that: if UE indicates to support soft satellite switching without PCI change, it also means UE supports both simultaneousRxDataSSB-DiffNumerology and parallelMeasurementWithoutRestriction-r17.

5.24 Further NR mobility enhancements

5.24.1 RRM Core requirements

[**R4-2411348**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411348.zip) **Discussion on RRM core requirements maintenance for LTM**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411349**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411349.zip) **CR on measurement report for fast CA/DC setup in RRC\_IDLE/RRC\_INACTIVE**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4637 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Merged.**

[**R4-2411433**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411433.zip) **Discussion of R18 LTM core requirements maintenance**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

[**R4-2411434**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411434.zip) **CR on R18 LTM cell switch delay**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4671 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Merged.**

[**R4-2411435**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411435.zip) **CR on R18 LTM cell switch delay**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4672 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Merged.**

[**R4-2411480**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411480.zip) **(NR\_Mob\_enh2-Core) Discussion on L1L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

[**R4-2411701**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411701.zip) **Discussion on R18 mobility core part requirements**

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

**Decision: Noted.**

[**R4-2411702**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411702.zip) **(NR\_Mob\_enh2-Core) CR on core maintenance for R18 mobility**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4704 rev Cat: F (Rel-18)  
  
 Source: MediaTek Inc.*

**Decision: Merged.**

[**R4-2411986**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411986.zip) **(NR\_Mob\_enh2-Core) Discussion on open issues for L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2411988**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411988.zip) **CR on fast CA/DC**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4736 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Revised to R4-2413961 (from R4-2411988).**

[**R4-2413961**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413961.zip) **CR on fast CA/DC**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4736 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Return to.**

[**R4-2412209**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412209.zip) **Discussion on maintenance for L1/L2-based inter-cell mobility**

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

**Decision: Noted.**

[**R4-2412210**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412210.zip) **Corrections on LTM TCI state activation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4789 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413962 (from R4-2412210).**

[**R4-2413962**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413962.zip) **Corrections on LTM TCI state activation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4789 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412211**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412211.zip) **Corrections on LTM cell switch delay and PDCCH ordered RACH delay**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4790 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

[**R4-2412212**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412212.zip) **Corrections on validity check requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4791 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon, Apple*

**Decision: Merged.**

[**R4-2412230**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412230.zip) **RRM Core requirements on Further NR mobility enhancements**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

[**R4-2412384**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412384.zip) **Discussion on L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2412390**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412390.zip) **draftCR on Measurement report for fast CA/DC setup**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Decision: Merged.**

[**R4-2412428**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412428.zip) **CR for rel-18 eEMR core part**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4825 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Merged.**

[**R4-2412488**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412488.zip) **CR for Rel-18 LTM maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4826 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Revised to R4-2413963 (from R4-2412488).**

[**R4-2413963**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413963.zip) **CR for Rel-18 LTM maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4826 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2412517**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412517.zip) **Discussion on maintenance of RRM core requirements for R18 NR\_Mob\_enh2**

*Type: discussion For: Discussion  
 Source: vivo*

**Abstract:**

MCC: The author stated that the agenda name ‘Further NR coverage enhancements’ was misread as ‘Further NR mobility enhancements’. Tdoc should be treated under agenda item 5.24.1. MCC updated tdoc agenda item to 5.24.1.

**Decision: Noted.**

[**R4-2412518**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412518.zip) **CR on R18 LTM RRM core requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4839 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Abstract:**

MCC: The author stated that the agenda name ‘Further NR coverage enhancements’ was misread as ‘Further NR mobility enhancements’. Tdoc should be treated under agenda item 5.24.1. MCC updated tdoc agenda item to 5.24.1.

**Decision: Revised to R4-2413964 (from R4-2412518).**

[**R4-2413964**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413964.zip) **CR on R18 LTM RRM core requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4839 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Abstract:**

MCC: The author stated that the agenda name ‘Further NR coverage enhancements’ was misread as ‘Further NR mobility enhancements’. Tdoc should be treated under agenda item 5.24.1. MCC updated tdoc agenda item to 5.24.1.

**Decision: Return to.**

[**R4-2412798**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412798.zip) **On remaining LTM core requirements**

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

**Decision: Noted.**

[**R4-2413005**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413005.zip) **RRM requirements for L1/L2 based inter-cell mobility**

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

**Abstract:**

RRM requirements for L1/L2 based inter-cell mobility

**Decision: Noted.**

[**R4-2413006**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413006.zip) **CR to 38.133 on LTM requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4881 rev Cat: F (Rel-18)  
  
 Source: Ericsson, Qualcomm Incorporated*

**Abstract:**

Draft CR to 38.133 on LTM requirements

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

[**R4-2413436**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413436.zip) **Draft CR to 38.133 on LTM requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4948 rev Cat: F (Rel-18)  
  
 Source: Ericsson, Qualcomm Incorporated*

**Abstract:**

Draft CR to 38.133 on LTM requirements. MCC: The author states this formal CR should be a draftCR. This need to be addressed by RRM session chair.

**Decision: Merged.**

5.24.2 RRM Performance requirements

[**R4-2411350**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411350.zip) **CR to TS 38.133 on performance requirements for further NR mobility enhancements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4638 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2413965 (from R4-2411350).**

[**R4-2413965**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413965.zip) **CR to TS 38.133 on performance requirements for further NR mobility enhancements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4638 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Return to.**

[**R4-2411436**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411436.zip) **CR for testability for eEMR FR1-FR2 test cases**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4673 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Return to.**

[**R4-2411703**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411703.zip) **Discussion on RRM performance requirements for R18 mobility**

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

**Decision: Noted.**

[**R4-2411704**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411704.zip) **(NR\_Mob\_enh2-Perf) CR on performance maintenance for R18 mobility**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4705 rev Cat: F (Rel-18)  
  
 Source: MediaTek Inc.*

**Decision: Revised to R4-2413966 (from R4-2411704).**

[**R4-2413966**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413966.zip) **(NR\_Mob\_enh2-Perf) CR on performance maintenance for R18 mobility**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4705 rev Cat: F (Rel-18)  
  
 Source: MediaTek Inc.*

**Decision: Return to.**

[**R4-2411989**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411989.zip) **CR on L1-RSRP measurement for LTM**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4737 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Revised to R4-2413967 (from R4-2411989).**

[**R4-2413967**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413967.zip) **CR on L1-RSRP measurement for LTM**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4737 rev Cat: F (Rel-18)  
  
 Source: CMCC*

**Decision: Return to.**

[**R4-2412213**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412213.zip) **Correction on LTM test cases**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4792 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413968 (from R4-2412213).**

[**R4-2413968**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413968.zip) **Correction on LTM test cases**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4792 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412214**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412214.zip) **Correction on validity check test cases**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4793 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413969 (from R4-2412214).**

[**R4-2413969**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413969.zip) **Correction on validity check test cases**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4793 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412392**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412392.zip) **Correction the chapter number on subsequent conditional PSCell addition/change**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4813 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

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

[**R4-2412489**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412489.zip) **On eEMR test cases**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

[**R4-2412490**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412490.zip) **CR for Rel-18 eEMR test cases**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4827 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Revised to R4-2413970 (from R4-2412490).**

[**R4-2413970**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413970.zip) **CR for Rel-18 eEMR test cases**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4827 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2412519**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412519.zip) **Discussion on maintenance of RRM test cases for R18 NR\_Mob\_enh2**

*Type: discussion For: Discussion  
 Source: vivo*

**Abstract:**

MCC: The author stated that the agenda name ‘Further NR coverage enhancements’ was misread as ‘Further NR mobility enhancements’. Tdoc should be treated under agenda item 5.24.2. MCC updated tdoc agenda item to 5.24.2.

**Decision: Noted.**

[**R4-2412520**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412520.zip) **CR on R18 LTM RRM test cases**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4840 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Abstract:**

MCC: The author stated that the agenda name ‘Further NR coverage enhancements’ was misread as ‘Further NR mobility enhancements’. Tdoc should be treated under agenda item 5.24.2. MCC updated tdoc agenda item to 5.24.2.

**Decision: Return to.**

[**R4-2412907**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412907.zip) **Correction the chapter number on subsequent conditional PSCell addition/change**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4874 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Decision: Return to.**

[**R4-2413007**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413007.zip) **RRM performance requirements for L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

RRM performance requirements for L1/L2 based inter-cell mobility

**Decision: Noted.**

[**R4-2413008**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413008.zip) **CR to 38.133 on LTM test case maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4882 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to 38.133 on LTM perfromance requirements

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

[**R4-2413151**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413151.zip) **CR for missing test case of enhanced CHO**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4912 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision: Return to.**

[**R4-2413437**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413437.zip) **CR to 38.133 on LTM test case maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4949 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to 38.133 on LTM perfromance requirements

**Decision: Revised to R4-2413971 (from R4-2413437).**

**[R4-2413971](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413971.zip) CR to 38.133 on LTM test case maintenance**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4949 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to 38.133 on LTM perfromance requirements

**Decision: Return to.**

5.24.3 Moderator summary and conclusions

Topic: [112][207] NR\_Mob\_enh2

[**R4-2411802**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411802.zip) **Topic summary for [112][207] NR\_Mob\_enh2**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413871**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413871.zip) **Ad-hoc minutes for [112][207] NR\_Mob\_enh2**

*Type: other For: Approval  
 Source: Apple*

**Decision: Return to.**

[**R4-2413960**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413960.zip) **WF on Further NR mobility enhancements**

*Type: other For: Approval  
 Source: MediaTek*

**Decision: Return to.**

**Online session (Monday Aug 19, 2024)**

**Issue 1-4-4-1: Applicable conditions of cell switch delay requirements in FR1 without L1 measurement**

* Proposals
  + Option 1 (CATT, ZTE, Huawei, MTK):
    - UE has reported L3-RSRP measurements for the SSB associated to the target TCI state in 1280 ms before the cell switch command.
    - SNR of the SSB associated to TCI state ≥ -3dB
  + Option 2 (Apple):
    - To decouple L1-RSRP with LTM for target cell in FR1, allow cell switch delay requirements applicable to unknown TCI state case with the following conditions:
      * TCI state has been activated and the TCI state activation was completed not more than 1280 ms before the cell switch command, or
      * UE has reported L3-RSRP measurements for the SSB associated to the target TCI state in 1280 ms before the cell switch command.
  + Option 3 (OPPO):
    - when SNR of the TCI state≥ -3dB and TCI state has been activated, it is also required that the RS associated to the target TCI state is available at least every 1280ms after TCI state activation command.
  + Option 4 (Nokia):
    - Cell switch delay requirements to apply for unknown target TCI state in FR1 if there was a beam level L3-RSRP report within TBD ms before the cell switch command.
    - TCI state is also known if
      * The target TCI state in the cell switch command is activated not more than 1280 ms before the reception of the cell switch command and SNR of the SSB associated to TCI state ≥ -3dB; or
      * The target TCI state in the cell switch command is activated before receiving the cell switch command and the SSB associated to target TCI state is available at least once every 1280 ms after the TCI state activation command is received and SNR of the SSB associated to TCI state ≥ -3dB
* Recommended WF

*Recommend agree on the common parts of most of the proposals and further discuss the divergence.*

* + Recommend agree on
    - Cell switch delay requirements apply to FR1 without L1 measurement provided that
      * UE has reported L3-RSRP measurements for the SSB associated to the target TCI state in [1280] ms before the cell switch command.
      * SNR of the SSB associated to TCI state ≥ -3dB
    - ~~FFS other conditions.~~

MTK: regardless of the TCI state is activated or not.

OPPO: we can compromise and support this proposal.

Agreement:

* Cell switch delay requirements apply to FR1 without L1 measurement provided that
  + UE has reported L3-RSRP measurements for the SSB associated to the target TCI state in [1280] ms before the cell switch command.
  + SNR of the SSB associated to TCI state ≥ -3dB

**Issue 1-4-4-2: How to capture the applicable conditions of cell switch delay requirements in FR1 without L1 measurement in spec?**

* Proposals
  + Option 1 (CATT, MTK):
    - directly clarify all applicable conditions for cell switch delay requirements in the spec, rather than defining known TCI state conditions.
  + Option 2 (Apple, Ericsson, QC, [Nokia]):
    - allow cell switch delay requirements applicable to unknown TCI state case with the agreed conditions.
* Recommended WF
  + Recommend follow the majority view and agree on Option 2:
    - Allow cell switch delay requirements applicable to unknown TCI state case with the agreed conditions in Issue 1-4-4-1.

Agreement:

* Allow FR1 cell switch delay requirements applicable to unknown TCI state case with the agreed conditions in Issue 1-4-4-1.

**Issue 1-2-3: Whether and how to support unknown TCI state in FR2 for early TCI state activation**

* Proposals
  + Option 1 (MTK, Huawei, Ericsson, QC):
    - Not to define requirements of SSB based early TCI state activation delay for FR2 unknown TCI state case.
  + Option 2 (ZTE):
    - Unknown TCI state in FR2 for early TCI state activation is supported with the following conditions:
      * UE has reported measurement result of the associated SSB of the TCI state within [TBD] before the LTM TCI state activation command.
      * SNR of the associated SSB is above -3dB.
  + Option 3 (Nokia):
    - RAN4 to discuss whether to cover TCI state activation delay requirement for a cell on which the UE is not performing L1 measurements due to earlier TCI state activation on other candidate cell(s) through:
      * Handling the case through unknown TCI state activation delay requirements (also in FR2), or
      * Reconsidering the agreement about UE being allowed to prioritize measurements only on cell(s) with active TCI states e.g. through some additional conditions.
      * Requirements not supporting TCI state activation for more than one candidate cell in FR2 in Rel-18.
* Recommended WF
  + Recommend following the majority view and agree on Option 1.

Agreement:

* Not to define requirements of SSB based early TCI state activation delay for FR2 unknown TCI state case.

**Issue 1-2-1: Whether to consider early TCI state activation for multiple cells at the same time**

* Proposals
  + Option 1 (CATT, MTK, Huawei, CTC, ZTE):
    - No requirements of early TCI state activation delay are specified for the case that multiple LTM TCI activation commands are received at the same time.
  + Option 2 (Ericsson, QC):
    - When one or more of TCI state activation commands are received at slot n, UE shall be able to finish the TCI state activation within slot n+ THARQ +TTF + TSSB-proc. where TTF  is mentioned in the below table.

|  |  |  |
| --- | --- | --- |
|  | **TTF** | **Comments** |
| FR1 intra-frequency cell, known and unknown TCI state | max (Tfirst-SSB\_TCI1, Tfirst-SSB\_TCI2 .., Tfirst-SSB\_TCIn) | Tfirst-SSB\_TCIn is the time for first SSB associated to TCI state n. |
| FR1 inter-frequency cell without MG, known and unknown TCI state | max (Tfirst-SSB\_TCI1, Tfirst-SSB\_TCI2 .., Tfirst-SSB\_TCIn) + (M-1)\*TSSB | Tfirst-SSB\_TCIn is the time for first SSB reception associated to TCI state n.  M is the number of cells to activate the TCI states  TSSB is the SSB burst periodicity. |
| FR1 inter-frequency cell with MG, known and unknown TCI state | TFirstMG + (M-1) \*MGRP+MGL | TFirstMG is the time to start of first MG after slot n+THARQ+3ms,  MGL is measurement gap length  M is the number of cells to activate the TCI states  MGRP is the MG repetition periodicity |
| FR2 intra-frequency cell, known TCI state | max (Tfirst-SSB\_TCI1, Tfirst-SSB\_TCI2 .., Tfirst-SSB\_TCIn) + (M-1)\*TSSB | Tfirst-SSB\_TCIn is the time for first SSB reception associated to TCI state n.  M is the number of cells to activate the TCI states  TSSB is the SSB burst periodicity |
| FR2 inter-frequency cell without MG, known TCI state | max (Tfirst-SSB\_TCI1, Tfirst-SSB\_TCI2 .., Tfirst-SSB\_TCIn) + (M-1)\*TSSB | Tfirst-SSB\_TCIn is the time for first SSB reception associated to TCI state n.  M is the number of cells to activate the TCI states  TSSB is the SSB burst periodicity |
| FR2 inter-frequency cell with MG, known TCI state | TFirstMG + (M-1) \*MGRP+MGL | TFirstMG is the time to start of first MG after slot n+THARQ+3ms,  MGL is measurement gap length  M is the number of cells to activate the TCI states  MGRP is the MG repetition periodicity |

* Recommended WF
  + Recommend following the majority view and agree on Option 1
    - No requirements of early TCI state activation delay are specified for the case that multiple LTM TCI activation commands are received at the same time.

E///: UE can report the corresponding capability, and the capability has been defined in RAN1/2.

MTK: This is for the case of multiple LTM TCI activation commands are received “at the same time”. A lot of scenarios to be considered if we consider this case.

Apple: We don’t need cover every case. Consider the typical case.

Nokia: Combing the multiple LTM TCI activation commands are received at the same time and the existing RAN4 requirements would be complicated.

Session Chair: E/// to kick off offline discussion on this issue. Conclude this issue in this meeting.

**Issue 1-4-3-1: Which cell(s) TLTM-RRC-processing = 0 apply to when candidate cells configured are more than UE capability?**

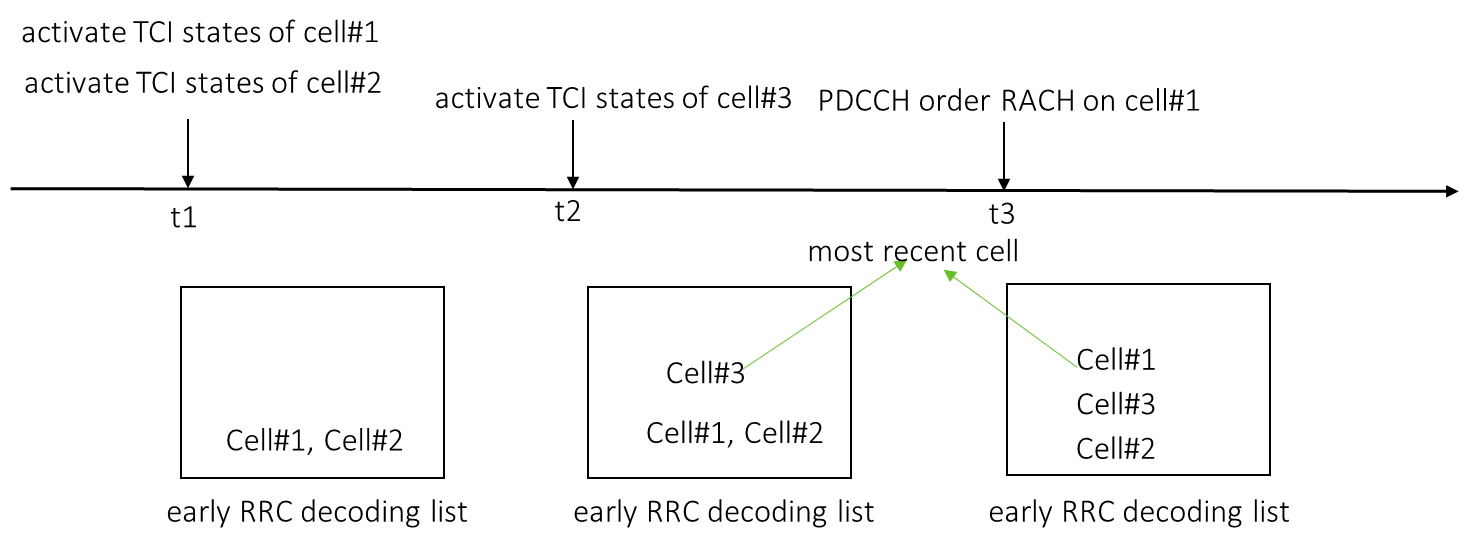
* Proposals
  + Proposal 1 (Huawei, CTC):
    - TLTM\_RRC-processing =0 applies to the cells with early TCI activation or early PDCCH order RACH, provided that the number of these cells doesn’t exceed UE capability [*Fast processing of LTM candidate cell RRC configuration*].
    - Otherwise TLTM\_RRC-processing =0 applies to the latest cell(s) with early TCI activation or early PDCCH order RACH before LTM cell switch command.
  + Proposal 2 (MTK):
    - When the configured candidate cells are more than number of candidates that UE supports early RRC decoding and validity check, UE will perform early RRC decoding on the last X cells which TCI state activation MAC-CE or PDCCH order command is sent for and
      * NW will not trigger TCI state activation or PDCCH-order RACH on different candidate cells at the same occasion.
      * If NW deactivates all the TCI states of a candidate, this cell will be removed from the early RRC decoding list until any of its TCI states is added back again.
  + Proposal 3 (ZTE, Nokia): When TCI state activation MAC-CE or PDCCH order is sent for more cells than UE capability for fast processing, the cells for which the UE received TCI state activation MAC-CE or PDCCH order the most recently before cell switch command are the ones that are pre-processed.
  + Proposal 4 (Ericsson, QC)
    - Fast RRC processing is applicable to the following candidate cells (ltm-CandidateConfig):
      * The ltm-CandidateConfig IEs associated with at least one active TCI state
      * The ltm-CandidateConfig IEs associated with previously performed PDCCH-order PRACH.
      * The current serving cells and the cells inside the ltm-CandidateConfig, chosen by the above condition, across cell groups (i.e. MCG and SCG) is not larger than maxServingAndCandidteCells
      * If the number of the ltm-CandidateConfig IEs associated with active TCI state and PDCCH-order PRACH transmission is larger than maxLTMCandidateConfig, the ltm-CandidateConfig IEs for fast RRC processing are chosen in reverse chronological order of Candidate Cell TCI States Activation MAC CE and PDCCH-order PRACH, i.e. maxLTMCandidateConfig ltm-CandidateConfig IEs with the most recently activated TCI states and PDCCH-order PRACH transmission. And in case a tie-break rule is needed, the ltm-CandidateConfig associated with the most recent PDCCH-order PRACH transmission will be chosen.
* Recommended WF

*The common part of the proposals are:*

* + - *If the total number of stored cells does not exceed UE capability maxNumberStoredConfigCells-r18 and the number of LTMCandidateConfigs fast decoded does not exceed maxNumberConfigs-r18, TLTM\_RRC-processing =0 applies to the LTM candidates with early TCI activation or early PDCCH order RACH,*
    - *Otherwise, TLTM\_RRC-processing =0 applies to the LTM candidates with the most recently activated TCI states and PDCCH-order PRACH transmission within UE capability maxNumberStoredConfigCells-r18 and maxNumberConfigs-r18.*

*The divergence is how to avoid misunderstanding of “most recent” candidates in the 2nd bullet.*

* + - *Option 1: add some limitation to avoid mis-understanding*
      * + *NW will not trigger TCI state activation or PDCCH-order RACH on different candidate cells at the same occasion.*
    - *Option 2: in case a tie-break rule is needed, the ltm-CandidateConfig associated with the most recent PDCCH-order PRACH transmission will be chosen.*



*This is also related to Issue 1-2-1: Whether to consider early TCI state activation for multiple cells at the same time.*

Agreement:

* + - If the total number of cells to be fast RRC decoded does not exceed UE capability *maxNumberStoredConfigCells-r18* and the number of *LTMCandidateConfigs* fast decoded does not exceed *maxNumberConfigs-r18*, TLTM\_RRC-processing =0 applies to the LTM candidates with early TCI activation or early PDCCH order RACH,
    - Further discuss:
      * FFS: Otherwise, TLTM\_RRC-processing =0 applies to the LTM candidates with the most recently activated TCI states (if any) [and/or] PDCCH-order PRACH transmission (if any) within UE capability *maxNumberStoredConfigCells-r18* and *maxNumberConfigs-r18.*
        + FFS: This is at least applicable to the case that NW does not trigger TCI state activation or PDCCH-order RACH on different candidate cells at the same occasion.
        + FFS: Whether to support and further optimize the case that NW triggers TCI state activation or PDCCH-order RACH on different candidate cells at the same occasion.

vivo: Clarify L1/L3 measurement aspect.

**Issue 1-4-2-1:** **Conditions of no extra time for PL-RS measurement in cell switch delay**

* Proposals
  + Option 1 (Apple, ZTE, Ericsson, QC):
    - No additional PL-RS measurement time is needed, provided L3-RSRP or L1-RSRP on the SSB associated with PL-RS has been measured/reported.
  + Option 2 (MTK):
    - The condition of no additional time for PL-RS measurement in cell switch delay is that the PL-RS is associated with the SSB indicated for T/F tracking in cell switch command.
  + Option 3 (Huawei):
    - RAN4 only consider PL-RS maintained case and no extra time is expected for PL-RS measurement in LTM cell switch delay.
  + Option 4 (Nokia):
    - Target PL-RS is maintained in the scenarios where Tfirst-RS = 0. When Tfirst-RS > 0, the UE can use the first SSB for PL-RS measurement, if needed. Hence, no additional delay due to PL-RS measurement is needed in cell switch delay requirement.

MTK: Note: If the time restriction of the existing known cell or known TCI state does not apply, further discuss whether to add a time restriction for the above agreement.

QC: PL-RS is associated with TCI state indicated by LTM cell switch command in terms of QCL chain.

vivo: TCI is activated before cell switch command long time ago, additional delay is needed to maintain PL-RS.

Nokia: How long is the delay for the case.

* Agreement:
  + No additional PL-RS measurement time is needed, provided L3-RSRP or L1-RSRP on the SSB associated with PL-RS has been measured/reported.
    - Further discuss offline whether to add: PL-RS is associated with TCI state indicated by LTM cell switch command in terms of QCL chain.

**Issue 1-5-1: Capability for supporting RTD>CP**

|  |  |  |  |
| --- | --- | --- | --- |
| 39-1 | SSB based L1-RSRP measurements for multiple cells with RTD > CP | Capability of simultaneous L1-RSRP measurements for more than one cell when the max RTD among the cells on the same frequency layer or in the same active BWP is larger than CP length of the cell on the frequency layer or in the same active BWP. | 45-1 from RAN1 Rel-18 feature list or 39-2 or 39-2a |

* Proposals
  + Option 1 (CATT, MTK):
    - The current capability of SSB based L1-RSRP measurements for multiple cells with RTD > CP (39-2) should be revised.
      * It only needs to describe the capability of handling multiple cells with RTD > CP.
      * This capability will be supported together with the capabilities of SSB based L1-RSRP measurements and/or early T/F tracking and/or PDCCH order RACH.
* Recommended WF
  + Need more discussion.

**Issue 1-5-2: Capability for RACH-less LTM cell switch**

* Proposals
  + Proposal 1 (Ericsson, QC): RAN4 to define the following UE capability:
    - RACH-less LTM cell switch can be conducted to one of ‘N’ cells to which the UE most recently transmitted the ‘PDCCH-order PRACH’ except for the cell configured as SCell.
      * N = {[1], 2, …, 7}, if not reported, N=8.
      * Granularity: Per UE
* Recommended WF
  + Need more clarification and discussion.

**Issue 1-4-1-1: T/F tracking when TRS as QCL source in cell switch delay**

* Proposals
  + Option 1 (CMCC):
    - It is proposed to consider TRS as QCL source RS for cell switch and early TCI state.
  + Option 2 (Huawei):
    - If TRS is configured as a resource RS in TCI state,
      * the current RACH based LTM cell switch delay can keep unchanged with using SSB for T/F tracking.
      * for RACH-less based LTM cell switch delay, either using SSB or using TRS for T/F tracking can work.
  + Option 3 (Nokia)
    - Add TRS as a possible QCL source for T/F tracking in RAN4 cell switch delay requirements.
  + Option 4 (Ericsson, QC):
    - modify the TCI known condition to following

The target joint DL/UL TCI state or separate DL and UL TCI states in the LTM cell switch command are known if the following conditions are met:

[- The TCI state is activated not more than TBD ms before the reception of the cell switch command and SNR of the SSB associated to TCI state is ≥ -3dB; where the TCI state is considered activated if the activated TCI state and target TCI state in the cell switch command are same or the SSB associated to target TCI state in cell switch command and the SSB associated to activated TCI state are same; or]

[- The TCI state is activated before the reception of the cell switch command (where the TCI state is considered activated if the activated TCI state and target TCI state in the cell switch command are same or the SSB associated to target TCI state in cell switch command and the SSB associated to activated TCI state are same) and the SSB associated to target TCI state is available at least once every TBD ms after the TCI state activation command is received and SNR of the SSB associated to TCI state ≥ -3dB; or]

* + - RAN4 to clarify, if TCI state in LTM Cell Switch command is “unknown”/not activated, UE should perform the cell switch with additional time for T/F tracking in the cell switch delay.
* Recommended WF

The proposals are discussing T/F tracking time needed in the following case:

|  |  |  |
| --- | --- | --- |
|  | Early TCI state activation | TCI state indication in cell switch command |
| Source RS | SSB | TRS |

In moderator understanding, whether to skip T/F tracking during cell switch delay is agnostic to the Type A source is SSB or TRS for early T/F tracking as long as they are on the same QCL chain.

* + Recommend agree on
    - Confirm current cell switch delay requirements are applicable to the case that TRS is configured as a QCL source in the indicated TCI state in cell switch command.

**Issue 3-2-1: More test for Improvement on SCell/SCG setup delay**

* Proposals
  + Proposal 1 (Nokia):
    - Introduce test cases with valid reporting for FR1 and FR2 also for the case when the UE is configured with EMR measurements.
* Recommended WF
  + Need more discussion.

5.25 Dual Tx/Rx Multi-SIM for NR

5.25.1 RRM core and performance requirements

[**R4-2411967**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411967.zip) **Discussion on remaining aspects of MUSIM**

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

**Decision: Noted.**

[**R4-2411968**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411968.zip) **CR on corrections and clarifications for MUSIM gap requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4733 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Revised to R4-2413952 (from R4-2411968).**

[**R4-2413952**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413952.zip) **CR on corrections and clarifications for MUSIM gap requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4733 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2412286**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412286.zip) **On remaining maintenance issues for MUSIM**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412287**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412287.zip) **CR on editorial changes for MUSIM**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4811 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Abstract:**

MCC: A revision is needed due to CR coversheet parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2412287](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412287.zip). Database value : NR\_DualTxRx\_MUSIM-Core. CR cover value : NR\_DualTxRx\_MUSIM-Core/Perf

**Decision: Merged.**

[**R4-2412288**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412288.zip) **CR on FR1 Type-1 gap + periodic MUSIM gap for SSB-based measurements in inter-frequency layers**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4812 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Abstract:**

MCC: A revision is needed due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2412288](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412288.zip). Database value : NR\_DualTxRx\_MUSIM-Perf. CR cover value : NR\_DualTxRx\_MUSIM-Core/Perf.

**Decision: Revised to R4-2413954 (from R4-2412288).**

[**R4-2413954**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413954.zip) **CR on FR1 Type-1 gap + periodic MUSIM gap for SSB-based measurements in inter-frequency layers**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4812 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Abstract:**

MCC: A revision is needed due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2412288](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412288.zip). Database value : NR\_DualTxRx\_MUSIM-Perf. CR cover value : NR\_DualTxRx\_MUSIM-Core/Perf.

**Decision: Return to.**

[**R4-2412498**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412498.zip) **(NR\_DualTxRx\_MUSIM-Core) Remaining issues on MUSIM**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the remaining issues for MUSIM gaps

**Decision: Noted.**

[**R4-2412499**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412499.zip) **(NR\_DualTxRx\_MUSIM-Core) CR on 38.133 MUSIM Core**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4830 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This core part CR for MUSIM

**Decision: Revised to R4-2413955 (from R4-2412499).**

[**R4-2413955**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413955.zip) **(NR\_DualTxRx\_MUSIM-Core) CR on 38.133 MUSIM Core**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4830 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This core part CR for MUSIM

**Decision: Return to.**

[**R4-2412660**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412660.zip) **Discussion on remaining issues in RRM requirements for MUSIM**

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

**Decision: Noted.**

5.26 Enhanced NR Sidelink Relay

5.26.1 RRM core and performance requirements

5.27 NR MIMO evolution for downlink and uplink

5.27.1 RRM core requirements

[**R4-2411384**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411384.zip) **On MIMO evolution RRM requirements maintenance**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision:** The document was **not treated**.

[**R4-2411385**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411385.zip) **CR on gradual timing adjustment for 2TA**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4655 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision:** The document was **not treated**.

[**R4-2411386**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411386.zip) **CR for eUTCI state switching requirements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4656 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision:** The document was **not treated**.

[**R4-2411707**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411707.zip) **Discussion on R18 MIMO for RRM core part requirement**

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

**Decision:** The document was **not treated**.

[**R4-2411708**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411708.zip) **(NR\_MIMO\_evo\_DL\_UL-Core) CR on core maintenance for R18 MIMO**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4706 rev Cat: F (Rel-18)  
  
 Source: MediaTek Inc.*

**Decision:** The document was **not treated**.

[**R4-2412034**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412034.zip) **On Rel-18 NR MIMO evolution for downlink and uplink RRM core requirements maintenance**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412114**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412114.zip) **Discussion on RRM core maintenance for MIMO evolution for downlink and uplink**

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

**Decision:** The document was **not treated**.

[**R4-2412199**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412199.zip) **Discussion on requirements maintenance for Rel-18 MIMO**

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

**Decision:** The document was **not treated**.

[**R4-2413009**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413009.zip) **Discussion on RRM core requirements maintenance for MIMO**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on RRM core requirements maintenance for MIMO

**Decision:** The document was **not treated**.

[**R4-2413010**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413010.zip) **CR to TS 38.133 on UL Transmit timing for MIMO Evolution.**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4883 rev Cat: F (Rel-18)  
  
 Source: Ericsson, Qualcomm Incorporated, Apple, Nokia, Vivo*

**Abstract:**

Draft CR to TS 38.133 on UL Transmit timing for MIMO Evolution.

**Decision:** The document was **not treated**.

5.27.2 RRM performance requirements

[**R4-2411387**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411387.zip) **CR for correcting sDCI mTRP based test cases**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4657 rev Cat: F (Rel-18)  
  
 Source: Apple*

**Decision:** The document was **not treated**.

[**R4-2412035**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412035.zip) **TDCP simulation results**

*Type: other For: Discussion  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412036**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412036.zip) **CR corrections of RRM performance requirements for NR MIMO Evo FR2 UE transmit timing**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4746 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412037**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412037.zip) **CR corrections of RRM performance requirements for NR MIMO Evo sDCI mTRP FR2 separate UL TCI state switching**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4747 rev Cat: F (Rel-18)  
  
 Source: Nokia*

**Decision:** The document was **not treated**.

[**R4-2412409**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412409.zip) **CR on test cases of UE transmit timing from two TRPs in FR1**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4821 rev Cat: F (Rel-18)  
  
 Source: Samsung*

**Decision:** The document was **not treated**.

[**R4-2413011**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413011.zip) **Performance requirements for TDCP**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Performance requirements for TDCP

**Decision:** The document was **not treated**.

[**R4-2413012**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413012.zip) **CR to TS 38.133: TC for TDCP measurements**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4884 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to TS 38.133: TC for TDCP measurements

**Decision:** The document was **not treated**.

5.27.4 Moderator summary and conclusions

Topic: [112][208] NR\_MIMO\_evo\_DL\_UL

[**R4-2411803**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411803.zip) **Topic summary for [112][208] NR\_MIMO\_evo\_DL\_UL**

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

**Abstract:**

Topic summary in RRM session

**Decision:** The document was **not treated**.

[**R4-2413872**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413872.zip) **Ad-hoc minutes for [112][208] NR\_MIMO\_evo\_DL\_UL**

*Type: other For: Approval  
 Source: Samsung*

**Decision: Return to.**

**Online session (Monday Aug 19, 2024)**

**Issue 1-1-1-b: Reference DL timing point for PUCCH/PUCCH/SRS**

* Proposals
  + Proposal 1: Confirm the wording in CR R4-2413010 (Apple, Ericsson)
    - For multi-DCI based multi-TRP operation with two TAs, the reference point for PUCCH/PUSCH/SRS, is the first detected path (in time) of one of the corresponding downlink reference signal(s) of the reference cell associated with one of the ~~[activated]~~ *DLorJointTCIState* [TS 38.331] having the same TAG as the uplink signal.
      * Proposal 1a: remove “activated” (HW, E///, QC)
      * Proposal 1b: keep activated (Apple, Nokia, E///)
  + Proposal 2: (Huawei, QC, MTK)
    - The first detected path (in time) of [one of] the corresponding downlink reference signal(s) of DL TCI state(s) of the reference cell associated with a coresetPoolIndex having same TAG as the uplink signal, where is commanded by the network independently for each TAG.
* Recommended WF
  + Discuss based on the CR R4-2413010. The differences in proposals are whether the DL TCI states(s) is active or not to remove the square bracket

QC: we don’t have the terminology of “activated” in timing requirement.

MTK: we also support P2.

E///: ok with P1 without activated.

Apple: support P1 with “activated”. If not activated, UE need additional time for tracking.

Nokia: support P1 with “activated”.

HW: If go with P1, UE has to use the “active” TCI state. For P2, it allows UE to use active TCI state as well.

Apple: there may be no “active” DL TCI state.

Agreement:

* For multi-DCI based multi-TRP operation with two TAs, the reference point for PUCCH/PUSCH/SRS, is the first detected path (in time) of one of the corresponding downlink reference signal(s) of the reference cell associated with one of the *DLorJointTCIState* [TS 38.331] having the same TAG as the uplink signal.

**Issue 1-2-1: For mDCI mTRP, whether to need additional DL RS tracking time for UL TCI state switching if UE supporting two TAs (RTD<CP and RTD>CP)?**

* Proposals
  + Proposal 1: Yes (Apple, Samsung)
  + Proposal 1a: (Apple)
    - For multi-DCI multi-TRP with 2TA for separate UL TCI state switch, if no DL TCI is in the active TCI state list associated with the TAG of the target UL TCI state choose one of the 2 options -
      * Additional time for DL timing reference tracking is needed for the UL TCI state switch
      * No requirements are applicable for this case
  + Proposal 1b: (Samsung)
    - For joint TCI state, the UE is not expected to transmit on UL based on the target TCI state before UE completes the DL and UL TCI state switch. The DL timing can always be achieved by DL TCI. No additional DL RS tracking time for UL TCI state switching.
    - For separate UL TCI state switch:
      * If the DL beams are changed as well and DL TCI is not in the active list, the previous DL timing cannot be used. Additional DL RS tracking time for UL TCI state switching is needed as:
        + Known case: THARQ + + TOk-ref (Tfirst-SSB-DLRef + OL\*T SSB-DLRef + 2ms)+NM\*( Tfirst-PL-RS + 4\*Ttarget\_PL-RS + 2ms)
        + Unknown case: THARQ + + TL1-RSRP + TOuk-ref (Tfirst-SSB-DLRef + OL\*T SSB-DLRef + 2ms)+ Tfirst-PL-RS + 4\*Ttarget\_PL-RS + 2ms
        + TOk-ref = 1 if there is no active DL TCI-State for DL timing reference associated with the same coresetPoolIndex
      * For other cases, no additional DL tracking is needed.
  + Proposal 2: (MediaTek, Nokia, Ericsson)
    - No. Reuse the same requirements as Rel-17
    - Note: TOk-ref = 0 if there is no active DL TCI-State for DL timing reference associated with the same coresetPoolIndex
* Recommended WF
  + TBA

Samsung: this is a new scenario not covered in the previous release.

Nokia: UE always have reference signal. Not see the need for additional time.

Apple: It is for separate DL and UL TCI state switching.

QC: this will force UE to do downlink tracking. There is always DL reference timing.

Apple: does not force UE to do this.

**Issue 1-2-2: Update RLM/BFD/CBD requirements for restriction when RTD is larger than CP**

* Proposals
  + Proposal 1: (MediaTek)
    - Add the measurement restriction and applicability for RLM/BFD/CBD when RTD is larger than CP
* Recommended WF
  + Discuss Proposal 1 and CR R4-2411708

**Issue 2-1-1: For high doppler condition (300Hz) + 30kHz SCS TDD, SNR = 10dB, TDCP test requirements in the test?**

* Proposals
  + Option 1: (Ericsson)
    - Reported TDCP index is larger than 6, with at least 80% probability. Confirm to delete “equal to 6”
* Recommended WF
  + To check whether option 1 is agreeable

5.28 Enhanced support of reduced capability NR devices

5.28.1 RRM core requirements

[**R4-2411351**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411351.zip) **CR to 38.133 on eDRX requirements in INACTIVE mode for eRedCap UE**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4639 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411351](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411351.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Revised to R4-2413956 (from R4-2411351).**

[**R4-2413956**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413956.zip) **CR to 38.133 on eDRX requirements in INACTIVE mode for eRedCap UE**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4639 rev Cat: F (Rel-18)  
  
 Source: CATT*

**Abstract:**

MCC: A revision is required due to parsing failure. Specification number wrong on CR cover for TDoc [R4-2411351](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411351.zip). Database value : 38.133. CR cover value : TS 38.133.

**Decision: Return to.**

[**R4-2411613**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411613.zip) **CR on relaxation measurement requirements for RedCap inactive UE with INACTIVE eDRX >10.24s**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Xiaomi*

**Decision: Revised to R4-2413957 (from R4-2411613).**

[**R4-2413957**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413957.zip) **CR on relaxation measurement requirements for RedCap inactive UE with INACTIVE eDRX >10.24s**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Xiaomi*

**Decision: Return to.**

[**R4-2412217**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412217.zip) **Correction to measurement requirements with inactive eDRX**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4796 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

5.29 Network energy saving for NR

5.29.1 RRM core requirements

[**R4-2411444**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411444.zip) **On RRM core requirements maintenance for NES**

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

**Decision: Noted.**

[**R4-2411464**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411464.zip) **Discussion on RRM requirements for inter-band SSB-less SCell operation**

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

**Decision: Noted.**

[**R4-2411482**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411482.zip) **(Netw\_Energy\_NR-Core) Discussion on R18 NES leftovers**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

[**R4-2411564**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411564.zip) **Core maintenance on network energy saving**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

[**R4-2411565**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411565.zip) **38.133 CR on handover delays for NES-based CHO**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4691 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2413901 (from R4-2411565).**

[**R4-2413901**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413901.zip) **38.133 CR on handover delays for NES-based CHO**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4691 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Return to.**

[**R4-2411721**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411721.zip) **On the remaining open issues for SSB-less SCell operation**

*Type: discussion For: Discussion  
 Source: Qualcomm Technologies Ireland*

**Abstract:**

In this paper, we provide our input to the remaining open RRM core requirements for SSB-less SCell operation.

**Decision: Noted.**

[**R4-2411757**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411757.zip) **(Netw\_Energy\_NR-Core) Discussion on core maintenance for NES**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412124**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412124.zip) **Discussion on RRM core requirements maintenance for NES**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

[**R4-2412200**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412200.zip) **CR on core requirements maintenance for NES CHO**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4787 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

[**R4-2412218**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412218.zip) **Discussion on SSB-less SCell operation**

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

**Decision: Noted.**

[**R4-2412219**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412219.zip) **Update on SSB-less based SCell activation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4797 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413902 (from R4-2412219).**

[**R4-2413902**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413902.zip) **Update on SSB-less based SCell activation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4797 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412420**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412420.zip) **Discussion on intra-band NCCA SSB-less Scell activation delay requirement**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

[**R4-2412421**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412421.zip) **DraftCR on intra-band NCCA SSB-less Scell activation**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Not pursued.**

[**R4-2412600**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412600.zip) **Discussion on maintenance of R18 NES RRM core requirements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412605**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412605.zip) **CR for conditional handover requirements on network energy saving**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4843 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Merged.**

[**R4-2413013**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413013.zip) **Remaining issues on NES general**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Remaining issues on NES general

**Decision: Noted.**

[**R4-2413014**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413014.zip) **CR to TS 38.133 on core requirement maintenance for NES**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4885 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR to TS 38.133 on core requirement maintenance for NES

**Decision: Merged.**

[**R4-2413075**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413075.zip) **Discussion on the core maintenance of SSB-less SCell operation of Network energy saving for NR**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2413083**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413083.zip) **CR on R18 NES SSB-less operation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4893 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413083](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413083.zip). Database value : Netw\_Energy\_NR-Core. CR cover value : [Netw\_Energy\_NR-Core]. Please check the WI code and match to the database value on

**Decision: Revised to R4-2413897 (from R4-2413083).**

**[R4-2413897](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413897.zip) CR on R18 NES SSB-less operation**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4893 rev Cat: F (Rel-18)  
  
 Source: ZTE Corporation, Sanechips*

**Abstract:**

MCC: A revision is required due to parsing failure. Change request Work Item wrong on CR cover for TDoc [R4-2413083](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413083.zip). Database value : Netw\_Energy\_NR-Core. CR cover value : [Netw\_Energy\_NR-Core]. Please check the WI code and match to the database value on

Moderator: Postponed

**Decision: Return to.**

5.29.2 RRM performance requirements

[**R4-2411445**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411445.zip) **On RRM test cases for NES**

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

**Decision: Noted.**

[**R4-2411566**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411566.zip) **RRM performance aspects on network energy saving**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

[**R4-2411567**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411567.zip) **Correction CR on NES based CHO HO delay TCs**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4692 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2413903 (from R4-2411567).**

[**R4-2413903**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413903.zip) **Correction CR on NES based CHO HO delay TCs**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4692 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Return to.**

[**R4-2412201**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412201.zip) **Discussion on RRM perforamnce maintenance for R18 NES**

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

**Decision: Noted.**

[**R4-2412422**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412422.zip) **Test case maintenance for NES triggering inter-frequency target CHO delay from FR2 to FR1**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Merged.**

[**R4-2412521**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412521.zip) **Discussion on test cases for R18 NES**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412522**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412522.zip) **CR on test cases for Cell DTX**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4841 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2413904 (from R4-2412522).**

[**R4-2413904**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413904.zip) **CR on test cases for Cell DTX**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4841 rev Cat: F (Rel-18)  
  
 Source: vivo*

**Decision: Return to.**

[**R4-2413015**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413015.zip) **Discussion on NES test cases**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on NES test cases

**Decision: Noted.**

[**R4-2413016**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413016.zip) **CR on TC for A-TRS based inter-band SSB-less SCell activation delay for EN-DC**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4886 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR on TC for A-TRS based inter-band SSB-less SCell activation delay for EN-DC

**Decision: Revised to R4-2413905 (from R4-2413016).**

**[R4-2413905](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413905.zip) CR on TC for A-TRS based inter-band SSB-less SCell activation delay for EN-DC**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4886 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR on TC for A-TRS based inter-band SSB-less SCell activation delay for EN-DC

**Decision: Return to.**

5.29.4 Moderator summary and conclusions

Topic: [112][209] Netw\_Energy\_NR

[**R4-2411804**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411804.zip) **Topic summary for [112][209] Netw\_Energy\_NR**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413906**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413906.zip) **Coffee break discussion minutes for [112][209] Netw\_Energy\_NR**

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

**Decision: Return to.**

[**R4-2413907**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413907.zip) **WF on** **RRM requirements for NR network energy saving**

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

**Decision: Return to.**

**Online session (Monday Aug 19, 2024)**

**Issue 1-1-1: Power difference conditions**

* Proposals
  + Option 1: Clarify that EPRE difference is smaller or equal to [12] dB + |20\*log (f1/f2)| - Margin, where f1 and f2 is the center frequency of reference Cell and SSB-less Cell and the value of Margin is FFS. (Apple, OPPO, Nokia, CMCC, Huawei, ZTE)
  + Option 2: Further increase [12] dB. (Nokia, Vivo, ZTE)
  + Option 3: The power difference condition could be further increased beyond EPRE = 12 dB. In this case one more P-TRS occurrence should be allowed for AGC convergence. Remove [after the compensation for AGC]. (QC, Vivo)
  + Option 4: RAN4 to keep “EPRE after pre-compensation” and “12dB EPRE difference” in the spec text, and no any further change is expected. (Apple, CTC, Ericsson)
* Moderator:
  + 6/10 companies support option 1
  + 3/10 companies support option 2
  + 2/10 companies support option 3.
  + 3/10 companies support option 4.

Though there is majority supporting for option 1, there is also strong objection behind each option based on the discussion in last meeting. Considering that it is already late stage, let’ try to conclude this issue in this meeting.

* Recommended WF:
  + Threat this issue online and try to conclude it in this meeting.

Apple: A-TRS

HW: cannot support 3 samples for A-TRS.

CMCC: has concern on 25dB. It can be larger for inter-band CA.

ZTE: has concern on 25dB. no upper bound.

Apple: we can discuss the number.

E///: increase 12 dB to 18 dB.

Apple: we cannot agree.

CMCC: Even for blind AGC, 3 samples are sufficient.

Apple: we have other components in the legacy requirement, which can also be used for AGC setting.

Agreement:

* + For EPRE difference within X dB, keep the existing requirement.
    - X equals to or larger than 12 dB
  + For EPRE difference beyond X dB and no larger than Y dB, add one more P-TRS occurrence.
    - Further discuss whether the upper bound of Y is needed. If needed, Y is larger than 25dB.
  + From RAN4 perspective, AGC compensation for carrier frequency difference can be optionally implemented by UE. Remove “[after pre-compensation]” from the spec, i.e., not specify “AGC compensation” for carrier frequency difference in the spec.
  + Further discuss the X and Y values in this meeting. Try to conclude in the 2nd round on Thursday afternoon.

**Issue 1-1-2: Multiple SSB-less SCells activation**

* Proposals

TRS-based:

* + Option 1: For multiple SSB-less SCell activation with TRS, when all to-be-activated SCells are intra-band contiguous SSB-less SCells and all to-be-activated SCells have same QCL source cell, the multiple SCell activation delay requirements are based on TRS with the shortest periodicity. (Apple, Nokia, CMCC, CTC, ZTE)
  + Option 2: Regarding the minimum requirement of multiple SSB-less SCells activation, the UE should activate each to-be-activated SCell based on the TRS on the SCell, and the requirements to be defined accordingly. (MTK, QC, Huawei)

A-TRS based:

* + Option 1: For multiple SSB-less SCell activation with A-TRS, when all to-be-activated SCells are intra-band contiguous SSB-less SCells and all to-be-activated SCells have same QCL source cell, the multiple SCell activation delay requirements are based on A-TRS on the SCell which has the earliest arrived A-TRS after MAC CE decoding. (Apple, CMCC)
  + Option 2: When all to-be-activated SSB-less SCells are contiguous in same band, the single SSB-less SCell activation delay can be applied to each to-be-activated SSB-less SCell respectively. (Huawei, ZTE)
  + Option 3: No requirements for multiple SSB-less SCell activation should be defined for A-TRS in Rel-18. (QC)

Mixed scenario (TRS-based and A-TRS based):

* + Option 1: For multiple SSB-less SCell activation, when “all to-be-activated SCells are intra-band contiguous SSB-less SCells” and “all to-be-activated SCells have same QCL source cell” and “A-TRS and TRS are configured for different to-be-activated intra-band contiguous SSB-less SCells”, the multiple SCell activation delay requirements are based on A-TRS on the SCell which has the earliest arrived A-TRS after MAC CE decoding. (Apple)
* Moderator:
  + It was agreed in previous meeting to define multiple SCell activation requirements at least for TRS-based case. Option 1 is one step further enhancement compared with option 2. Considering it is already late stage, Companies please check with option 2 can be agreed, and further enhancement can be considered in later release. A-TRS and mixed (TRS and A-TRS), can be discussed after TRS-based case.
* Recommended WF:
  + For TRS-based multiple SSB-less SCell activation, agree on option 2. Further enhancement (e.g. option 1) can be considered in further release.
  + Discuss whether/how to define requirements for A-TRS based and mixed scenario (TRS-based and A-TRS based):

**Issue 1-1-4: Neighbour cells on carrier of SSB-less SCell**

* Proposals
  + Option 1: if neighbor cells on carrier of SSB-less SCell have SSB transmission, the measurement for those neighbor cells shall be treated as inter-frequency measurement without MG as long as the SSBs from those neighbor cells can be contained in the active BWP of SSB-less SCell (Apple, ZTE)
* Recommended WF:
  + Intra-frequency/Inter-frequency: Inter-frequency based on existing definition.
  + With/without gap:
    - Option 1: For UE supporting R18 SSB-less, UE autonomously supports inter-f w/o gap as long as the SSB is within the active BWP.
    - Option 2: Whether UE can support inter-f w/o gap following existing rules (conditions in 9.3.1, e.g supporting of R16 inter-frequency without gap, R17 R18 NeedForGap)

**Issue 1-1-3: Relation to R15 intra-band SSB-less**

* Proposals
  + Option 1: For UE supports both R18 inter-band SSB-less and R15 intra-band contiguous SSB-less SCell operation, if the to-be-activated SSB-less SCell is configured with QCL source to both intra-band contiguous and inter-band Cells, no SCell activation requirement shall be applied, regardless of whether the Rel-18 reference cell indication is configured. (Apple, Nokia, Huawei, ZTE)
    - Option 1a: (Huawei)
    - For UE supports both R18 inter-band SSB-less and R15 intra-band contiguous SSB-less, when R18 reference cell indication is configured, network shall configure QCL source to associate with the inter-band Cell.
    - For UE supports both R18 inter-band SSB-less and R15 intra-band contiguous SSB-less, when R18 reference cell indication is configured, Rel-18 SSB-less requirement is applied.
  + Option 2: When R18 reference cell indication is configured, network configure with QCL source to both intra-band contiguous and inter-band Cells, SSB less activation should follow Rel-15 requirement. (Ericsson)
* Recommended WF:
  + Agree on option 1, which means no spec impacts.

5.30 IoT (Internet of Things) NTN (non-terrestrial network) enhancements

5.30.2 RRM core and performance requirements

[**R4-2412869**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412869.zip) **Measurements on disappearing neighbor cells**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision:** The document was **revised to** [**R4-2413124**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413124.zip).

[**R4-2413124**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413124.zip) **Measurements on disappearing neighbor cells**

*Type: discussion For: Discussion  
 Source: Nokia*

(Replaces [R4-2412869](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412869.zip))

**Decision: Noted.**

5.31 NR Network-controlled Repeaters

5.31.5 RRM core and performance requirements

5.32 Mobile IAB (Integrated Access and Backhaul) for NR

5.32.3 RRM core and performance requirements

5.34 Other Rel-18 non-spectrum related WIs

5.34.3 RRM requirements

5.35 Rel-18 TEI

[**R4-2411586**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411586.zip) **Discussion on performance requirements for RTK/PPP positioning for NR**

*Type: discussion For: Discussion  
 Source: Rohde & Schwarz*

**Decision: Noted.**

[**R4-2412208**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412208.zip) **CR on specification improvement for 38.133 A.5**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-4788 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

6 Rel-18 on-going work items

6.1 Expanded and improved NR positioning

6.1.1 RRM core requirements maintenance

6.1.1.1 General aspects

[**R4-2413975**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413975.zip) **Big CR to 38133 for RRM core part for expanded and improved NR positioning**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-xxxx rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Decision: Return to.**

6.1.1.2 SL Positioning and Carrier Phase Positioning

[**R4-2411333**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411333.zip) **Draft CR on core requirements for CPP**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2413979 (from R4-2411333).**

[**R4-2413979**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413979.zip) **Draft CR on core requirements for CPP**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Return to.**

[**R4-2411335**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411335.zip) **Discussion on Core requirements of carrier phase positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2412643**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412643.zip) **Discussion on RRM requirements for SL positioning and CPP**

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

**Decision: Noted.**

[**R4-2412644**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412644.zip) **draftCR on RRM requirements for SL positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Not pursued.**

[**R4-2412645**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412645.zip) **draftCR on RRM requirements for CPP**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412679**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412679.zip) **draftCR 38.133 Core requirement for CPP**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR for corrections of core requirement for CPP.

**Decision: Revised to R4-2413980 (from R4-2412679).**

[**R4-2413980**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413980.zip) **draftCR 38.133 Core requirement for CPP**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR for corrections of core requirement for CPP.

**Decision: Return to.**

[**R4-2413386**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413386.zip) **On remaining core issues for SL positioning and CPP**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On remaining issues for SL positioning and CPP

**Decision: Noted.**

[**R4-2413387**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413387.zip) **Draft CR 38133 on remaining core issues for SL positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR 38133 on remaining core issues for SL positioning

**Decision: Revised to R4-2413981 (from R4-2413387).**

[**R4-2413981**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413981.zip) **Draft CR 38133 on remaining core issues for SL positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR 38133 on remaining core issues for SL positioning

**Decision: Return to.**

[**R4-2413461**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413461.zip) **On the definition of Carrier Phase and the Impact of CFO on Averaging Carrier Phase Measurements**

*Type: discussion For: Discussion  
 Source: Lenovo*

**Decision: Noted.**

[**R4-2413462**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413462.zip) **RRM core maintenance for NR Carrier Phase Positioning**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

6.1.1.3 LPHAP use case

[**R4-2411332**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411332.zip) **Draft CR on LPHAP core requirements**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Endorsed.**

[**R4-2412646**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412646.zip) **draftCR on RRM requirements for LPHAP**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

[**R4-2412680**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412680.zip) **draftCR 38.133 Core requirement for LPHAP**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR for corrections of core requirement for LPHAP. Especially some clause numbers in the introduction section of positioning in RRC\_IDLE state needs to be corrected.

**Decision: Endorsed.**

6.1.1.4 RedCap Positioning and PRS/SRS bandwidth aggregation

[**R4-2411330**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411330.zip) **Draft CR on core requirements for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: CATT*

**Decision: Endorsed.**

[**R4-2411331**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411331.zip) **Draft CR on interruption requirements for SRS BW aggregation**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2413976 (from R4-2411331).**

[**R4-2413976**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413976.zip) **Draft CR on interruption requirements for SRS BW aggregation**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Return to.**

[**R4-2411336**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411336.zip) **Discussion on Core requirements of PRS BW aggregation**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2412647**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412647.zip) **Discussion on RedCap positioning and PRS/SRS BWA**

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

**Decision: Noted.**

[**R4-2412648**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412648.zip) **draftCR on RRM requirements for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413977 (from R4-2412648).**

[**R4-2413977**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413977.zip) **draftCR on RRM requirements for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412649**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412649.zip) **draftCR on requirements for PRS BWA**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

[**R4-2412681**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412681.zip) **On core requirement for bandwidth aggregation for positioning measurements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion paper on remaining issues related to bandwidth aggregation for positioning measurements.

**Decision: Noted.**

[**R4-2412682**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412682.zip) **draftCR 38.133 Core requirement for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR for corrections of core requirement for RedCap positioning. To implement changes in CR agreed in earlier meeting. Corrections to UE measurement capability and some IEs to align with RAN2 spec.

**Decision: Revised to R4-2413978 (from R4-2412682).**

**[R4-2413978](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413978.zip) draftCR 38.133 Core requirement for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR for corrections of core requirement for RedCap positioning. To implement changes in CR agreed in earlier meeting. Corrections to UE measurement capability and some IEs to align with RAN2 spec.

**Decision: Return to.**

6.1.2 RRM performance requirements

6.1.2.1 General aspects

[**R4-2413983**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413983.zip) **Big CR to 38.133 for RRM performance part for expanded and improved NR positioning**

*Type: CR For: Agreement  
 38.133 v18.6.0 CR-xxxx rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Decision: Return to.**

[**R4-2412650**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412650.zip) **draftCR on TCs for RRC\_IDLE**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413984 (from R4-2412650).**

[**R4-2413984**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413984.zip) **draftCR on TCs for RRC\_IDLE**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412683**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412683.zip) **Updated work split for Rel. 18 positioning**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Clause numbers for Rel.18 positioning TCs are fixed.

**Decision: Return to.**

[**R4-2412684**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412684.zip) **draftCR 38.133 Corrections to accuracy requirements for Rel18. positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR for corrections of accuracy requirement endorsed in the last meeting.

**Decision: Revised to R4-2413982 (from R4-2412684).**

[**R4-2413982**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413982.zip) **draftCR 38.133 Corrections to accuracy requirements for Rel18. positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR for corrections of accuracy requirement endorsed in the last meeting.

**Decision: Return to.**

[**R4-2413390**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413390.zip) **Draft Big CR to 38133 for RRM performance part for expanded and improved NR positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft Big CR to 38133 for RRM performance part for expanded and improved NR positioning

**Decision: Endorsed.**

6.1.2.2 SL Positioning

[**R4-2411334**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411334.zip) **Draft CR on SL PRS-RSRP(P) measurement delay and accuracy test cases in FR1**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2413985 (from R4-2411334).**

[**R4-2413985**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413985.zip) **Draft CR on SL PRS-RSRP(P) measurement delay and accuracy test cases in FR1**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Return to.**

[**R4-2411337**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411337.zip) **Discussion on Performance requirements of Sidilink positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411488**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411488.zip) **Discussion on perf requirements for SL positioning**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

[**R4-2411489**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411489.zip) **[TC 11-1 and 11-2] CR on TC for SL measurement accuracy in FR1**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: OPPO*

**Decision: Revised to R4-2413986 (from R4-2411489).**

[**R4-2413986**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413986.zip) **[TC 11-1 and 11-2] CR on TC for SL measurement accuracy in FR1**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: OPPO*

**Decision: Return to.**

[**R4-2411793**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411793.zip) **On RRM performance requirements for SL positioning**

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

**Abstract:**

MCC: This was not made available at tdoc submission deadline.

**Decision: Noted.**

[**R4-2411983**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411983.zip) **(NR\_pos\_enh2-Perf) Discussion on open issues for sidelink positioning**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412651**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412651.zip) **On performance requirements for SL positioning**

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

**Decision: Noted.**

[**R4-2412652**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412652.zip) **draftCR on performance requirements for SL positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged.**

[**R4-2413388**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413388.zip) **On remaining performance issues for SL positioning**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On remaining performance issues for SL positioning

**Decision: Noted.**

[**R4-2413389**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413389.zip) **Draft CR 38133 on remaining performance issues for SL positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR 38133 on remaining performance issues for SL positioning

**Decision: Revised to R4-2413987 (from R4-2413389).**

**[R4-2413987](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413987.zip) Draft CR 38133 on remaining performance issues for SL positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR 38133 on remaining performance issues for SL positioning

**Decision: Return to.**

6.1.2.3 LPHAP use case

[**R4-2411789**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411789.zip) **Draft CR – Test cases for RSTD measurement delay with eDRX > 10.24s in RRC\_INACTIVE, Sets 9-9, 9-10**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2413988 (from R4-2411789).**

[**R4-2413988**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413988.zip) **Draft CR – Test cases for RSTD measurement delay with eDRX > 10.24s in RRC\_INACTIVE, Sets 9-9, 9-10**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Return to.**

[**R4-2411790**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411790.zip) **Draft CR – Test cases for PRS-RSRPP measurement delay with eDRX > 10.24s in RRC\_INACTIVE, Sets 9-15, 9-16**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2413989 (from R4-2411790).**

[**R4-2413989**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413989.zip) **Draft CR – Test cases for PRS-RSRPP measurement delay with eDRX > 10.24s in RRC\_INACTIVE, Sets 9-15, 9-16**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Return to.**

[**R4-2411791**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411791.zip) **Draft CR – Test cases for RSTD measurement delay and accuracy with eDRX > 10.24s in RRC\_IDLE, Sets 10-4, 10-10, 11-4, 11-10**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2413990 (from R4-2411791).**

[**R4-2413990**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413990.zip) **Draft CR – Test cases for RSTD measurement delay and accuracy with eDRX > 10.24s in RRC\_IDLE, Sets 10-4, 10-10, 11-4, 11-10**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Return to.**

[**R4-2412254**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412254.zip) **(10-1 10-2) Draft CR on RSTD measurement delay TCs for RRC\_IDLE mode**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2413991 (from R4-2412254).**

[**R4-2413991**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413991.zip) **(10-1 10-2) Draft CR on RSTD measurement delay TCs for RRC\_IDLE mode**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: vivo*

**Decision: Return to.**

[**R4-2412255**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412255.zip) **(11-1 11-2) Draft CR on RSTD measurement accuracy TCs for RRC\_IDLE mode**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2413992 (from R4-2412255).**

[**R4-2413992**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413992.zip) **(11-1 11-2) Draft CR on RSTD measurement accuracy TCs for RRC\_IDLE mode**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: vivo*

**Decision: Return to.**

[**R4-2412653**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412653.zip) **On performance requirements for LPHAP**

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

**Decision: Noted.**

[**R4-2412654**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412654.zip) **draftCR on performance requirements for LPHAP**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413993 (from R4-2412654).**

[**R4-2413993**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413993.zip) **draftCR on performance requirements for LPHAP**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412685**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412685.zip) **On performance requirement for LPHAP**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion paper on remaining issues related to LPHAP performance requirement.

**Decision: Noted.**

[**R4-2412686**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412686.zip) **draftCR 38.133 Phase II LPHAP test cases**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR containing phase II TCs agreed for LPHAP.

**Decision: Revised to R4-2413994 (from R4-2412686).**

[**R4-2413994**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413994.zip) **draftCR 38.133 Phase II LPHAP test cases**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR containing phase II TCs agreed for LPHAP.

**Decision: Return to.**

[**R4-2413293**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413293.zip) **RRM Performance Requirements for LPHAP**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

6.1.2.4 RedCap Positioning

[**R4-2411338**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411338.zip) **Discussion on Performance requirements of RedCap UE positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411490**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411490.zip) **[TC 3-31 and 3-32] CR on TC for PRS-RSRPP delay with Rx FH in RRC inactive**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: OPPO*

**Decision: Revised to R4-2413995 (from R4-2411490).**

[**R4-2413995**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413995.zip) **[TC 3-31 and 3-32] CR on TC for PRS-RSRPP delay with Rx FH in RRC inactive**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: OPPO*

**Decision: Return to.**

[**R4-2411491**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411491.zip) **[TC 10-17 and 11-17] CR on TC for PRS-RSRP delay wo Rx FH in RRC IDLE**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: OPPO*

**Decision: Revised to R4-2413996 (from R4-2411491).**

[**R4-2413996**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413996.zip) **[TC 10-17 and 11-17] CR on TC for PRS-RSRP delay wo Rx FH in RRC IDLE**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: OPPO*

**Decision: Return to.**

[**R4-2411792**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411792.zip) **Additional simulation results for 1Rx RedCap UEs without frequency hopping**

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

**Decision: Noted.**

[**R4-2412253**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412253.zip) **(4-21, 22, 23, 24) Draft CR on UE Rx-Tx measurement accuracy TCs for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: vivo*

**Decision: Revised to R4-2413997 (from R4-2412253).**

[**R4-2413997**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413997.zip) **(4-21, 22, 23, 24) Draft CR on UE Rx-Tx measurement accuracy TCs for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: vivo*

**Decision: Return to.**

[**R4-2412423**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412423.zip) **(4-17~20) Test cases for RedCap CONNECTED and INACTIVE mode RSTD measurement accuracy with frequency hopping**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Revised to R4-2413998 (from R4-2412423).**

[**R4-2413998**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413998.zip) **(4-17~20) Test cases for RedCap CONNECTED and INACTIVE mode RSTD measurement accuracy with frequency hopping**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Intel Corporation*

**Decision: Return to.**

[**R4-2412655**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412655.zip) **On performance requirements for RedCap positioning**

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

**Decision: Noted.**

[**R4-2412656**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412656.zip) **draftCR on performance requirements for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2413999 (from R4-2412656).**

[**R4-2413999**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413999.zip) **draftCR on performance requirements for RedCap positioning**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412687**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412687.zip) **On performance requirement for RedCap positioning**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion paper on remaining issues related to RedCap positioning performance requirement.

**Decision: Noted.**

[**R4-2412688**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412688.zip) **Summary of simulation results for RedCap positioning**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Updated summary of simulation results submitted by companies up to RAN4#111.

**Decision: Noted.**

[**R4-2412689**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412689.zip) **draftCR 38.133 Phase II RedCap positioning test cases**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR containing phase II TCs agreed for RedCap positioning.

**Decision: Revised to R4-2414000 (from R4-2412689).**

[**R4-2414000**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414000.zip) **draftCR 38.133 Phase II RedCap positioning test cases**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR containing phase II TCs agreed for RedCap positioning.

**Decision: Return to.**

[**R4-2413044**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413044.zip) **test case for PRS-RSRPP measurement accuracy TC in RRC\_CONNECTED state in FR1 without Rx FH**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTECorporation,Sanechips*

**Decision: Revised to R4-2414001 (from R4-2413044).**

[**R4-2414001**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414001.zip) **test case for PRS-RSRPP measurement accuracy TC in RRC\_CONNECTED state in FR1 without Rx FH**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTECorporation,Sanechips*

**Decision: Return to.**

[**R4-2413045**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413045.zip) **test case for PRS-RSRPP measurement accuracy TC in RRC\_INACTIVE state in FR1 without Rx FH**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTECorporation,Sanechips*

**Decision: Revised to R4-2414002 (from R4-2413045).**

[**R4-2414002**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414002.zip) **test case for PRS-RSRPP measurement accuracy TC in RRC\_INACTIVE state in FR1 without Rx FH**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTECorporation,Sanechips*

**Decision: Return to.**

[**R4-2413046**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413046.zip) **test case for PRS-RSRPP measurement accuracy TC in RRC\_INACTIVE state in FR2 with Rx FH**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTECorporation,Sanechips*

**Decision: Revised to R4-2414003 (from R4-2413046).**

[**R4-2414003**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414003.zip) **test case for PRS-RSRPP measurement accuracy TC in RRC\_INACTIVE state in FR2 with Rx FH**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: ZTECorporation,Sanechips*

**Decision: Return to.**

[**R4-2413292**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413292.zip) **(NR\_pos\_enh2-Perf) (3-11, 3-12) PRS-RSRP measurement delay test case for RedCap positioning without Rx FH in RRC INACTIVE state in FR1 and FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: (Rel-18)  
  
 Source: Nokia*

**Decision: Revised to R4-2414004 (from R4-2413292).**

[**R4-2414004**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414004.zip) **(NR\_pos\_enh2-Perf) (3-11, 3-12) PRS-RSRP measurement delay test case for RedCap positioning without Rx FH in RRC INACTIVE state in FR1 and FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: (Rel-18)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2413329**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413329.zip) **draftCR (3-2)(3-4) TCs for RedCap positioning without FH on RSTD measurement delay in CONNECTED and INACTIVE states**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2414005 (from R4-2413329).**

[**R4-2414005**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414005.zip) **draftCR (3-2)(3-4) TCs for RedCap positioning without FH on RSTD measurement delay in CONNECTED and INACTIVE states**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Return to.**

[**R4-2413330**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413330.zip) **draftCR (4-2)(4-4) TCs for RedCap positioning without FH on RSTD measurement accuracy in CONNECTED and INACTIVE states**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2414006 (from R4-2413330).**

[**R4-2414006**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414006.zip) **draftCR (4-2)(4-4) TCs for RedCap positioning without FH on RSTD measurement accuracy in CONNECTED and INACTIVE states**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Return to.**

[**R4-2413331**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413331.zip) **draftCR (10-7)(10-8) TCs for RedCap positioning without FH on RSTD measurement delay in IDLE state without eDRX**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2414007 (from R4-2413331).**

[**R4-2414007**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414007.zip) **draftCR (10-7)(10-8) TCs for RedCap positioning without FH on RSTD measurement delay in IDLE state without eDRX**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Return to.**

[**R4-2413332**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413332.zip) **draftCR (11-7)(11-8) TCs for RedCap positioning without FH on RSTD measurement accuracy in IDLE state without eDRX**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2414008 (from R4-2413332).**

[**R4-2414008**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414008.zip) **draftCR (11-7)(11-8) TCs for RedCap positioning without FH on RSTD measurement accuracy in IDLE state without eDRX**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Return to.**

[**R4-2413877**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413877.zip) **Sets (10-15) and (10-16) Test case for PRS-RSRP measurement delay without Rx FH in RRC IDLE in FR1 and FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia*

**Decision: Revised to R4-2414009 (from R4-2413877).**

[**R4-2414009**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414009.zip) **Sets (10-15) and (10-16) Test case for PRS-RSRP measurement delay without Rx FH in RRC IDLE in FR1 and FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2413878**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413878.zip) **Sets (11-15) and (11-16) for measurement accuracy TCs for PRS-RSRP without Rx FH in RRC\_IDLE in FR1 and FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia*

**Decision: Revised to R4-2414010 (from R4-2413878).**

[**R4-2414010**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414010.zip) **Sets (11-15) and (11-16) for measurement accuracy TCs for PRS-RSRP without Rx FH in RRC\_IDLE in FR1 and FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia*

**Decision: Return to.**

6.1.2.5 PRS/SRS bandwidth aggregation

[**R4-2411328**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411328.zip) **(10-5, 6) Draft CR on RSTD measurement reporting delay test cases with PRS aggregation in FR1 and FR2 in RRC\_IDLE state**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2414011 (from R4-2411328).**

[**R4-2414011**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414011.zip) **(10-5, 6) Draft CR on RSTD measurement reporting delay test cases with PRS aggregation in FR1 and FR2 in RRC\_IDLE state**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Return to.**

[**R4-2411329**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411329.zip) **(11-5, 6) Draft CR on RSTD measurement accuracy test cases with PRS aggregation in FR1 and FR2 in RRC\_IDLE state**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Revised to R4-2414012 (from R4-2411329).**

[**R4-2414012**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414012.zip) **(11-5, 6) Draft CR on RSTD measurement accuracy test cases with PRS aggregation in FR1 and FR2 in RRC\_IDLE state**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: CATT*

**Decision: Return to.**

[**R4-2411787**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411787.zip) **Draft CR – Performance requirements for UE Rx-Tx measurement accuracy with PRS BW aggregation (Set 2-7)**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2414013 (from R4-2411787).**

[**R4-2414013**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414013.zip) **Draft CR – Performance requirements for UE Rx-Tx measurement accuracy with PRS BW aggregation (Set 2-7)**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Return to.**

[**R4-2411788**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411788.zip) **Draft CR – Test cases for UE Rx-Tx measurement accuracy with PRS BW aggregation, Sets 6-5, 6-6, 6-7, 6-8**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Revised to R4-2414014 (from R4-2411788).**

[**R4-2414014**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414014.zip) **Draft CR – Test cases for UE Rx-Tx measurement accuracy with PRS BW aggregation, Sets 6-5, 6-6, 6-7, 6-8**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Return to.**

[**R4-2412657**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412657.zip) **On performance requirements for PRS BWA**

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

**Decision: Noted.**

[**R4-2412658**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412658.zip) **draftCR on performance requirements for PRS BWA**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2414015 (from R4-2412658).**

[**R4-2414015**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414015.zip) **draftCR on performance requirements for PRS BWA**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Return to.**

[**R4-2412690**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412690.zip) **On performance requirement for PRS/SRS aggregation**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion paper on remaining issues related to performance requirement for bandwidth aggregation for positioning measurements.

**Decision: Noted.**

[**R4-2412691**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412691.zip) **draftCR 38.133 Phase II test cases for bandwidth aggregation for positioning measurements**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR containing phase II TCs agreed for bandwidth aggregation for positioning measurements.

**Decision: Revised to R4-2414016 (from R4-2412691).**

[**R4-2414016**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414016.zip) **draftCR 38.133 Phase II test cases for bandwidth aggregation for positioning measurements**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR containing phase II TCs agreed for bandwidth aggregation for positioning measurements.

**Decision: Return to.**

[**R4-2412692**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412692.zip) **Summary of simulation results for PRS aggregation**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Updated summary of simulation results submitted by companies up to RAN4#111.

**Decision: Noted.**

6.1.2.6 Carrier Phase Positioning

[**R4-2411339**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411339.zip) **Discussion on Performance requirements of Carrier phase positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411492**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411492.zip) **Discussion on perf requirements for carrier phase positioning**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

[**R4-2411624**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411624.zip) **(8-1,8-2,8-3,8-4, 8-7,8-8) Draft CR RSCPD test case**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Xiaomi*

**Decision: Revised to R4-2414017 (from R4-2411624).**

[**R4-2414017**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414017.zip) **(8-1,8-2,8-3,8-4, 8-7,8-8) Draft CR RSCPD test case**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Xiaomi*

**Decision: Return to.**

[**R4-2411982**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411982.zip) **(NR\_pos\_enh2-Perf) Discussion on open issues for carrier phase positioning**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412659**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412659.zip) **On performance requirements for CPP**

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

**Decision: Noted.**

[**R4-2412693**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412693.zip) **On performance requirement for CPP**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Discussion paper on remaining issues related to CPP performance requirement.

**Decision: Noted.**

[**R4-2412694**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412694.zip) **draftCR 38.133 Phase II test cases for CPP**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR containing phase II TCs agreed for CPP.

**Decision: Revised to R4-2414018 (from R4-2412694).**

[**R4-2414018**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414018.zip) **draftCR 38.133 Phase II test cases for CPP**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR containing phase II TCs agreed for CPP.

**Decision: Return to.**

[**R4-2413312**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413312.zip) **Sets (7-7) and (7-8) Measurement delay TCs for RSCP with UE Rx-Tx in RRC\_INACTIVE for FR1 and FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia*

**Decision: Revised to R4-2414019 (from R4-2413312).**

[**R4-2414019**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414019.zip) **Sets (7-7) and (7-8) Measurement delay TCs for RSCP with UE Rx-Tx in RRC\_INACTIVE for FR1 and FR2**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2413313**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413313.zip) **Simulation results for DL RSCPD and DL RSCP**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

6.1.3 Moderator summary and conclusions

Topic: [112][210] NR\_pos\_enh2\_part1

[**R4-2411805**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411805.zip) **Topic summary for [112][210] NR\_pos\_enh2\_part1**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Wednesday Aug 21, 2024)**

[**R4-2413873**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413873.zip) **Ad-hoc minutes #1 for NR\_pos\_enh2 WI**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Approved.**

[**R4-2413874**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413874.zip) **Ad-hoc minutes #2 for NR\_pos\_enh2 WI**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Approved.**

[**R4-2413875**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413875.zip) **Ad-hoc minutes #3 for NR\_pos\_enh2 WI**

*Type: other For: Approval  
 Source: Intel*

**Decision: Approved.**

Issue 3-1: Considerations for interruption length for SRS aggregation for positioning

* Agreements
  + The interruption length is derived by: guard period + duration of aggregated SRS transmission + guard period.
  + SRS is transmitted only if SRS duration plus guard period before and after does not collide with other UL transmission or DL reception with higher priority as defined by RAN1 on victim cells
  + SRS is transmitted only if SRS duration plus guard period before and after does not collide with any NR L3 or L1 measurement on victim cells
  + The victim cells/carriers can be derived by UE capability 41-4-9
  + The interruption length is defined on a symbol level

Issue 2-1-1: Measurement period requirements for DL RSCP/DL RSCPD with aperiodic time window

Agreement:

* Define the requirement for one-shot window.
* The requirement is defined by taking the time window length + processing time.

Issue 2-2-2: Additional margins due to frequency drift and RF calibration

Lenovo: We believe further investigation is needed. This is fundamental issue.

Nokia: there is also solution for performance part, with no update in core part.

CATT: We have discussed this issue in the adhoc, and also discussed in RAN1/2 for a long time. Why Nokia always introduce some new solution out of RAN4 scope. It is the time to complete the performance part.

HW: Share the similar view as CATT. Not discuss any solution with RAN1 impact.

QC: Conclude this issue now.

E///: Agree with CATT, HW and QC.

Agreement:

* RAN4 to clarify that the RSCPD accuracy requirement and the relative RSCP accuracy requirement apply given that the carrier phase measurements are performed on PRS resources within a slot/a set of symbols, which can be controlled at least by the window configuration.
* Companies can bring proposals on other scenarios in WI performance maintenance phase.

Issue 2-2-1: Whether to verify the accuracy of legacy measurements in RSCPD/RSCP TCs

* Proposals
  + Option 1: (CATT, CMCC, Nokia, Ericsson, Xiaomi)
    - Verify both the accuracies of legacy measurements (RSTD) and CPP measurements in one TC with a 90% success rate to reflect UE’s real positioning performance in the deployment.
  + Option 2: (OPPO, Huawei, QC)
    - Not verify the accuracy requirements for legacy RSTD/Rx-Tx measurement in the RSCPD/RSCP TC.
* Recommended WF
  + Discuss the option(s).

HW: we don’t have simulation results for option 1.

QC: 90% for both means much higher requirement for each one. We already have RSTD requirement, and will not run additional simulation.

Xiaomi: prefer option 1. The difference will be very limited.

CATT: RSTD and CPP are used together in real network. Can further discuss the number.

Nokia: share the view from CATT.

QC: this will also impact RAN5. Very complicated test case.

Xiaomi: share the view from CATT.

QC: With option 1, the success rate is X \* Y, there is no difference.

Option 1: success rate is X \* Y.

Option 2: success rate is X for RSTD, is Y for CPP.

Agreement:

* For the CPP test case, both RSTD/Rx-Tx measurement and CPP reporting are configured, and TE check the success rate for CPP reporting.
* If UE supports CPP measurement, UE shall also pass the test case for RSTD/Rx-Tx measurement.

Topic: [112][211] NR\_pos\_enh2\_part2

[**R4-2411806**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411806.zip) **Topic summary for [112][211] NR\_pos\_enh2\_part2**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

Topic: [112][212] NR\_pos\_enh2\_part3

[**R4-2411807**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411807.zip) **Topic summary for [112][212] NR\_pos\_enh2\_part3**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

8 Rel-19 on-going non-spectrum related work items

8.1 UE RF enhancements for NR FR1/FR2 and EN-DC, Phase 4

8.1.2 RRM core requirements

[**R4-2411568**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411568.zip) **RRM requirements for NR FR1/FR2 and EN-DC Phase 4**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

[**R4-2412223**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412223.zip) **Discussion on UE RF enhancements for NR FR1/FR2 and EN-DC, Phase 4**

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

**Decision: Noted.**

[**R4-2412404**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412404.zip) **Discussions on RRM impact of Rel-19 WI on UE RF enhancements WI**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss RRM impact of Rel-19 WI on UE RF enhancements WI.

**Decision: Noted.**

8.1.3 Moderator summary and conclusions

Topic: [112][213] NR\_ENDC\_RF\_Ph4

[**R4-2411808**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411808.zip) **Topic summary for [112][213] NR\_ENDC\_RF\_Ph4**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413972**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413972.zip) **WF on** **RRM requirements for R19 UE RF enhancements for NR FR1/FR2 and EN-DC**

*Type: other For: Approval  
 Source: Huawei*

**Decision: Return to.**

**Online session (Tuesday Aug 20, 2024)**

**Issue 1-3: Cell identification delay, measurement delay, mobility requirements for 6Rx capable UE**

* Proposals
  + Option 1 (Ericsson): The legacy core RRM requirements for identification delay, measurement delay, mobility requirements are reused for 6 Rx capable UEs
* Recommended WF

Agree on option 1 and no spec changes.

Agreement: Agree on the following and no core spec impact.

* + The legacy core RRM requirements for identification delay, measurement delay, mobility requirements, scheduling restriction are reused for 6 Rx capable UEs.
  + Note: Interruption requirements at SRS antenna switching for 6Rx capable UE is discussed in an separate issue.

**Issue 1-4: Interruption requirements at SRS antenna switching for 6Rx capable UE**

* Proposals
  + Option 1(Nokia): To wait for RAN1 conclusion on the 6Rx relevant SRS antenna switching before defining the RRM requirements in RAN4.
  + Option 2(Huawei, Ericsson): The existing interruption requirements at SRS antenna switching are applicable to 6RX capable UE, and no specification impact is observed.
* Recommended WF

Further discussion.

Nokia: Different patterns are dicussed in RAN1. Need to wait for RAN1.

Huawei: The symbols for SRS transmission have been extended in previous release. The SRS pattern discussed in RAN1 is not related to the RAN4 interruption requirement. No intend to consider the enhancement of the requirements, and just apply the existing requirement.

Nokia: In rel-17, the last 6 sybmols are used for SRS transmission. The SRS can be transmitted in the whole 14 sybmols. We need to wait for RAN1 to make sure that the SRS patterns defined in RAN1 can be based on the legacy requirements.

**Issue 1-5: RRM performance requirements for 6Rx capable UE**

* Proposals
  + Option 1(Huawei, Ericsson): RAN4 introduce the antenna connection for 6Rx capable UEs in TS 38.133 A.3.6, where the following aspects are specified:
    - Testing principles for 6Rx capable UEs
    - RLM and BFD testing
* Recommended WF

Further discussion.

Agreement:

* + RAN4 introduce the antenna connection for 6Rx capable UEs in TS 38.133 A.3.6, where the following aspects are specified:
    - Testing principles for 6Rx capable UEs
    - RLM and BFD testing

**Issue 1-6: SNR level for RLM and BFD testing for 6Rx capable UE**

* Proposals
  + Option 1(Huawei): Reuse SNR levels specified for 4Rx capable UE
  + Option 2 (Ericsson): RAN4 to discuss impact on RLM/BFD tests when operating with 6 Rx UEs
* Recommended WF

Further discussion.

HW: 6Rx is not used for PDCCH monitoring, still use 4Rx. So no new SNR level.

E///: it is performance part, not urgent to reach agreement for now. Keep it open on whether to reuse the 8Rx approach.

Nokia: keep it open for now.

8.4 NR channel BW less than 5MHz for FR1 Phase 2

8.4.3 RRM core requirements

[**R4-2411295**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411295.zip) **Discussion on RRM requirements for NR CA/DC in less than 5 MHz**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

RRM core requirement for NR less than 5 MHz in Rel 19

**Decision: Noted.**

[**R4-2411448**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411448.zip) **On RRM core for less than 5MHz Phase 2**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Apple*

**Decision: Noted.**

[**R4-2412386**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412386.zip) **Initial discussion on RRM impacts for less than 5MHz BW**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2412415**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412415.zip) **RRM scope for Rel-19 less than 5MHz work item phase 2**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

[**R4-2412416**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412416.zip) **RRM work plan for Rel-19 less than 5MHz work item phase 2**

*Type: Work Plan For: Approval  
 Source: Intel Corporation*

**Decision: Noted.**

[**R4-2412667**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412667.zip) **Initial discussion on RRM requirements for less than 5MHz Ph2**

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

**Decision: Noted.**

[**R4-2412799**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412799.zip) **Discussion on RRM impact for NR\_FR1\_lessthan\_5MHz\_BW\_Ph2**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Nokia*

**Decision: Noted.**

8.4.4 Moderator summary and conclusions

Topic: [112][214] NR\_FR1\_lessthan\_5MHz\_BW\_Ph2

[**R4-2411809**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411809.zip) **Topic summary for [112][214] NR\_FR1\_lessthan\_5MHz\_BW\_Ph2**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413882**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413882.zip) **Coffee break discussion minutes for [112][214] NR\_FR1\_lessthan\_5MHz\_BW\_Ph2**

*Type: other For: Approval  
 Source: Intel*

**Decision: Return to.**

[**R4-2413883**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413883.zip) **WF for [112][214] NR\_FR1\_lessthan\_5MHz\_BW\_Ph2**

*Type: other For: Approval  
 Source: Intel*

**Decision: Return to.**

**Online session (Tuesday Aug 20, 2024)**

**Sub-topic 2-2 RRM scope for PSCell configured with less than 5MHz bandwidth in NR-DC**

**Issue 2-2-1: PSCell addition and release, conditional PSCell addition delay requirements:**

* Proposals
  + Option 1: Specify new PSCell addition delay requirements for PSCell configured with less than 5MHz channel bandwidth.
* Recommended WF
  + Agree on option 1.

Agreement:

* + Specify new PSCell addition delay requirements for PSCell configured with less than 5MHz channel bandwidth.

**Issue 2-2-2: PSCell change, conditional PSCell change delay requirements:**

* Proposals
  + Option 1: RAN4 to discuss the impacts of less than 5MHz, in particular PBCH puncturing, to PSCell change delay requirements.
* Recommended WF
  + Agree on option 1.

E///, ZTE: we need to study.

QC: For PScell change, the requirement is based on PScell addition with additional margin. If the extension is already considered for PSCell addition, may be no further update PScell change requirement.

**Issue 2-2-3: Handover with PSCell, conditional handover including target MCG and SCG:**

* Proposals
  + Option 1: SSB index acquisition of less than 5MHz cell can be extended in legacy requirement.
* Recommended WF
  + Agree on option 1.

Agreement:

* + SSB index acquisition of less than 5MHz cell can be extended in legacy requirement.

**Issue 2-2-4: SCG activation and deactivation requirement:**

* Proposals
  + Option 1: Need FFS, if target PSCell is using 3MHz, the SSB index acquisition of less than 5MHz cell may extend the SCG activation requirement requirement.
* Recommended WF
  + Agree on option 1.

E///: support option 1.

Apple: Fine to FFS.

Agreement:

* + FFS, if target PSCell is using 3MHz, the SSB index acquisition of less than 5MHz cell may extend the SCG activation requirement requirement.

**Sub-topic 2-3 Other RRM impacts**

**Issue 2-3-1: NW indication on PBCH BW in MO configuration and/or HO command:**

* Proposals
  + Option 1: RAN4 to discuss whether NW indication on PBCH BW in MO configuration is needed considering a cell with less than 5MHz can be SCell.
  + Option 2: If SCell can use 12PRB SSB bandwidth in R19, it’s necessary to provide assistance information to UE regarding whether the PBCH is 12 or 20 PRBs in either MO or HO command. (Apple)
* Recommended WF
  + Discussion is needed.

Apple: Option 2 is for Rel-19 new UE.

ZTE: Wait for RF conclusion. They are discussing whether the SSB of Scell is associated with sync raster.

Apple: This also impact RAN2. Sync raster assumption is only for PCell in RAN2 spec.

**Issue 2-3-2: CGI reading:**

* Proposals
  + Option 1: RAN4 to discuss and decide whether CGI reading is considered for less than 5MHz.
* Recommended WF
  + Discussion is needed.

Apple: No CGI reading requirement for Rel-18. Not needed for Scell as well.

E///: CGI is required for interruption, and for Scell.

QC: We don’t consider CGI reading in Rel-18.

Intel: the scenario is not typical, and should not be considered in the WI.

Agreement:

* + not consider the CGI reading related requirement in Rel-19.

**Issue 2-3-3: EMR requirements:**

* Proposals
  + Option 1: RAN4 to Study the Cell detection requirements in EMR measurements for less than 5MHz.
  + Option 2: RAN4 to study impact of reduced PBCH BW of 12PRBs for 3MHz channel bandwidth on EMR measurement with SSB index reading. (E///, ZTE, Nokia)
  + Option 3: not define IDLE mode EMR requirement (QC, MTK, Apple)
* Recommended WF
  + Discussion is needed.

QC: Do we need EMR requirements for less than 5Mhz CA?

Intel: it is to apply the idle mode requirement.

Apple: SSB index reporting is needed for EMR.

QC: EMR is to reduce the latency. the benefit of enabling this is not clear.

Further discuss:

* Option 2: RAN4 to study impact of reduced PBCH BW of 12PRBs for 3MHz channel bandwidth on EMR measurement with SSB index reading.
* Option 3: not define IDLE mode EMR requirement

**Issue 2-3-4: requirements applicability:**

* Proposals
  + Option 1: the features/scenarios not considered in R18 less than 5MHz RRM shall not be discussed in R19 CA/DC with less than 5MHz band, e.g., CSI-RS based L1/L3/RLM/BFD/CBD measurement.
* Recommended WF
  + Discussion is needed.

Agreement:

* + the features/scenarios not considered in R18 less than 5MHz RRM shall not be discussed in R19 CA/DC with less than 5MHz band, e.g., CSI-RS based L1/L3/RLM/BFD/CBD measurement.

8.5 Support of intra-band non-collocated EN-DC/NR-CA deployment Phase2: new receiver type(s)

8.5.3 RRM core requirements

[**R4-2411420**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411420.zip) **Discussion on RRM requirements for type 4 UE**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

[**R4-2411421**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411421.zip) **draft CR on RRM requirement update for type 4 UE**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: B (Rel-19)  
  
 Source: Apple*

**Abstract:**

MCC: This was not made available at tdoc submission deadline.

**Decision: Return to.**

[**R4-2411569**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411569.zip) **RRM requirements for intra-band non-collocated scenarios Phase2**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

[**R4-2412221**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412221.zip) **Discussion on RRM requirements for supporting intra-band non-collocated EN-DC/NR-CA deployment Phase2: new receiver type(s)**

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

**Decision: Noted.**

[**R4-2412388**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412388.zip) **Discussion on intra-band non-collocated EN-DC and NR-CA**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2412849**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412849.zip) **On RRM impact related to support of intra-band non-collocated EN-DC/NR-CA deployment Phase2 WI**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Observations and proposals based on approved WF from RAN4#111.

**Decision: Noted.**

[**R4-2412854**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412854.zip) **General discussion on intra-band non-collocated EN-DC/NR-CA type 4**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Samsung, KDDI*

**Decision: Noted.**

8.5.4 Moderator summary and conclusions

Topic: [112][215] NonCol\_intraB\_ENDC\_NR\_CA\_Ph2

[**R4-2411810**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411810.zip) **Topic summary for [112][215] NonCol\_intraB\_ENDC\_NR\_CA\_Ph2**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413973**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413973.zip) **WF on** **RRM requirements for supporting intra-band non-collocated EN-DC/NR-CA deployment Phase2: new receiver type(s)**

*Type: other For: Approval  
 Source: Huawei*

**Decision: Return to.**

**Online session (Tuesday Aug 20, 2024)**

**Issue 1-1: MRTD and MTTD for Type 4 capable UE in non-collocated scenario**

* Proposals
  + Option 1(Apple, Nokia, Huawei, ZTE, Ericsson, Samsung, KDDI): R18 MRTD/MTTD requirements defined for Type 2 UE in non-collocated scenarios can be reused for Type 4 capable UE in non-collocated scenarios, that is

- non-collocated FR1 inter-band synchronous EN-DC with overlapping DL bands for Type 4 UE,

• MRTD=33us (Table 7.6.2.1-1)

• MTTD=35.21us (Table 7.5.2.1-1)

- non-collocated FR1 intra-band non-contiguous NR-CA for Type 4 UE,

• MRTD=33us (Table 7.6.4-2)

• MTTD=34.6us (Table 7.5.4-1)

* Recommended WF

Further discussion.

Agreement:

* + R18 MRTD/MTTD requirements defined for Type 2 UE in non-collocated scenarios can be reused for Type 4 capable UE in non-collocated scenarios, that is

- non-collocated FR1 inter-band synchronous EN-DC with overlapping DL bands for Type 4 UE,

• MRTD=33us (Table 7.6.2.1-1)

• MTTD=35.21us (Table 7.5.2.1-1)

- non-collocated FR1 intra-band non-contiguous NR-CA for Type 4 UE,

• MRTD=33us (Table 7.6.4-2)

• MTTD=34.6us (Table 7.5.4-1)

**Issue 1-2: MRTD and MTTD for Type 4 capable UE in collocated scenario**

* Proposals
  + Option 1(Apple): R18 MRTD/MTTD requirements defined for Type 2 UE in collocated scenario can be reused for Type 4 capable UE in collocated scenario, that is

- for Type 4 UE non-collocated FR1 inter-band synchronous EN-DC with overlapping DL bands in collocated scenario,

• MRTD=3us (Table 7.6.3-1)

• MTTD=5.21us (Table 7.5.3-1)

- for Type 4 UE non-collocated FR1 intra-band non-contiguous NR-CA,

• MRTD=3us (Table 7.6.4-1)

* + Option 2 (Nokia): The MRTD/MTTD need to be adapted based on the eventual UE type in operation which is indicated by the BS signaling. To wait for RF conclusion on the UE type transition before specifying the RRM requirements
* Recommended WF

Further discussion.

HW: we support option 1. Share RF chain will be used in collocated case.

Apple: Option 1 and 2 does not conflict with each other.

Nokia: In principle, we are aligned.

Agreement:

* + Assuming the network signaling indicating the collocated and non-collcoated conditions will be defined depending on RF progress, R18 MRTD/MTTD requirements defined for Type 2 UE in collocated condition can be reused for Type 4 capable UE in collocated condition, that is

- for Type 4 UE non-collocated FR1 inter-band synchronous EN-DC with overlapping DL bands in collocated condition,

• MRTD=3us (Table 7.6.3-1)

• MTTD=5.21us (Table 7.5.3-1)

- for Type 4 UE non-collocated FR1 intra-band non-contiguous NR-CA in collocated condition,

• MRTD=3us (Table 7.6.4-1)

**Issue 1-5: Interruption requirements for Type 4 capable UE when UE operates with separate RF chain in non-collocated scenario**

* Proposals
  + Option 1(Apple, Huawei, ZTE, Ericsson, Samsung, KDDI): When Type 4 capable UE operates with separate RF chain in non-collocated scenario, interruption requirements (below listed) defined for type 2 UE in non-collocated scenario in R18 can be applied
* Interruption at SCell addition/release
* Interruptions at SCell activation/deactivation
* Interruptions during measurements on deactivated SCC
* Recommended WF

Further discussion.

Nokia: why we mention the separate RF chain?

Apple: 8Rx chain with separate RF chains to support the non-collcoated scenario.

Agreement:

* + When Type 4 capable UE operates in non-collocated condition, interruption requirements (below listed) defined for type 2 UE in non-collocated condition in R18 can be applied
* Interruption at SCell addition/release
* Interruptions at SCell activation/deactivation
* Interruptions during measurements on deactivated SCC

**Issue 1-7: SCell activation delay requirements for Type 4 capable UE when UE operates with separate RF chain in non-collocated scenario**

* Proposals
  + Option 1(Apple, Huawei, ZTE, Ericsson, Samsung, KDDI): When Type 4 capable UE operates with separate RF chain in non-collocated scenario, SCell activation delay defined for type 2 UE in non-collocated scenario in R18 can be applied.
* Recommended WF

Further discussion.

Agreement:

* + When Type 4 capable UE operates in non-collocated condition, SCell activation delay defined for type 2 UE in non-collocated condition in R18 can be applied.

**Issue 1-9: Scheduling availability for Type 4 capable UE when UE operates with separate RF chain in non-collocated scenario**

* Proposals
  + Option 1(Apple, Huawei, ZTE, Ericsson, Samsung, KDDI): When type 4 capable UE operates with separate RF chain in non-collocated scenario, scheduling availability defined for type 2 UE in non-collocated scenario in R18 can be applied
* Recommended WF

Further discussion.

Agreement:

* + When type 4 capable UE operates in non-collocated condition, scheduling availability defined for type 2 UE in non-collocated condition in R18 can be applied

8.8 Enhanced requirements and conductive test methodology for NR NTN and IoT NTN

8.8.3 Less than 5MHz for NTN

8.8.3.4 RRM core requirements

[**R4-2411352**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411352.zip) **Discussion on less than 5MHz for NTN RRM requirement**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411453**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411453.zip) **On less than 5MHz for NTN RRM**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Apple*

**Decision: Noted.**

[**R4-2411620**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411620.zip) **Discussion on RRM requirements for less than 5MHz NTN**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

[**R4-2412111**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412111.zip) **Discussion on RRM impacts on Rel-19 NR-NTN in less than 5MHz**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Samsung*

**Decision: Noted.**

[**R4-2412235**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412235.zip) **Discussion on RRM requirements for enhanced requirements and test methodology for NR and IoT NTN**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discuss less than 5MHz for NTN

**Decision: Noted.**

[**R4-2412668**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412668.zip) **Initial discussion on RRM requirements for less than 5MHz for NTN**

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

**Decision: Noted.**

[**R4-2412867**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412867.zip) **On RRM scope of work for less than 5 MHz**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

[**R4-2413043**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413043.zip) **Discussion on RRM requirements for less than 5M in NTN**

*Type: discussion For: Discussion  
 Source: ZTECorporation,Sanechips*

**Decision: Noted.**

[**R4-2413189**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413189.zip) **(NR\_IoT\_NTN\_req\_test\_enh-Core) Support of less than 5MHz for NR NTN**

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

**Decision: Noted.**

8.8.5 Moderator summary and conclusions

Topic: [112][216] NR\_IoT\_NTN\_req\_test\_enh

[**R4-2411811**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411811.zip) **Topic summary for [112][216] NR\_IoT\_NTN\_req\_test\_enh**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413974**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413974.zip) **WF for RRM of NTN with channel BW less than 5MHz**

*Type: other For: Approval  
 Source: Xiaomi*

**Decision: Return to.**

**Online session (Thursday Aug 22, 2024)**

Issue 1-1-1: Clarification on 15KHz SC

Main proposals:

* Proposal 1: (Xiaomi, Samsung)
  + Only consider 15KHz SC for RRM requirements under NTN less than 5MHz

Agreement:

* To confirm only 15KHz SCS needs to be considered.

Issue 1-1-2: CA

Main proposals:

* Proposal 1: (Samsung, Qualcomm)
  + Not consider RRM requirements for CA operation in NTN less than 5MHz

Agreement:

* Not define any CA related RRM requirements for NTN less than 5MHz.

Issue 1-1-3: CSI-based measurements

Main proposals:

* Proposal 1: (CATT, ZTE)
  + Not consider CSI-RS based RLM/L3 measurement/L1 measurement for NTN less than 5MHz
* Proposal 1a: (Xiaomi, Samsung)
  + Deprioritize on CSI-RS based RLM and L1 measurement for NTN less than 5MHz

Recommended WF:

[Moderator note: According to the TN with less than 5MHz bandwidth, actually the RRM impacts on RLM/L1 measurement were identified. But due to the timeline limitation, RAN4 decided to skip these works. Thus, we suggest to firstly focus on SSB-based measurement. We can further check whether CSI-RS based measurement requirement in NTN less than 5MHz. So we suggest companies can check the following tentative agreements during meeting. ]

Agreement:

* Prioritize SSB based RLM and L1 measurement for NTN less than 5MHz

Issue 1-2-3: On top of which requirements in TS38.133 for NTN less than 5MHz

Main proposals:

* Option 1: (CATT, Xiaomi, Ericsson, ZTE)
  + The current requirements for NTN in TS38.133 can be used as the baseline to define the new requirements for NTN less than 5MHz

Recommended WF:

It is obviously the further specification works and changes shall be based on NTN context. But as mentioned in sub-topic 1-1, basically we can check which of clause/sub-clause for NTN requirements defined in TS38.133 shall be updated or revisited due to the reduced channel bandwidth. For an example, in order to clearly aligned RAN4’s further work contents on this WI, we can agree the table below before we dive to the detailed discussion on the specific requirements.

Moderator: Companies to discuss the potential impacts based on the content in the following table.

RRM impacts summary due to spectrum less than 5MHz

|  |  |  |
| --- | --- | --- |
| RRM requirements | NTN requirements in TS38.133 v18.5.0 | Possible impacts if BW below 5MHz |
| IDLE/inactive mode mobility | 4.2C Cell Re-selection for NR UE for Satellite Access | TBD |
| RRC connection mobility control | 6.2C RRC Connection Mobility Control for Satellite Access | TBD |
| Handover | 6.1C Handover for SAN | TBD |
| UE Tx timing, MTTD/ MRTD, timer accuracy, TA accuracy | 7.1C, 7.2C, 7.3C | TBD |
| RLM | 8.1C Radio Link Monitoring for Satellite Access  8.5C Link Recovery Procedures for Satellite Access | TBD |
| Others, if any |  |  |

Issue 1-1-4: Other enhanced aspects beyond Rel18

Main proposals:

* Proposal 1: (Qualcomm)
  + Not consider positioning
* Proposal 2: (ZTE, Qualcomm)
  + Not consider CGI
* Proposal 3: (Qualcomm)
  + Not consider mTRP
* Proposal 4: (Qualcomm)
  + FFS on Redcap

Recommended WF: According to moderator understanding, RAN4 needs to define the NTN less than 5MHz requirements on top of NTN requirements in TS38.133. That is if in Rel17/R18 requirements for NTN there is not any requirements for positioning, such aspects shall be precluded. But if the interesting companies can also brought further investigation on the necessary and feasible enhancements. Thus we suggest that:

Agreement: For less than 5MHz NTN in this WI:

* Not define requirements for positioning, CGI, mTRP, CSI-RS based L3 measurement.
* Not define requirements for Redcap.

Samsung, ZTE: RedCap is out of scope. Not combine two Rel-19 features.

Issue 1-1-5: Applicability requirement clarification

Main proposals:

* Proposal 1: (Apple)
  + An applicability requirement is needed to clarify which R17/R18 NTN requirement can be applied for less than 5MHz band without any change in R19.

Agreement:

* + An applicability requirement is needed to clarify which R17/R18 NTN requirement can be applied for less than 5MHz band without any change in R19.

Issue 1-2-1: Baseline requirement which can be taken as the start point for NTN less than 5MHz requirements

Main proposals:

* Option 1: (CATT, Apple, Xiaomi, Samsung, Ericsson, Huawei, ZTE, Qualcomm)
  + the RRM requirement for TN less than 5MHz shall be used as baseline to design NTN less than 5MHz requirement

Recommended WF:

[Moderator note: Most of companies explicitly or implicitly expressed that the impacts on TN because of less channel bandwidth shall be most likely same as these on NTN. From moderator perspective, this general principle can be agreeable. But we would like split such general discussion into more detailed aspects in issue 1-2-2 below.]

Agreement:

* RRM requirement for TN less than 5MHz shall be used as baseline to design NTN less than 5MHz requirement.

Issue 1-2-2-1: Channel bandwidth assumption

Main proposals:

* Option 1: (Xiaomi, Samsung, CATT, ZTE)
  + 3MHz

Recommended WF:

* FFS

Agreement: To align with the agreement in BDaT session.

Issue 1-2-2-2: SSB/PBCH assumption

Main proposals:

* Option 1: (Xiaomi, Samsung)
  + 12 PRBs

Recommended WF:

* FFS

Agreement: To align with the agreement in BDaT session.

Issue 1-2-2-3: CORRSET

Main proposals:

* Option 1: (Xiaomi)
  + 15 PRBs
* Option 2: (Qualcomm)
  + 12 PRBs & 15 PRBs

Recommended WF:

* FFS

Agreement: To align with the agreement in BDaT session.

#### Issue 1-3-1: whether IDLE/INACTIVE RRM requirement for NTN in current TS38.133 will be impacted becasue of less than 5MHz bandwidth

Main proposals:

* ***Option 1: (Xiaomi, Samsung, MediaTek)***
  + ***No impacts***
* ***Option 1a: (Xiaomi)***
  + ***No impacts but the corresponding test case parameters shall be updated***

Recommended WF:

* **FFS**

Agreement: No core part impact.

#### Issue 1-3-2: Handover

Main proposals:

* ***Proposal 1: (CATT, Apple, Xiaomi, Samsung, Ericsson, Huawei, MediaTek, ZTE)***
  + ***HO requirement shall be redefined***
* ***Proposal 1a: (CATT, Apple, Samsung, Huawei, ZTE)***
  + ***T∆ in HO requirement shall be redefined*** 
    - ***based on TN less than 5MHz requirements***
* ***Proposal 1b: (Xiaomi, Samsung, Ericsson, Huawei, Nokia)***
  + *Tsearch* ***under the reduced PBCH bandwidth needs to be defined*.**
* ***Proposal 2: (Samsung, Qualcomm)***
  + ***Time/location-based CHO with L3 measurement handover delay can be impacted***
* ***Proposal 3: (Samsung, Qualcomm)***
  + ***RAN4 should discuss the satellite switch time including Tmeasure and T∆ should be impacted or not.***

Recommended WF:

[*Moderator note: the proposals on NTN HO here are not exclusive each other. Proposal 1 seems can be supported by most companies. Proposal 1a,1b can be FFS when defining the new requirements for NTN less than 5MHz.* ]

* **Agree Proposal 1 and FFS on others**

Agreement:

Define HO delay requirement for NTN less than 5MHz, and take extension of delay for TN less than 5MHz as baseline.

For NTN specific HO requirement:

* Time/location-based CHO delay requirement will be defined for NTN less than 5MHz.
* Satellite switch time requirement will be defined for NTN less than 5MHz.
* Further discuss the details of the requirements.

8.10 Enhancements for Air-to-ground network for NR

8.10.4 RRM core requirements for CA

[**R4-2411353**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411353.zip) **Discussion on enhancements for Rel-19 ATG RRM requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411423**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411423.zip) **RRM requirement impact for ATG**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

[**R4-2411644**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411644.zip) **Discussion on Rel-19 ATG CA RRM requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

RRM core requirement for ATG CA in Rel 19

**Decision: Noted.**

[**R4-2411687**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411687.zip) **Discussion on RRM requirements for ATG CA operation**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

[**R4-2411758**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411758.zip) **(NR\_ATG\_enh-Core) Overview of RRM requirements for R19 ATG**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412229**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412229.zip) **Discussions on RRM requirements for Rel-19 ATG**

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

**Decision: Noted.**

[**R4-2413078**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413078.zip) **Discussion on RRM aspects of R19 ATG**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

8.10.5 Moderator summary and conclusions

Topic: [112][217] NR\_ATG\_enh

[**R4-2411812**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411812.zip) **Topic summary for [112][217] NR\_ATG\_enh**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413959**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413959.zip) **WF on RRM requirements for NR\_ATG\_enh**

*Type: other For: Approval  
 Source: CMCC*

**Decision: Return to.**

**Online session (Tuesday Aug 20, 2024)**

**Issue 1-1-1: Scenario**

* Proposals
  + Proposal 1: Only consider FR1 co-located DL intra-band contiguous CA and inter-band CA (CATT, Ericsson, CMCC)
  + Proposal 2: For other ATG scenario characteristics like UE speed, ISD and so on, the R18 working assumption will be reused (CMCC)
* Recommended WF
  + P1 and P2 can be agreed

LGE: For UL, can change UL CC1 to UL CC2 dynamically or not?

ZTE: CA for DL only. Single carrier for UL, and dynamic change of UL CC is not considered.

E///: Share the same view as ZTE.

HW: For proposal 1, if it is in the WID, no need to try additional agreement in RAN4.

CMCC: Further clarification is beneficial, in case companies would like to ask about other scenario.

Agreement:

* + Following the WID, only consider FR1 co-located DL intra-band contiguous CA and FR1 co-located DL inter-band CA.
  + For other ATG scenario characteristics like UE speed, ISD and so on, the R18 scenario captured in TR 38.876 will be reused as baseline.

**Issue 1-1-4: Whether to support multiple downlink SCells**

* Proposals
  + Proposal 1: Only consider single SCell for R19 ATG CA (Apple)
  + Proposal 2: Deprioritize multiple downlink SCells (CMCC)

CMCC: only two CCs are considered in the example band combination in the WID. We are ok to compromise to P1.

* Agreement
  + Only consider single SCell for R19 ATG CA

**Issue 1-1-5: UE antenna type**

* Background

RAN4#111 meeting has achieved following agreement about antenna type:

**Issue 3-1: clarify the antenna type for each band for inter-band CA**

Agreement:

No limitation on antenna types for ATG CA

FFS on whether to assume omni-antenna type can be assumed for both band n3 and n39 in DL CA\_n3-n39

FFS on whether new capability is needed for ATG CA

* Proposals
  + Proposal 1: For intra-band contiguous CA, same antenna type should be applied on each carrier, including one or more omni-directional antenna(s) and antenna array. (CMCC)
  + Proposal 2: For inter-band CA, either different or same antenna type can be applied on different carriers. (Ericsson, CMCC, HW)
    - Proposal 2-1: Specifically, for inter-band CA, there are five cases: (Ericsson, CMCC)
      * 1. ATG UE with omnidirectional antennas on both PCell and SCell/s.
      * 2. ATG UE with an omnidirectional antenna on PCell and an antenna array on SCell/s.
      * 3. ATG UE with an antenna array on PCC and an omnidirectional antenna on SCell/s.
      * 4. ATG UE with an antenna array on both PCell and SCell/s with only one antenna panel.
      * 5. ATG UE with an antenna array on both PCell and SCell/s with separate antenna panels.
  + Proposal 3: RAN4 needs to further discuss whether different antenna type for inter-band CA operation is considered. (LGE)
* Recommended WF
  + Proposal 1 can be agreed
  + Proposal 2 can be agreed which aligns with RF agreement
  + Further check Proposal 2-1

E///: why the same antenna type for intra-band CA?

Apple: one single type of antenna for the same band.

ZTE: The reason of different antenna types is to consider different carrier frequencies.

Agreement:

* For intra-band contiguous CA, same antenna type should be applied on each carrier.
* For inter-band CA, either different or same antenna type can be applied on different carriers.

ZTE: for n3 +n39, omnidirectional antenna types are more typical.

CMCC: we have different view as ZTE. To define generic core requirement.

QC: The motivation of listing these case? May only consider the antenna type for Scell.

Apple: Usually the RRM requirement is band agnostic. We wonder whether to define the requirement for all the scenarios.

CMCC: The antenna type will impact at least the scheduling restriction, in which the antenna type for both cells need to be considered.

E///: The antenna type will impact the delay requirement (beam sweeping), and all related scenarios should be considered.

HW: For #4 and #5, what is the difference from RRM requirement perspective?

ZTE: To HW, the scheduling restriction requirement is impacted.

E///: Use antenna pattern instead of antenna panel.

Apple, CMCC: use panel in RF session.

Apple: case 4 is not discussed in RF session.

Agreement:

* + - For inter-band CA, consider the following cases:
      * 1. ATG UE with omnidirectional antennas on both PCell and SCell.
      * 2. ATG UE with an omnidirectional antenna on PCell and an antenna array on SCell.
      * 3. ATG UE with an antenna array on PCC and an omnidirectional antenna on SCell.
      * [4. ATG UE with an antenna array on both PCell and SCell with only one antenna panel.]
      * 5. ATG UE with an antenna array on both PCell and SCell with separate antenna panels.
      * Note: If some of the cases will be precluded in RF discussion, they will be removed for RRM requirement discussion.

**Issue 1-1-2: Co-located definition**

* Background
  + According to RP-180557, LS response on work to support IMT-2020/5G in the Transport Network, the definition of co-located for MIMO, Tx diversity transmissions, and intra-band contiguous carrier aggregation is as follows:

|  |
| --- |
| RAN thanks ITU-T Study Group 15 for their LS/r on the initiation of work to support IMT-2020/5G in the Transport Network. In that document, ITU-T SG15 asked if it is correct to expect that in the case of MIMO or Tx diversity transmissions, and intra-band contiguous carrier aggregation, that the antennas typically be co-located (same site).  In 3GPP RAN, the above-mentioned features are specified to be applied intra-gNB, where the gNB is a logical node. A gNB is then typically implemented within a “base station” that is deployed at a “site”. Although base station antennas of the same “site” can be deployed at different locations within that site, e.g. different corners of a roof, it is correct to assume that the distribution of the reference timing signal would not be required between sites; an intra-site timing distribution would suffice. |

* Proposals
  + Proposal 1: RAN4 should discuss and define co-location in the context of ATG in Rel-19 (Ericsson)
* Recommended WF
  + Discuss and define co-location for R19 ATG
    - Option 1: Reuse the legacy definition for MIMO, Tx diversity transmissions, and intra-band contiguous carrier aggregation, as defined in RP-180557.
    - Option 2: Antennas at the same physical location, or the distance difference between antennas can be ignored.
    - Other Options are not precluded

**Issue 1-3-1: MTTD**

* Proposals
  + Option 1: FFS whether MTTD requirement is needed or not (Apple)
* Recommended WF
  + To be discussed

CMCC: only DL CA is considered.

Intel: MTTD not only considers UL CA. MTTD is to ensure UL timing in either carrier. Need further checking.

LGE: MTTD is the timing difference between two carriers, not applied to UL CC case.

**Issue 1-3-2: MRTD**

* Proposals
  + Option 1: Introduce MRTD requirements for ATG Carrier Aggregation (CATT, Ericsson, LGE, HW)
    - Option 1-1: For inter-band co-located CA, MRTD = TAE + ΔRF\_prop + Dispersion = 3 µs+ 0.3 µs+0.245 µs= 3.545 µs (Ericsson)
    - Option 1-2: For MRTD requirements in ATG CA operation, existing MRTD for intra-band CA as 3us can be reused for both ATG intra- and inter-band CA. (LGE)
    - Option 1-3: No need to introduce MRTD requirement for ATG intra-band contiguous CA. Define MRTD requirement for ATG inter-band CA, legacy 33µs requirement can be reused. (CMCC)
  + Option 2: FFS whether MRTD requirement is needed or not (Apple)
* Recommended WF
  + To be discussed
    - For ATG intra-band contiguous CA, MRTD is needed or not?
    - For ATG inter-band CA, MRTD is?

For ATG intra-band contiguous CA

* E///: MRTD requirement is not needed.
* CATT: Not needed. It is small.
* ZTE: Not needed or MRTD within CP. It is collocated scenario.
* HW: Not needed. No such requirement in legacy requirement.

Agreement:

* For ATG intra-band contiguous CA, not define MRTD requirement.
* For ATG inter-band CA, MRTD requirement is:

E///: option 1-1.

CATT: A little relaxation than option 1-2.

ZTE: Further discuss the exact value.

HW: Different RF chains are used. Reuse 33us as legacy.

Intel: 3us

* For ATG inter-band CA, MRTD requirement is:
  + Option 1: A little larger than 3us, i.e., 3.545 µs
  + Option 2: 33us
  + Option 3: 3us
  + Option 4: further discuss

8.15 NR Radio Resource Management (RRM) Phase 5

8.15.1 General aspects

8.15.2 FR2-1 SSB based L3 measurement delay reduction for connected mode

8.15.2.1 FR2-1 L3 measurement delay by optimizing Rx beam sweeping factor

[**R4-2411357**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411357.zip) **Discussion on FR2-1 L3 measurement delay reduction by optimizing Rx beam sweeping factor**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411407**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411407.zip) **On FR2-1 L3 measurement delay by optimizing Rx beam sweeping factor**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

[**R4-2411483**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411483.zip) **Discussion on FR2-1 L3 measurement delay by optimizing Rx beam sweeping factor**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

[**R4-2411622**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411622.zip) **Discussion on FR2-1 SSB based L3 measurement delay reduction by RX beam**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

[**R4-2411681**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411681.zip) **Discussions on FR2-1 SSB based L3 measurement delay reduction**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Decision: Noted.**

[**R4-2411688**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411688.zip) **Discussion on RRM requirements for FR2-1 L3 measurement delay reduction**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

[**R4-2411975**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411975.zip) **Discussion on L3 measurement delay reduction by optimizing Rx beam sweeping factor**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412117**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412117.zip) **Discussion on FR2-1 L3 measurement delay by optimizing Rx beam sweeping factor**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

[**R4-2412202**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412202.zip) **Discussion on FR2-1 L3 measurement delay by optimizing Rx beam sweeping factor**

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

**Decision: Noted.**

[**R4-2412236**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412236.zip) **Discussion on FR2-1 L3 measurement delay by optimizing Rx beam sweeping factor**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on FR2-1 L3 measurement delay by optimizing Rx beam sweeping factor

**Decision: Noted.**

[**R4-2412256**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412256.zip) **Discussion on FR 2-1 L3 measurement delay by optimizing Rx beam sweeping factor**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412417**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412417.zip) **Discussion on delay reduction by optimizing Rx beam sweeping factors**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

[**R4-2412495**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412495.zip) **Discussion on L3 Rx beam sweeping factor reduction**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

[**R4-2412852**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412852.zip) **Discussion on L3 measurement enhancement by optimizing Rx BSF**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Samsung*

**Decision: Noted.**

[**R4-2413077**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413077.zip) **Discussion on Rx beam factor optimization of R19 RRM enhancements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2413167**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413167.zip) **FR2-1 L3 measurement delay by optimizing Rx beam sweeping factor**

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

**Decision: Noted.**

[**R4-2413326**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413326.zip) **Discussion on FR2-1 SSB based L3 measurement delay reduction by optimizing Rx beam sweeping factor**

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

**Decision: Noted.**

8.15.2.2 FR2-1 L3 measurement delay by optimizing CSSF outside gap in CA/DC

[**R4-2411358**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411358.zip) **Discussion on FR2-1 L3 measurement delay reduction by optimizing CSSF outside gap in CA/DC**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411454**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411454.zip) **On FR2-1 L3 measurement delay by optimizing CSSF outside gap in CA/DC**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Apple*

**Decision: Noted.**

[**R4-2411484**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411484.zip) **Discussion on FR2-1 L3 measurement delay reduction by optimizing CSSF**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

[**R4-2411623**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411623.zip) **Discussion on FR2-1 SSB based L3 measurement delay reduction by CCSF optimization**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

[**R4-2411976**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411976.zip) **Discussion on L3 measurement delay reduction by optimizing CSSF outside gap in CA/DC**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412118**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412118.zip) **Discussion on FR2-1 L3 measurement delay by optimizing CSSF outside gap in CA/DC**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

[**R4-2412220**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412220.zip) **Discussion on FR2-1 L3 measurement delay by optimizing CSSF outside gap in CA/DC**

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

**Decision: Noted.**

[**R4-2412237**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412237.zip) **Discussion on FR2-1 L3 measurement delay by optimizing CSSF outside gap in CA/DC**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on FR2-1 L3 measurement delay by optimizing CSSF outside gap in CA/DC

**Decision: Noted.**

[**R4-2412257**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412257.zip) **Discussion on FR 2-1 L3 measurement delay by optimizing CSSF outside gap in CA/DC**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412418**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412418.zip) **Discussion on delay reduction by optimizing CSSF outside gap**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

[**R4-2412851**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412851.zip) **Discussion on L3 measurement delay by optimizing CSSF**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Samsung*

**Decision: Noted.**

[**R4-2413076**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413076.zip) **Discussion on CSSF optimization of R19 RRM enhancements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2413190**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413190.zip) **(NR\_RRM\_Ph5-Core) Enhancement on FR2 CSSF**

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

**Decision: Noted.**

8.15.3 Fast SCell activation for UE supporting Rel-18 EMR

[**R4-2411359**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411359.zip) **Discussion on Fast SCell activation for UE supporting Rel-18 EMR**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411455**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411455.zip) **On fast SCell activation with EMR**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Apple*

**Decision: Noted.**

[**R4-2411977**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411977.zip) **Discussion on fast SCell activation for UE supporting Rel-18 EMR**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412038**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412038.zip) **Discussion on RRM requirements for Fast SCell activation for UE supporting R18 EMR**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: LG Electronics Inc.*

**Abstract:**

Discussion on RRM requirements for Fast SCell activation for UE supporting R18 EMR

**Decision: Noted.**

[**R4-2412119**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412119.zip) **Discussion on Fast SCell activation for UE supporting Rel-18 EMR**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

[**R4-2412203**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412203.zip) **Discussion on fast SCell activation for UE supporting Rel-18 EMR**

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

**Decision: Noted.**

[**R4-2412280**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412280.zip) **Initial discussion on fast Scell activation for UE supporting Rel-18 EMR**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution is discussing the RRM requirement for fast Scell activaiton for UE supporting Rel-18 EMR

**Decision: Noted.**

[**R4-2412389**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412389.zip) **Discussion on the fast SCell activation for UE supporting Rel-18 EMR**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2412604**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412604.zip) **Initial discussion on fast SCell activation for UE supporting Rel-18 EMR**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412800**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412800.zip) **Discussion on Fast SCell activation for UE supporting Rel-18 EMR**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

[**R4-2412853**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412853.zip) **General discussion on fast SCell activation for UE supporting eEMR**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Samsung*

**Decision: Noted.**

[**R4-2413327**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413327.zip) **Discussion on the RRM requirements for fast SCell activation for UE supporting Rel-18 EMR**

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

**Decision: Noted.**

8.15.4 Moderator summary and conclusions

Topic: [112][218] NR\_RRM\_Ph5\_Part1

[**R4-2411813**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411813.zip) **Topic summary for [112][218] NR\_RRM\_Ph5\_Part1**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413876**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413876.zip) **Ad-hoc minutes for NR\_RRM\_Ph5 WI**

*Type: other For: Approval  
 Source: Apple*

**Decision: Return to.**

[**R4-2414026**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414026.zip) **WF for NR\_RRM\_Ph5\_Part1**

*Type: other For: Approval  
 Source: Apple*

**Decision: Return to.**

**Online session (Tuesday Aug 20, 2024)**

**Issue 1-1: Applicability requirement of L3 measurement delay reduction by optimizing Rx BSF**

|  |
| --- |
| *Agreement in last meeting:*  *Baseline: L3 delay enhancements in Rel-19 by optimizing Rx BSF for UE supporting multi-rx simultaneous reception are applicable provided that:*   * *the target carrier(s) to be measured: only one carrier in the single FR2-1 band is configured for L3 SSB measurement and* * *UE serving carrier(s): UE is configured with single carrier on FR2-1 band, i.e. FR2-1 PCell without CA/DC.*   *Note: The ‘other UE CA/DC modes (e.g., 1 or 2 FR2-1 bands CA, or FR1+FR2 CA/DC, or EN-DC)’ and/or the ‘other number of target to-be-measured carrier(s) on FR2-1 band’ can be FFS after concluding the baseline above. These extra FFS parts will NOT delay the WI completion.* |

**Applicability requirement:**

* Proposal 1 (LGE): add one note to the last agreement.
  + Note: Target and serving carrier frequency can be the same or different.
* Proposal 2 (CTC, ZTE):
  + Firstly concentrate on the technical issues, then restart the discussion on applicable scenarios besides the single carrier single FR2-1 band case until concrete progress achieved.
* Proposal 3 (QC):
  + RAN4 to define an overall framework for the fast beam sweeping factor based L3-measurement and mobility latency enhancement for a single serving cell. Whether/how to extend the solution and framework to CA/DC scenarios (e.g., FR2 PSCell addition, FR2 SCell activation, FR2 SCG activation) is FFS.

**UE Power class:**

* Option 1 (Apple, OPPO, NTT DCM, LGE, CTC, Ericsson, vivo, Samsung, MTK):
  + focus on PC3 UE as first priority.
  + Option 1a (NTT DCM, LGE, vivo, Samsung): Whether other power classes could apply the outcome of the WI discussion can be FFS after concluding on PC3. These extra FFS parts will NOT delay the WI completion.
* Option 2 (CATT, Nokia):
  + not to limit the applied power class for enhancement of Rx BSF.

**Other clarification on WID:**

* Option 1 (CATT):
  + The enhanced Rx BSF applies to the UE supporting Multi-Rx operation for L3 measurements which means UE supports simultaneous reception of multiple SSBs from different directions of the same target frequency layer inside a SMTC window.
* Option 2 (CTC):
  + “For UE supporting multiple Rx simultaneous reception for L3 delay enhancement” means UE supporting “simultaneous reception of multiple SSBs from different directions of the same target frequency layer inside a SMTC window. But it does not mean “UE can process multiple SSBs from different directions of the target frequency in parallel”.
* Option 3 (vivo): no need to consider this issue, and FFS in last agreement can be removed.
* Recommended WF
  + Moderator note: try to accommodate all the options, suggest to discuss if following can be agreed:

|  |
| --- |
| **Applicability requirement:**  Moderator: P1 is captured as in following yellow-highlighted sentence. P2 and P3 has already reflected in the last agreement.  Updated Agreement:  Baseline: L3 delay enhancements in Rel-19 by optimizing Rx BSF for UE supporting multi-rx simultaneous reception are applicable provided that:   * the target carrier(s) to be measured: only one carrier in the single FR2-1 band is configured for L3 SSB measurement and * UE serving carrier(s): UE is configured with single carrier on FR2-1 band, i.e. FR2-1 PCell without CA/DC.   Note: Target and serving carrier frequency can be the same or different.  Note: The ‘other UE CA/DC modes (e.g., 1 or 2 FR2-1 bands CA, or FR1+FR2 CA/DC, or EN-DC)’ and/or the ‘other number of target to-be-measured carrier(s) on FR2-1 band’ can be FFS after concluding the baseline above. These extra FFS parts will NOT delay the WI completion.  **UE Power class:**  Agreement:  Baseline: RAN4 to consider UE supporting FR2-1 power class 3 as first priority.  Note: whether other power classes could apply the outcome of the WI discussion can be FFS after concluding on PC3. These extra FFS parts will NOT delay the WI completion.  **Other clarification on WID:**  Moderator: this issue can directly be discussed in issue of SSB processing time.  Agreement:  Remove {FFS: “For UE supporting multiple-Rx simultaneous reception for L3 delay enhancement” means UE supporting “simultaneous reception of multiple SSBs from different directions of the same target frequency layer inside a SMTC window. But it does not mean “UE can process multiple SSBs from different directions of the target frequency in parallel.”}. |

**Issue 1-2: Conditions to apply L3 measurement delay reduction by optimizing Rx BSF**

[Moderator note]: The condition here means in which case/condition/use-case/mode UE can apply the L3 measurement delay reduction by optimizing Rx BSF.

|  |
| --- |
| WF R4-2410260  FFS：Conditions for UE to apply L3 measurement delay reduction by optimizing Rx BSF   * + FFS: multi-Rx simultaneous reception of UE is in active mode, which is expected to follow the one specified in Rel-18 for multi-Rx simultaneous reception features   + FFS: UE’s mobility status, e.g., whether HST is precluded or not   + FFS: RRM measurement with two panels activated, two searchers are occupied by this single carrier   + FFS: SSB processing delay/time for processing multiple beams received in a SMTC   + FFS: Power consumption issue   + FFS: UE has prior knowledge on the cell to be measured   + FFS: Rel-19 L3 measurement with multi-Rx DL reception is irrelevant to multi-TRP operation deployment   + FFS: Other conditions: cell-centre UE or cell-edge UE   + FFS: DRX is configured or not   + FFS: Simultaneous operation between L3 and L1 measurements   + FFS: UE is in RRC CONNECTED mode   Agreement: Only support multi-Rx L3 measurement for CONNECTED UE |

**Conditions for UE to apply L3 measurement delay reduction by optimizing Rx BSF:**

**Issue 1-2-1: FFS: multi-Rx simultaneous reception of UE is in active mode, which is expected to follow the one specified in Rel-18 for multi-Rx simultaneous reception feature**

* + - Option 1 (CATT, OPPO, vivo, Intel): multi-Rx simultaneous reception of UE is in active mode, which is expected to follow the one specified in Rel-18 for multi-Rx simultaneous reception feature.
      * Option 1a (CATT):
  + But some Rel-19 specific enhancements are still allowed. The condition of Multi-Rx operation in Rel-18 can be reused, i.e., the UE is in multi-Rx operation if following condition is met:
    - UE is configured with group-based beam reporting (GBBR) report.
  + UE can indicate the preference of Multi-Rx operation for L3 measurement and further discuss whether to reuse the existing signaling.
    - * Option 1b (Intel): The UE is considered activated in multi-Rx simultaneous reception mode and activated for L3 reporting when the GBBR is configured and configured not long prior to the expected L3 reporting.
    - Option 2 (NTT DCM, CMCC, LGE, Ericsson, Nokia, Samsung, MTK): the conditions for UE to apply L3 measurement delay reduction by optimizing Rx BSF is that multi-Rx simultaneous reception of UE is in active mode. And it does not assume that the condition of in active mode is same as that for Rel-18 multi-Rx simultaneous reception
      * Option 2a (Ericsson): For sake of simplification while considering the target scenarios, when Rel-19 L3 measurement enhancement is enabled, it is assumed that L1 measurement enhancement in Rel-18 doesn’t work simultaneously. Subsequently, the sharing factor between L3 and L1 is defined with respect to the assumption of L3 measurement applying FBS and L1 measurement not applying multi-Rx in Rel-18, so legacy ﻿Psharing factor is applied.
      * Option 2b (Nokia): Rel-18 L1 BSF reduction operates independently of Rel-19 L3 BSF reduction.
    - Option 3 (CTC): For conditions to apply L3 measurement delay reduction by optimizing Rx BSF, UE shall support Rel-18 multi-Rx capability and multi-Rx simultaneous reception of UE is in active mode, but the conditions are not needed to be same as Rel-18 multi-Rx work item.
    - Option 4 (ZTE):
  + At least the following applicability conditions are supported:
    - Multi-Rx simultaneous reception of UE is in CONNECTED mode
    - RRM measurement with two panels activated
    - ~~Preclude the HST scenario since reduced Rx beam sweeping has been introduced for HST~~(this point is captured by Issue 1-2-2, so I removed)
      * Option 4a (ZTE): The prerequisite of fast beam sweeping in L3 measurement is the multi-panel Rx simultaneously. In other words, each panel scans a subset of beams, multiple panels perform the subset beam sweeping simultaneously.

[Moderator]: discussion can be mainly focus on option 1 and 2, and then add details from other options if needed.

* + - Option 1 (CATT, OPPO, vivo, Intel): multi-Rx simultaneous reception of UE is in active mode, which is expected to follow the one specified in Rel-18 for multi-Rx simultaneous reception feature.
    - Option 2 (NTT DCM, CMCC, LGE, Ericsson, Nokia, Samsung, MTK, QC, HW, ZTE): the conditions for UE to apply L3 measurement delay reduction by optimizing Rx BSF is that multi-Rx simultaneous reception of UE is in active mode. And it does not assume that the condition of in active mode is same as that for Rel-18 multi-Rx simultaneous reception

QC: We support option 2. UE location can be different from Rel-18.

HW: Share the view as QC. Throughput boosting for Rel-18. Fast measurement for Rel-19.

CMCC: Support option 2. Target scenario is different.

ZTE: Support option 2. Fast L3 measurement due to Multi panel for Rel-19. Two different features.

E///: Support option 2. Share the view of other companies.

MTK: Support option 2.

LGE: Support option 2.

Nokia: Support option 2.

NTT DOCOMO: Support option 2.

Samsung: Support option 2.

Apple: In general option 2 makes sense. Meanwhile, when GBBR is configured, and multi-panel is activated anyway, we may also consider to use multi-panel for fast L3 measurement.

OPPO: We should also respect what we agreed for Rel-18.

Nokia: they are two independent features. GBBR is for multi-TRP scenario, which is not the assumption for Rel-19.

OPPO, Apple: GBBR configuration is one of the conditions for Rel-19 L3 measurement enhancement.

Agreement:

* + - The conditions for UE to apply L3 measurement delay reduction by optimizing Rx BSF is that multi-Rx simultaneous reception of UE is in active mode. And it does not assume that the condition of in active mode is same as that for Rel-18 multi-Rx simultaneous reception.

**Issue 1-2-2: FFS: UE’s mobility status, e.g., whether HST is precluded or not**

* + - Option 1 (CATT, CMCC): requirements of enhanced BSF can also be applied for HST
    - Option 2 (OPPO, NTT DCM, CTC, Ericsson, vivo, Samsung, ZTE): do not consider HST case
    - Option 3 (LGE): Do not consider mobility condition for L3 measurement delay reduction by optimizing Rx BSF, and power class 3 can be first priority (i.e., power class 6 as HST can be further discussed later)
    - Option 3 (Intel): Mobility status should not be considered as a limitation for UE delay reduction since the purpose of the reduction is to have greater mobility in general, so we are not supposed to compromise on mobility status.
    - [Moderator option]: Option 4:
      * RAN4 to consider UE in non-HST case as first priority.
      * Note: whether or how HST case could use the outcome of the WI discussion can be FFS after concluding on non-HST case. These extra FFS parts will NOT delay the WI completion.

CMCC: For HST, it is important to reduce the measurement delay.

Apple: PC3 in FR2 means handled UE, which does not work in HST scenario. FR2 in general is for low mobility.

Xiaomi: Agree with CMCC on the scenario. What’s the additional effort to support HST?

Samsung: Agree with Apple. For Rel-18 multi-Rx WI, HST is considered separately.

E///: Technically the L3 measurement enhancement can be applied HST. Meanwhile, ok with option 4 to control the workload.

MTK: Combination of different features can be discussed separately.

CMCC: PC3 UE can also be used in HST scenario. This is a valid and important case from operator perspective.

Agreement:

* + - * RAN4 to consider UE in non-HST case as first priority.
      * Note: whether or how HST case could use the outcome of the WI discussion can be FFS after concluding on non-HST case. These extra FFS parts will NOT delay the WI completion.

**Issue 1-2-3: FFS: RRM measurement with two panels activated, two searchers are occupied by this single carrier**

* + - Option 1 (CATT, OPPO, vivo): The existing searcher assumption (i.e., 2 searchers) is applied to the requirements of enhanced BSF for single carrier.
    - Option 1a: Two searchers are occupied by this single carrier to the requirements of enhanced BSF for single carrier.
    - Option 2 (Ericsson): One searcher is able to handle the single carrier received from multiple panels, targeting the scenario: ‘UE is configured with single carrier on FR2-1 band. Only one carrier in the single FR2-1 band is configured for L3 SSB measurement.’

[Moderator]: check if option 1 is agreeable.

E///: The intention of option 2 is to define the minimal requirement. We are ok with option 1.

QC: We support option 2. Option 1 is quite complicated, for example, for single band scenario.

ZTE: Include both option 1 and 2, which may imply different RAN4 requirements.

HW: Two searcher is an easier way for UE to support the fast L3 measurement feature. The conclusion of the issue will not impact the discussion of CSSF enhancement.

Apple: In the last meeting, we agreed to focus on single carrier. Both options are acceptable. The measurement delay in option 2 will be slightly extended.

Nokia: What’s the spec impact of these options?

QC: The measurement delay is SSB periodicity x certain scaling factor. We don’t see any issue for option 2.

vivo: Need to consider generic scenario, and option 2 is also ok.

Nokia: We may come back to this issue later.

E///: we can support Option 1a/A, if it brings benefits on the delay.

* + - Option A/1a: Two searchers are occupied by this single carrier to the requirements of enhanced BSF for single carrier. Discuss CA case later. (E/// - with condition, HW, Apple, CATT, Xiaomi, OPPO, LGE)
    - Option B: Consider one searcher for single carrier. (E///, QC, Apple, vivo, Nokia, MTK, ZTE, OPPO)

**Issue 2-1: Clarification on the bullets in WID for this CSSF optimization**

|  |
| --- |
| In WID:  For UE not in multiple-Rx simultaneous reception mode:   * + - Study suitable scenarios and conditions and, if feasible, introduce methods to reduce FR2-1 L3 measurement delay by optimizing:       * CSSF outside gap in CA/DC scenarios         + Baseline assumption on number of searchers is 2   Agreement in WF R4-2406392:  Rel-19 discussion on CSSF optimization starts for the case UE is not capable of Rel-18 multi-Rx simulaeous reception, further discuss whether/how it can be applied to the case UE is capable of Rel-18 multi-Rx simulaeous reception but work in single-Rx currently. |

* Option 1 (CATT, Apple, OPPO, Xiaomi, CMCC, vivo): Rel-19 CSSF optimization applies for the both cases: (1)UE is not capable of Rel-18 multi-Rx simultaneous reception, (2)UE is capable of Rel-18 multi-Rx simultaneous reception but not work in multiple-Rx reception mode currently.
  + Option 1a (OPPO): Rel-19 CSSF optimization applies for the both cases: (1)UE is not capable of Rel-18 multi-Rx simultaneous reception, (2)UE is capable of multi-Rx but not configured with GBBR report.
  + Option 1b (ZTE): Rel-19 CSSF optimization applies for the both cases: 1) The UE is not capable of R18 multi-Rx; 2) The UE is capable of R18 multi-Rx but work in normal mode currently.(highlight the refining part)
* Option 2 (CATT): Discuss CSSF optimization independently with the UE support of multi-Rx capabilities.
* Option 3 (Apple, Nokia): Rel-19 discussion on the scenarios for CSSF optimization will be considered in CA/DC scenarios [with at least two FR2 serving cells], independently of the UE support of multi-Rx capabilities.
* Option 4 (CTC): It’s preferred to decouple Rel-19 FR2-1 L3 measurement enhancement and Rel-18 multi-Rx work item, if there is no consensus on the description that “UE is capable of Rel-18 multi-Rx simultaneous reception but work in single Rx currently”,
  + (CTC, Ericsson) it’s proposed Rel-19 discussion on CSSF optimization can be focused on the case that UE is not capable of Rel-18 multi-Rx simultaneous reception.
* Option 5(Samsung):
  + Rel-19 CSSF optimization and multi-Rx simultaneous reception enhancement to L3 measurement are independent features
  + The RRM measurement requirements of CSSF optimization shall be derived based on the assumption that UE could sweep one beam direction at any single time instance
* Recommended WF
  + Summarized all options into 3 options (a/b/c) as following for discussion. If companies cannot achieve consensus on option a/b/c, RAN4 can start work firstly with UE is not capable of Rel-18 multi-Rx simultaneous reception (option b).

Discussion:

* + Option a (ZTE, CMCC, Intel, CATT, MTK):
    - Rel-19 CSSF optimization applies for the both cases: (1)UE is not capable of Rel-18 multi-Rx simultaneous reception, (2)UE is capable of Rel-18 multi-Rx simultaneous reception but not work in multiple-Rx reception mode currently.
    - Note: if option a is agreeable, then work on wording polishing based on option 1a/1b.
  + Option b (HW, MTK, Samsung, E///):
    - Rel-19 CSSF optimization applies for case that UE is not capable of Rel-18 multi-Rx simultaneous reception.
  + Option c (Apple, Nokia, QC):
    - Rel-19 CSSF optimization applies for CA/DC scenarios with at least two FR2 serving cells, independently of the UE support of multi-Rx capabilities.

**Issue 2-2: UE measurement procedure to use L3 measurement delay reduction by optimizing CSSF**

**Proposals:** the following aspects in CA/DC to use L3 measurement delay reduction by optimizing CSSF shall be prioritized:

* + Aspect 1 (CATT, Apple, OPPO, CMCC, CTC, HW, Ericsson, vivo, Samsung, Nokia): SSB based Intra-frequency measurement without MG
    - Option 1 (CATT, Apple, Samsung, Nokia): including TPSS/SSS\_sync\_intra and TSSB\_measurement\_period\_intra
    - Option 2 (CTC): including TPSS/SSS\_sync\_intra, TSSB\_time\_index\_intra and TSSB\_measurement\_period\_intra
    - Option 3 (HW): CSSFintra for intra-frequency measurement without gap which is defined since Rel-15
  + Aspect 2 (CATT, Apple, OPPO, CMCC, CTC, HW, Ericsson, vivo, Samsung, Nokia): SSB based Inter-frequency measurement without MG
    - Option 1 (CATT, Apple, CTC, Samsung, Nokia): including TPSS/SSS\_sync\_inter, TSSB\_time\_index\_inter and TSSB\_measurement\_period\_inter
    - Option 2 (HW): CSSFinter for inter-frequency measurement without gap (either legacy gap or NCSG).
  + Aspect 3 (CATT, HW): Inter-RAT SSB measurement without MG
    - Option 1(HW): CSSFinterRAT for inter-RAT measurement without gap if the UE indicates ‘nogap-noncsg’ via NeedForGapNCSG-InfoEUTRA for the inter-RAT measurement.
    - Option 2(Ericsson): FFS on Inter-RAT measurement without MG
  + MG related features to be considered in aspect 1/2/3
    - Option 1 (CATT): The applied SSB based intra-frequency and inter-frequency measurements include the cases when:
      * UE indicates ‘nogap-noncsg’ via NeedForGapNCSG-InfoNR or,
      * UE indicates ‘no-gap’ via NeedForGapsInfoNR
    - Option 2 (CMCC): all the cases that refer to clause 9.2.5 and 9.3.9 of TS38.133 are considered
    - Option 3 (HW): Multiple cases are included herein:
      * R16 Inter-frequency measurement without gap where SSB is completely contained in active BWP;
      * R17 NCSG measurement with ‘nogap-noncsg’;
      * R18 NeedForGaps measurement with ‘no-gap-no-interruption’ or with “no-gap-with-interruption”,
    - Option 4 (Ericsson):RAN4 further to take below scenarios into account:
      * FFS on NeedForGaps measurement without MG, including both with and without interruption
      * FFS on NCSG measurement without MG without interruption
      * FFS on Inter-RAT measurement without MG
* Recommended WF
  + Moderator note: to check if following summary from Moderator can be accepted.

QC: Aspect 1 should be the main target scenario.

Apple: for aspect 1, it means UE is only configured with intra-frequency measurement without MG, not consider the mixed scenario.

Nokia: The overall CSSF value can be impacted by the optimization for intra-frequency measurement without MG.

Option 1: Prioritize Aspect 1. (QC, MTK, Apple, Nokia)

Option 2: Cover Aspect 1, 2, 3 for now.

Moderator: Discuss the solution of CSSF optimization based on Aspect 1 [for the UE which is only configured with intra-frequency without MG], and then check how it can be applied to Aspect 2/3 as well as the mixed scenario.

HW, ZTE and CMCC have concern.

Agreement:

* + The following aspects in CA/DC to use L3 measurement delay reduction by optimizing CSSF shall be discussed, and further prioritization among the 3 aspects can be discussed in future meeting:
    - Aspect 1: SSB based Intra-frequency measurement without MG, including:
      * TPSS/SSS\_sync\_intra and TSSB\_measurement\_period\_intra
      * CSSFintra for intra-frequency measurement without gap which is defined since Rel-15
    - Aspect 2: SSB based Inter-frequency measurement without MG, including:
      * TPSS/SSS\_sync\_inter, TSSB\_time\_index\_inter and TSSB\_measurement\_period\_inter
      * CSSFinter for inter-frequency measurement without gap.
    - Aspect 3: Inter-RAT SSB measurement without MG, including:
      * CSSFinterRAT for inter-RAT measurement without gap if the UE indicates ‘nogap-noncsg’ via NeedForGapNCSG-InfoEUTRA for the inter-RAT measurement.
    - MG related features to be considered in aspect 1/2/3 including:
      * R16 Inter-frequency measurement without gap where SSB is completely contained in active BWP
      * R17 NCSG measurement with ‘nogap-noncsg’
      * R18 NeedForGaps measurement with ‘no-gap-no-interruption’ or with “no-gap-with-interruption”

Topic: [112][219] NR\_RRM\_Ph5\_Part2

[**R4-2411814**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411814.zip) **Topic summary for [112][219] NR\_RRM\_Ph5\_Part2**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Tuesday Aug 20, 2024)**

WI objective:

* Fast SCell activation for UE supporting Rel-18 EMR
  + Study and, if feasible, to reduce the SCell activation delay with valid EMR reporting
  + Apply fast scell activation in FR1 and FR2-1
  + Note: RAN4 to start this work from Q3’2024 and aim for completion in Dec’2024. Workplan for this bullet can be discussed in May’2024

**Issue 1-1-1: Clarification on Rel-18 eEMR**

* Proposals
  + Option 1: (CATT, MTK, Samsung, CMCC, LGE, Apple, ZTE, vivo, E///)
    - Do not change the Rel-18 eEMR definition in this fast SCell activation discussion

Nokia: it is too early to decide on this.

* + Option 2: (Nokia)
    - Discuss if improvements to idle/inactive-mode reporting framework are needed, and possibly send LS to RAN2
    - RAN4 to discuss if the UE may perform additional measurement starting from RRC connection setup/resume procedure
  + Option 3: (LGE)
    - For fast SCell activation with valid EMR reporting, the continuous EMR measurements are necessary after T331 is expired, and the EMR measurement relaxation should be considered to reduce the measurement burden
* Recommended WF
  + Discuss the option(s) to clarify whether further improvements on Rel-18 eEMR can be considered:
    - e.g., reporting framework improvement, additional measurements after RRC resume/setup request
* *Moderator note: to facilitate the discussion, Rel-18 eEMR is used in the title to differentiate from Rel-16 EMR:* 
  + *Rel-16 EMR: for the UE supports idleInactiveNR-MeasReport-r16 or idleInactiveEUTRA-MeasReport-r16*
  + *Rel-18 eEMR: for the UE supports measValidationReportEMR-r18 or measValidationReportReselectionMeasurements-r18*

Agreement:

* + - Do not change the Rel-18 eEMR definition in this fast SCell activation discussion

**Issue 1-1-2: Applicability of fast SCell activation delay requirements**

* Proposals
  + Option 1: (CATT)
    - The fast SCell activation delay requirements are defined for the case when:
      * The UE supports Rel-18 eEMR and is configured with validity duration,
        + the UE supporting measValidationReportEMR-r18 and configured with measIdleValidityDuration-r18 by higher layers, or
        + the UE supporting measValidationReportReselectionMeasurements-r18 and configured with measReselectionValidityDuration-r18 by higher layers.
      * And the UE has reported valid results on the SCell to be activated before SCell activation command.
  + Option 2a: (ZTE)
    - Similar as R18, both EMR and cell reselection measurement should be considered for fast SCell activation.
  + Option 2b: (vivo)
    - RAN4 to clarify if valid cell reselection reporting can be used for fast SCell activation in Rel-19
  + Option 3: (Nokia)
    - Rel-19 Fast SCell WI supports the case where measIdleValidityDuration-r18 and / or measReselectionValidityDuration-r18 are configured and are not configured
  + Option 4a: (CT)
    - The EMR reporting need to be valid for fast SCell activation, and the validity check can be discussed.
  + Option 4b: (Nokia)
    - RAN4 to discuss how to enable Fast SCell activation when the validity duration is configured with high values.
* Recommended WF
  + Discuss the following requirements applicability:

Agreement:

* + - The fast SCell activation delay requirements are defined for the case when
      * the UE supports Rel-18 eEMR:
        + Including both EMR and cell reselection measurement,
        + Including the case when *measIdleValidityDuration-r18* and / or *measReselectionValidityDuration-r18* are configured
        + FFS Including the case when *measIdleValidityDuration-r18* and / or *measReselectionValidityDuration-r18* are not configured
      * and the UE has reported valid results on the SCell to be activated before SCell activation command.

8.18 NR MIMO Phase 5

8.18.3 RRM core requirements

[**R4-2411392**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411392.zip) **On RRM Requirements for MIMO Evolution**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

[**R4-2411629**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411629.zip) **Discussion on RRM impact on Rel-19 FeMIMO**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

[**R4-2411784**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411784.zip) **Views on the RRM impact of NR MIMO Phase 5**

*Type: discussion For: Discussion  
 Source: Qualcomm Technologies Ireland*

**Abstract:**

In this paper, we share our views on the major topics of NR MIMO Phase 5 and a preliminary assessment of the RRM impact.

**Decision: Noted.**

[**R4-2411972**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411972.zip) **Discussion on RRM requirements for NR MIMO Phase 5**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412110**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412110.zip) **Discussion on RRM impacts on Rel-19 MIMO phase 5**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Samsung*

**Decision: Noted.**

[**R4-2412204**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412204.zip) **Discussion on RRM impacts for R19 MIMO**

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

**Decision: Noted.**

[**R4-2412494**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412494.zip) **On Rel-19 NR MIMO Phase 5 RRM core requirements**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

[**R4-2412523**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412523.zip) **Discussion on RRM requirement impacts for R19 NR MIMO Phase 5**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2413017**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413017.zip) **Discussion on Rel-19 MIMO RRM requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on Rel-19 MIMO RRM requirements

**Decision: Noted.**

[**R4-2413080**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413080.zip) **Discussion on RRM aspects of R19 NR MIMO Phase 5**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2413328**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413328.zip) **Discussion on R19 MIMO for RRM core part requirement**

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

**Decision: Noted.**

8.18.4 Moderator summary and conclusions

Topic: [112][220] NR\_MIMO\_Ph5

[**R4-2411815**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411815.zip) **Topic summary for [112][220] NR\_MIMO\_Ph5**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Wednesday Aug 21, 2024)**

**Sub-topic 2-3: UE reporting enhancement for CJT calibration**

**Issue 2-3-1: Whether RRM core requirements impacts exist by UE reporting enhancement for CJT calibration?**

* Proposals
  + Proposal 1: (Apple, Xiaomi, Qualcomm, CMCC, Samsung)
    - No
  + Proposal 2: (Huawei, MediaTek)
    - RAN4 to discuss whether to define core requirements for CJT calibration reporting for delay offset/frequency offset/phase offset.
    - FFS on delay requirements
  + Proposal 3: (Ericsson)
    - Yes
    - RAN4 to define the measurement delay or measurement behaviour for the aperiodic standalone CJT reporting
* Recommended WF
  + TBA

E///: The measurement is based on TRS. Need to define the measurement delay or measurement behavior.

Samsung: It is based on the CSI-RS framework. RAN1 will define the timeline. No need to define the delay requirements for all the three types of reporting.

MTK: We are open to further discuss.

QC: Share the same view as Samsung.

Apple: Share the same view as Samsung and QC. No expectation that UE can measure earlier.

vivo: For now, agree with option 1, and also wait for more RAN1 progress.

HW: Share the view as MTK and vivo. Not whether it is one-time measurement or based on several samples.

Nokia: Share the view as MTK, vivo and HW.

Samsung: From the current RAN1 progress, RAN1 only defined the aperiodic reporting, no FFS part.

**Sub-topic 2-4: 3TX support**

**Issue 2-4: RRM core impacts by introducing 3TX support?**

* Proposals
  + Proposal 1: (Apple, Xiaomi, Qualcomm, Samsung, Huawei, Ericsson, MediaTek)
    - No
  + Proposal 1a: (Samsung)
    - If 3t6r is supported in NR\_ENDC\_RF\_Ph4, it is supposed no additional enhancement for MIMO 3-antenna-port codebook-based transmissions, reuse the same requirement in 3t6r SRS antenna switching as the assumption if no further difference is observed
  + Proposal 2: FFS (CMCC)
    - FFS on whether existing interruption requirements at SRS antenna port switching can be reused
* Recommended WF
  + Discuss whether Proposal 1 can be agreed.

CMCC: we don’t agree with P1. Similar discussion happens in NR\_ENDC\_RF\_Ph4 WI.

Samsung: nothing special for 3Tx MIMO, compared to the 3Tx in NR\_ENDC\_RF\_Ph4 WI.

**Sub-topic 2-5: Enhancement for asymmetric DL sTRP/UL mTRP scenarios**

**Issue 2-5-1: Whether RRM impacts exist by Enhancement for asymmetric DL sTRP/UL mTRP scenarios in general?**

* Proposals
  + Proposal 1: (Apple, Xiaomi, CMCC, Samsung, Ericsson)
    - FFS
  + Proposal 2: (Huawei, MediaTek)
    - No
  + Proposal 2a: (MediaTek)
    - No RRM impact at least for unified TCI state switching since RAN1 agreed to reuse Rel-17/Rel-18 unified TCI framework on the enhancement of asymmetric DL sTRP/UL mTRP deployment scenarios.
* Recommended WF
  + TBA

Samsung: 1) 2TA enhancement, for which the discussion in RAN1 is postponed for now. 2) PL-RS offset introduced in RAN1.

Agreement: RRM core impact analysis:

|  |  |  |
| --- | --- | --- |
| Topic | Description | RRM impact |
| UE-initiated/event-driven beam management | UE-initiated/event-driven beam management | YES |
| CSI enhancement | Type-I codebook refinement supporting up to a total of 128 CSI-RS ports | NO |
| Type-II codebook refinement supporting up to a total of 128 CSI-RS ports | NO |
| CRI-based CSI refinement for up to 128 CSI-RS ports | NO |
| Aperiodic standalone CJT calibration reporting | FFS |
| 3TX | 3-antenna-port codebook-based UL transmission | FFS |
| Asymmetric DL sTRP/UL mTRP |  | FFS |

**Sub-topic 2-1: Enhancement for UE-initiated/event-driven beam management**

**Issue 2-1-3: Whether/how to define new delay requirements such as measurement reporting delay/measurement period?**

* Proposals
  + Proposal 1: (Apple, Xiaomi, Qualcomm, CMCC, Samsung, Nokia, vivo, Ericsson)
    - Yes
  + Proposal 1a: (Xiaomi)
    - Measurement period will be the same for both event-triggered reporting and other reporting type.
  + Proposal 1b: (Qualcomm)
    - RAN4 should study how the reporting delay for UE-initiated/event-driven beam management can be defined. The definition of L3 measurement reporting delay could serve as a starting point
    - FFS on whether to define additional delay requirements between the steps of Mode A and Mode B beam report.
  + Proposal 1c: (CMCC)
    - RAN4 to discuss whether the measurement period defined in Rel-18 LTM can be reused.
  + Proposal 1d: (Samsung)
    - RAN4 can discuss UE-initiated/event-driven beam management requirements for above contents, use L1-RSRP as baseline, more RAN1 progress is needed
  + Proposal 1e: (Nokia)
    - Event triggered measurement reporting delay defined in 9.2.4 of TS 38.133 are not directly applicable to UEIBM.
    - RAN4 to define new measurement reporting delay requirements for UEIBM. The details of the reporting delay depend on further RAN1 agreements.
  + Proposal 1f: (vivo)
    - RAN4 specifies RRM requirements at least for Mode-A event-triggered L1 reporting.
    - To determine how to count latency for the uncertainty in acquiring UL resource for event-triggered L1 reporting, RAN4 waits further conclusions from RAN1 on whether the first PUCCH is SR or not.
  + Proposal 1g: (Ericsson)
    - RAN4 to discuss the event evaluation time (i.e., the minimum time required to complete the event evaluation and be ready to send on first UL channel from the measurement occasion)
    - RAN4 may not need to specify requirements for Transmission on first UL channel, obtain resource for second UL channel and transmit on second UL channel.
* Recommended WF
  + RAN4 to discuss whether/how to define the requirements of
    - Event triggered measurement reporting delay
    - Whether to support both mode A and mode B
    - Whether to differentiate mode A and mode B
    - Etc

Agreement:

* RAN4 will define Event triggered measurement reporting delay requirement
* Further discuss:
  + Whether to support both mode A and mode B
  + Whether to differentiate mode A and mode B
  + Other related aspects

**Issue 2-1-6: L1-RSRP for CSI-RS measurement?**

* Proposals
  + Proposal 1: (CMCC, Huawei, vivo, Ericsson, ZTE)
    - Define CSI-RS based L1-RSRP measurement requirements. CSI-RS is periodic CSI-RS.
    - Proposal 1a: (CMCC):
      * Define CSI-RS based L1-RSRP measurement requirements for intra-frequency and inter-frequency case. CSI-RS is periodic CSI-RS.
  + Proposal 2: (Samsung)
    - Start the discussion based on SSB firstly.
    - Send LS to ask RAN1 confirmation for CSI-RS based measurement for inter-cell if necessary
  + Proposal 3: (ZTE)
    - FFS on TRS
* Recommended WF
  + To confirm with companies for Proposal 1.

Samsung: P1 is very generic and aligned with RAN1 agreement. Meanwhile, CSI-RS is only for intra-cell but not for inter-cell. For inter-cell, it should be SSB only.

Apple: For CSI-RS, UE cannot know whether it is intra-cell or inter-cell, so both can be covered in the WI.

HW: We will further check, and Apple’s understanding is reasonable.

vivo: Whether the CSI-RS is intra-cell or inter-cell depending on the TCI state. In RAN4, we only consider intra-cell for defining requirement, i.e., for section 9.5.

ZTE: Further check whether to cover inter-cell CSI-RS case.

Xiaomi: We also support to only define requirement for intra-cell CSI-RS case. For inter-cell CSI-RS, it is discussed in R19 mobility WI. No combination of the features.

CMCC: We share the same view as ZTE.

Samsung: In Rel-17, ICBM is introduced, and only SSB-based L1-RSRP is introduced at that time. In RAN1, the enhancement for generic/basic CSI-RS based L1-RSRP measurement is not discussed in RAN1 MIMO WI.

Nokia: what’s the impact of intra- inter-cell scenario on RRM requirement?

Samsung: Different delay requirements for SSB based and CSI based.

Samsung: even inter-cell CSI-RS case will be introduced in R19 LTM, and the configuration can be different with generic MIMO.

E///: For LTM, it is for neighboring cell measurement.

Samsung: the scenario and configuration is different for Rel-19 MIMO and LTM.

Enhancement for UE-initiated/event-driven beam management

Agreement: Define CSI-RS based L1-RSRP measurement requirements. CSI-RS is periodic CSI-RS.

**Issue 2-1-5: measurement metrics for beam report?**

* Proposals
  + Proposal 1: (Qualcomm, Samsung, Huawei)
    - Based on L1-RSRP
  + Proposal 1a: (Samsung)
    - beam report can include the report for current beam or not depends on the configuration by RRC. The beam report should comprise N beams for new beams: N includes at least one new beam which satisfies the event-2 trigger condition.
* Recommended WF
  + TBA

**Sub-topic 2-5: Enhancement for asymmetric DL sTRP/UL mTRP scenarios**

**Issue 2-5-2: Clarification for the scenario of asymmetric DL sTRP/UL mTRP:**

* Proposals
  + Proposal 1: (ZTE)
    - sDCI only
* Recommended WF
  + Confirm with companies with Proposal 1

Samsung: the scenario should be concluded in RAN1 but not RAN4. If it is ICBM, not sDCI. Follow RAN1.

**Issue 2-5-5: Whether to define RRM core requirements of pathloss offset update?**

* Proposals
  + Proposal 1: (Qualcomm, Samsung)
    - FFS. Need RAN1 further progress.
  + Proposal 2: (Ericsson)
    - MAC CE based pathloss offset update requirement delay is equal to MAC CE processing time.
  + Proposal 3: (Apple)
    - Pathloss offset update requirement would be similar to pathloss switching requirements introduced in eMIMO
* Recommended WF

[Moderator’s comment]: In latest RAN1 agreement:

|  |
| --- |
| Agreement  For the association between PL offset and joint/UL TCI state, support the following   * Alt1b: One PL offset value is configured in a joint or UL TCI state by RRC, where different PL offset values can be configured to different joint or UL TCI states. A MAC CE can update the PL offset value(s) for joint or UL TCI state(s). |

RAN 4 can start whether the new requirements are needed or not from high level.

Samsung: According to RAN1 agreement on “A MAC CE can update the PL offset value(s) for joint or UL TCI state(s)”, RAN4 can define delay requirement, which is MAC CE decoding time without measurement.

HW: If the delay is only MAC CE decoding time, no need to define the requirement. There are many other MCE CE commands, we don’t need to define delay requirement for all of them.

ZTE: Share the view of Samsung and HW.

QC: First decode MAC CE, and then apply the PL offset. If we define requirement for the time to apply the PL offset, it is more related to RF.

E///: Only MAC CE decoding aspect is related to RRM discussion, and not necessary to define the RRM requirement.

Apple: Agree with Huawei and QC.

Agreement:

Whether to define RRM core requirements of pathloss offset update?

* Not define RRM requirement for MAC CE decoding delay.
* The agreement can be revisited depending on further RAN1 progress.

**Issue 2-5-4: RRM core impacts of Active uplink TCI state switching delay for unified TCI?**

* Proposals
  + Proposal 1: (Xiaomi)
    - FFS on how to consider SRS as reference signal for UL TCI state switching delay requirements
    - FFS on whether DL-RS from anchor DL RS can be used to define UL TCI state activation requirements
  + Proposal 2: (Qualcomm)
    - FFS whether the uplink TCI state switch delay is impacted if the target TCI is associated with a pathloss offset
  + Proposal 3: (Samsung)
    - ~~For FR1, FFS on UL TCI state switching delay requirement for unified TCI states.~~
    - For FR1 and FR2, no RRM impacts on UL TCI state switching delay requirement for unified TCI states. Do not define such requirements if the UL TCI state is associated to SRS.
  + Proposal 4: (Nokia)
    - RAN4 to discuss TCI switching requirements for asymmetric DL sTRP / UL mTRP.
  + Proposal 6: (ZTE)
    - Reuse the unified TCI state framework defined in R18 MIMO sDCI case as much as possible, just add the adaptation update to facilitate the multiple UL transmission.
* Recommended WF
  + TBA
  + RAN4 can start the discussion from high level

Samsung: the same for FR1, based on the latest RAN1 agreement.

HW: for FR2, share the view as Samsung.

8.19 Evolution of NR duplex operation: Sub-band full duplex (SBFD)

MCC: The TR 38.858 is a RAN1-led TR. RAN4 can not approve draftCRs, but can endorse it and directly submitted formal CR in RAN1 or send LS out to RAN1 for final agreement.

8.19.3 RRM core requirements

[**R4-2411344**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411344.zip) **Views on SBFD RRM requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411406**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411406.zip) **On UE RRM requirement**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

[**R4-2411571**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411571.zip) **RRM requirements for evolution of NR duplex operation**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

[**R4-2412039**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412039.zip) **Discussion on RRM requirements for NR duplex operation**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: LG Electronics Inc.*

**Abstract:**

Discussion on RRM requirements for NR duplex operation

**Decision: Noted.**

[**R4-2412122**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412122.zip) **Discussion on RRM core requirements for evolution of NR duplex operation**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

[**R4-2412279**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412279.zip) **Initial discussion on RRM core requirements for Rel-19 Evolution of NR duplex operation SBFD**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution is discussing the RRM requirement for SBFD Rel-19

**Decision: Noted.**

[**R4-2412292**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412292.zip) **Initial discussion on RRM for SBFD**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412533**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412533.zip) **Initial view on Rel-19 Duplex Evo WI RRM impact**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

[**R4-2412534**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412534.zip) **Work plan for Rel-19 Duplex Evo WI (RRM part only)**

*Type: Work Plan For: Approval  
 Source: Samsung, Huawei*

**Abstract:**

MCC: The source of the contribution was updated to include Huawei.

**Decision: Approved.**

[**R4-2412671**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412671.zip) **Initial discussion on RRM requirements for SBFD**

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

**Decision: Noted.**

[**R4-2413081**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413081.zip) **Discussion on RRM aspects of R19 SBFD**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2413209**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413209.zip) **Discussion on SBFD**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: MediaTek inc.*

**Decision: Noted.**

[**R4-2413454**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413454.zip) **RRM requirements for SBFD**

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

**Decision: Noted.**

8.19.4 Moderator summary and conclusions

Topic: [112][221] NR\_duplex\_evo

[**R4-2411816**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411816.zip) **Topic summary for [112][221] NR\_duplex\_evo**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413900**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413900.zip) **WF on SBFD RRM**

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

**Decision: Return to.**

**Online session (Tuesday Aug 20, 2024)**

**Sub-topic 1-1: Work plan**

* Proposals
  + Proposal 1 (Samsung, HW):
    - Work plan for RRM part of Rel-19 Duplex Evo WI is provided in R4-2412534
* Recommended WF
  + Approve the work plan in R4-2412534

**Issue 2-2-1: Scope of requirements for gNB-to-gNB CLI handling**

* Proposals
  + Proposal 1 (Samsung, HW, Nokia):
    - There is no RRM impact on gNB to gNB CLI handing.
  + Proposal 2 (ZTE):
    - L1 based gNB-to-gNB CLI measurement is preferred due to the relatively stable interference circumstance. If channel matrix measurement allowed, need to discuss how to define the measurement type.
* Agreement:
  + RAN4 not to define RRM requirements for gNB to gNB CLI handing.

**Issue 2-1-1: Scope of requirements for UE-to-UE CLI handling**

* Proposals
  + Proposal 1 (CATT, Apple, Nokia, LGE, CTC, E///, vivo, Samsung, HW, ZTE, QC, MTK, CMCC):
    - RAN4 to define RRM requirements for L1 based UE-to-UE CLI measurement and reporting.
* Recommended WF
  + Agree on P1
* Agreement
  + RAN4 to define RRM requirements for L1 based UE-to-UE CLI measurement and reporting.

**Sub-topic 2-3: RRM impacts of SBFD operation**

**Issue 2-3-1: Requirements for legacy UE**

* Proposals
  + Proposal 1 (Nokia):
    - The legacy UEs shall perform and operate according to the legacy RRM requirements, despite being served by a gNB operating with SBFD.
* Recommended WF
  + Agree on P1

Agreement:

* The legacy UEs shall perform and operate according to the legacy RRM requirements and no new RAN4 RRM requirement for legacy UEs, despite being served by a gNB operating with SBFD.
* Clarification on the applicability of the existing RRM requirements in RAN4 spec is not precluded.
* The legacy UEs refer to non-SBFD aware UE.

**Issue 2-3-2: Requirements for SSB based measurement**

* Proposals
  + Proposal 1 (Nokia, HW, QC, MTK):
    - For SBFD-aware UE, the SSB-based measurement, including RRM requirements for idle/inactive mode, requirement will not be impacted due to SBFD configuration.
  + Proposal 2 (E///):
    - RAN4 need clarification from RAN1 which SSB is being agreed, only current serving cell or any SSBs collide with the SBFD symbol.
* Recommended WF
  + For SBFD-aware UE, existing requirements apply for SSB-based serving cell measurement. FFS for SSB based neighbour cell measurement.

MTK: what is FFS for neighbor cell?

Samsung: we support Proposal 1 for serving cell. For neighboring cell, it needs to be discussed in RAN4.

E///: SSB for the serving cell is prioritized for the transmission in case of collision.

HW: We share the understanding as Samsung.

Nokia: Does the neighbour cell is also a SBFD cell?

Samsung: regardless of SBFD or non-SBFD cell. Serving cell is SBFD cell.

Agreement:

* + For SBFD-aware UE, existing requirements apply for SSB-based serving cell measurement. Further discuss for SSB based neighbour cell measurement in RAN4.
  + Note: The serving cell is SBFD cell, and the neighbour cell is SBFD or non-SBFD cell.

**Sub-topic 2-1: RRM impacts of UE-to-UE CLI handling**

**Issue 2-1-7: Side condition**

* Proposals
  + Proposal 1 (CATT, CTC, E///, vivo, Samsung, HW, ZTE, QC):
    - RAN4 to discuss side conditions for L1 based UE-to-UE CLI measurement requirements.
  + Proposal 2 (Samsung):
    - For Rel-19 L1 CLI SRS-RSRP measurement, the time difference between UE’s DL reference timing in the serving cell and SRS arrival time shall be further discussed, e.g. the residual timing error can be
      * For intra-cell L1 CLI SRS-RSRP measurement: Tother = 1.67usec for FR1 and 0.67usec for FR2 can be considered (i.e. without 3us cell phase error).
      * For inter-cell L1 CLI SRS-RSRP measurement: Reduced values compared R16 CLI assumption can be considered.
  + Proposal 3 (Samsung):
    - Reuse R16 L3 CLI SRS-RSRP measurement assumption on SRS configuration and SINR condition as starting point
  + Proposal 4 (ZTE):
    - The side condition for Method#2 should be considered from the following aspects:
      * Side condition of time offset between UE’s DL reference timing in the serving cell and SRS arrival time
      * Side condition of SINR
      * Side condition of maximum/minimum RSRP
* Recommended WF
  + RAN4 to define side conditions for L1 based UE-to-UE CLI measurement requirements.
  + RAN4 to discuss at least time offset between DL timing and SRS arrival timing, SRS Es/Iot, SRS configuration and maximum/minimum SRS-RSRP.

Apple: RAN1 is still discussing the time offset.

Samsung: RAN1 discussion is on the enhanced solution. RAN4 is to discuss the value based on typical scenario. SBFD is targeting intra-cell scenario, without considering cell phase error. We may enable single shot measurement.

HW: These side conditions listed here need to be defined in RAN4. Some options for each of the side conditions need to be provided as well.

Apple: this issue is open in RAN1. RAN1 has no clear decision.

Agreement:

* + RAN4 to define side conditions for L1 based UE-to-UE CLI measurement requirements.
  + RAN4 to discuss at least time offset between DL timing and SRS arrival timing, SRS Es/Iot, SRS configuration and maximum/minimum SRS-RSRP.
    - The RAN1 progress will be taken into account when discussing the values for the side conditions.

Options for further discussion and down-selection (for information purpose):

* Time offset between DL timing and SRS arrival timing
  + Option 1: Rel-16 CLI SRS RSRP assumption
  + Option 2: Remove cell phase error from option 1
  + Other options are not precluded, pending on RAN1 progress.
* SRS Es/Iot, SRS configuration and maximum/minimum SRS-RSRP
  + Option 1: Rel-16 CLI SRS RSRP assumption
  + Other options are not precluded.

**Issue 2-1-8: Measurement period**

* Proposals
  + Proposal 1 (CATT, Apple, Nokia, LGE, CTC, E///, vivo, Samsung, HW, ZTE, QC):
    - RAN4 to discuss measurement period requirements for L1 based UE-to-UE CLI measurement
  + Proposal 2 (CATT):
    - More RAN1 progress on resource configurations for CLI measurements is needed for defining CLI measurement period requirements.
  + Proposal 3 (Apple, Samsung, HW):
    - RAN4 to discuss number of samples for the L1-SRS-RSRP measurement including single shot and multiple shots
  + Proposal 4 (Nokia):
    - RAN4 should specify the measurement periods for L1-SRS-RSRP and L1-CLI-RSSI measurements irrespective of different CLI measurement methods.
  + Proposal 5 (CTC):
    - Define better measurement requirements for Rel-19 L1 CLI measurement compared to Rel-16 L3 CLI measurement
* Recommended WF
  + RAN4 to define measurement periods for L1 based UE-to-UE CLI measurement requirements,
  + RAN4 to discuss whether the measurement is based on single shot and/or multiple shots (e.g. 3 samples as R16 SRS-RSRP measurement).

Samsung: do we need simulation? In our understanding, simulation is needed.

E///: To set proper L1 requirements, simulation is needed. No hurry to decide the number of samples.

HW: Share the view as Samsung and E///.

Apple: L1 is to reduce the delay compared to L3 measurement.

Samsung: the processing delay is L1 is shorter than L3 measurement.

Nokia: ok to do simulation.

Agreement:

* + RAN4 to define measurement periods for L1 based UE-to-UE CLI measurement requirements,
  + RAN4 to discuss the number of shots for the measurement, which can be based on RAN4 simulation results and RAN1 design.
    - Number of shots for simulation: 1, 2, 3.
    - Companies to bring proposals on other simulation parameters in the next meeting.

8.21 Enhancements of network energy savings for NR

8.21.1 General aspects and work plan

[**R4-2412508**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412508.zip) **Work plan for R19 NES**

*Type: Work Plan For: Approval  
 Source: Ericsson, Apple*

**Abstract:**

This contribution discusses the work plan for Rel-19 NES

**Decision: Approved.**

8.21.2 RRM core requirements

[**R4-2411360**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411360.zip) **Discussion on RRM requirements for R19 NES**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411451**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411451.zip) **On RRM core requirements for R19 NES enhancement**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Apple*

**Decision: Noted.**

[**R4-2411468**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411468.zip) **Discussion on RRM requirements for network energy saving**

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

**Decision: Noted.**

[**R4-2411485**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411485.zip) **Discussion on RRM requirements of R19 NES**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

[**R4-2411570**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411570.zip) **RRM requirements for R19 network energy saving**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

[**R4-2411621**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411621.zip) **Discussion on NES RRM requirements**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

[**R4-2411724**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411724.zip) **On the RRM impact of enhanced network energy saving**

*Type: discussion For: Discussion  
 Source: Qualcomm Technologies Ireland*

**Abstract:**

In this paper, we share our views on the major topics of Rel-19 enhanced network energy saving and a preliminary assessment of the RRM impact.

**Decision: Noted.**

[**R4-2411761**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411761.zip) **(Netw\_Energy\_NR\_enh-Core) Discussion on RAN4 impact of network energy saving enhancement**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412120**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412120.zip) **Discussion on Enhancements of network energy savings for NR**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

[**R4-2412205**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412205.zip) **Discussion on RRM impacts for R19 NES**

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

**Decision: Noted.**

[**R4-2412419**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412419.zip) **RRM scope for Rel-19 network energy saving enhancements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

[**R4-2412507**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412507.zip) **Initial discussion on Rel-19 NES**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the Rel-19 NES requirement

**Decision: Noted.**

[**R4-2412524**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412524.zip) **Discussion on RRM requirement impacts for R19 NES enhancements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412855**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412855.zip) **General discussion on NES RRM impact**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Samsung*

**Decision: Noted.**

[**R4-2413079**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413079.zip) **Discussion on RRM aspects of R19 NES**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

8.21.3 Moderator summary and conclusions

Topic: [112][222] Netw\_Energy\_NR\_enh

[**R4-2411817**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411817.zip) **Topic summary for [112][222] Netw\_Energy\_NR\_enh**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413884**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413884.zip) **Coffee break discussion minutes for [112][222] Netw\_Energy\_NR\_enh**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Return to.**

[**R4-2413885**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413885.zip) **WF on Netw\_Energy\_NR\_enh**

*Type: other For: Approval  
 Source: Ericsson*

**Decision: Return to.**

**Online session (Monday Aug 19, 2024)**

**Issue 1-1: Workplan proposals**

* Proposals
  + Option 1: R4-2412508
* Recommended WF
  + Agree on the work plan in R4-2412508.

**Sub-topic 2-1: General On-demand SSB(OD-SSB) requirements**

*Sub-topic description: This sub-topic covers OD-SSB requirement general aspects.*

**Issue 2-1-1: OD-SSB work plan**

* Proposal 1
  + Option 1: Ericsson, CATT, Apple, OPPO, Qualcomm, China Telecom, Huawei, Samsung
    - RAN4 to study OD-SSB impact based on Rel-15 single Scell activation requirement as a start points.
* Proposals 2
  + Option 1: Ericsson, Apple
    - RAN4 to first focus on the single SCell activation case as baseline.
    - After RAN4 concludes on the baseline case, RAN4 may discuss other enhanced scenarios if needed in phase 2, e.g., multiple SCells activation, PUCCH SCell activation, and direct SCell activation.
      * Note: Phase 2 will start from RAN4 #114 meeting (Feb., 2025)
  + Option 2: Qualcomm
    - RAN4 should study which SCell activation scenarios can work together with on-demand SSB and define priorities which of them should be enhanced.
  + Option 3: Huawei
    - For Scenario #2A and Case #1 and Scenario #2A and Case #2, RAN4 starts work from single SCell activation unknown case for:
      * SCell activation (8.3.2)
      * PUCCH SCell activation (8.3.12)
    - Multiple SCell activation requirements can be discussed after the discussion on single SCell activation is concluded.

Discussion:

Nokia: consider direct SCell activation in phase 1.

Apple: Not set a fixed time to start phase 2.

Xiaomi: Share the same view as Apple.

* Agreement:
  + - RAN4 to first focus on the MAC CE based single SCell activation case as starting point.
    - After RAN4 concludes on the above case, RAN4 may discuss other Scell activation scenarios if needed.

**Issue 2-1-2: OD-SSB scenarios**

Background:

|  |
| --- |
| **RAN1 #116 Agreement**  Regarding the UE assumption on SSB transmission on a cell supporting on-demand SSB SCell operation, the following cases are identified for further study:   * Case #1: No always-on SSB on the cell * Case #2: Always-on SSB is periodically transmitted on the cell * FFS: Whether always-on SSB and on-demand SSB are not cell-defining SSB if transmitted. * FFS: Which scenario the above applies for   **RAN1 #116 Agreement**  For the following identified scenarios for on-demand SSB SCell operation, focus future RAN1 discussion to down-select (both may be selected) between the two scenarios.   * Scenario #2: SCell is configured to a UE but before the UE receives SCell activation command (e.g., as defined in TS 38.321) * Scenario #3: After UE receives SCell activation command (e.g., as defined in TS 38.321)   + This does not preclude SCell for which activation is completed   + FFS: The case where SCell activation is completed   FFS: Application timing between NW triggering message and on demand SSB transmission  **RAN1 #116bis Agreement**  For the identified scenarios and cases (as per RAN1#116 agreement), on-demand SSB can be triggered by gNB at least for the following scenarios/cases:   * Scenario #2 and Case #1 * Scenario #2 and Case #2 * Scenario #2A and Case #1 * Scenario #2A and Case #2 * FFS: Scenario #3A and Case #1 * FFS: Scenario #3A and Case #2 * FFS: Scenario #3B and Case #1 * FFS: Scenario #3B and Case #2 * For Case #1, once on-demand SSB is triggered, its transmission is in a periodic manner.   + Note: This does not imply periodic on-demand SSB is transmitted indefinitely after triggered. * Notes:   + Scenario #2A refers to     - “When UE receives SCell activation command (e.g., as defined in TS 38.321)”   + Scenario #3A refers to     - “After UE receives SCell activation command (e.g., as defined in TS 38.321) until SCell activation is completed”   + Scenario #3B refers to     - “When SCell activation is completed and SCell is activated” or     - “After SCell activation is completed and SCell is activated”   + For discussion purpose under AI 9.5.1, always-on SSB is SSB supported in Rel-18 specifications.   + Timing for on-demand SSB transmission (e.g. when the triggered SSB starts and ends) will be separately discussed. |

* Proposals
  + Option 1: CATT, Apple, Nokia, Qualcomm, CMCC, Huawei, Samsung
    - RAN4 to define on-demand SSB based SCell activation requirements for the following cases as agreed in RAN1:
      * Scenario #2 and Case #1
      * Scenario #2 and Case #2
      * Scenario #2A and Case #1
      * Scenario #2A and Case #2
  + Option 2: Mediatek
    - RAN4 to discuss SCell activation requirements for R19 NES for the following scenarios:
      * Case 1: RRC based / MAC-CE based OD-SSB operation for a SSB SCell
      * Case 2: RRC based / MAC-CE based OD-SSB operation for a SSB-less SCell
  + Option 3: OPPO
    - RAN4 to consider Not-always-on SSB and Always-on SSB for the known and unknown SCell.
  + Option 4: Ericsson, China Telecom
    - RAN4 to study OD-SSB SCell activation for both Case 1 and Case 2 as follow.
      * Case 1-1: No always-on SSB on the known cell
      * Case 1-2: No always-on SSB on the unknown cell
      * Case 2-1: Always-on SSB periodically transmitted on the known cell
      * Case 2-2: Always-on SSB periodically transmitted on the unknown cell
* Agreement:
  + - RAN4 to discuss OD-SSB based SCell activation requirements based on following RAN1 agreed scenarios.
      * Case #1 and Scenario #2
      * Case #1 and Scenario #2A
      * Case #2 and Scenario #2
      * Case #2 and Scenario #2A
      * Note 1: Follow RAN1 definition on the scenarios and cases.
      * Note 2: This list can be updated pending on RAN1 further agreement.

**Issue 2-1-3: Deactivated SCell measurement requirement**

* Proposals
  + Option 1: CATT, Apple, Ericsson, OPPO, Nokia, CMCC, Intel, Huawei, Xiaomi, vivo, Samsung, ZTE
    - RAN4 to discuss OD-SSB based deactivated Scell measurement and Scell activation requirement.
      * Includes both FR1 and FR2
* Agreement:
  + - RAN4 to discuss OD-SSB based deactivated Scell measurement and Scell activation requirement.
      * Includes both FR1 and FR2-1

**Sub-topic 4-1: SSB Adaptation requirements**

*Sub-topic description: This sub-topic covers SSB adaptation requirement identification in RAN4.*

**Issue 4-1-1: SSB adaptation in IDLE/CONNECTED mode**

* Proposals
  + Option 1: Nokia, Qualcomm, CMCC, Ericsson, Samsung
    - RAN4 to prioritize the SSB adaptation discussion in CONNECTED mode.
  + Option 2: Samsung
    - RAN4 to wait for RAN1 progress on whether idle/inactive can be supported.
* Agreement
  + - RAN4 to prioritize the SSB adaptation discussion in CONNECTED mode.
    - Whether to discuss SSB adaptation in IDLE mode depends on RAN1 progress

**Issue 4-1-2: SSB adaptation impact in RRM requirement**

* Proposals
  + Option 1: CATT, Nokia, Qualcomm, CMCC, Ericsson, Samsung
    - RAN4 to discuss the RRM requirement impact due to SSB periodicity adaptation.
    - Option 1-1: Nokia, CMCC, Ericsson, Samsung
      * RAN4 to study the L1/L3 measurement impact.
    - Option 1-2: Samsung
      * RAN4 to study the SCell activation and deactivation delay impact.
        + Combine the RAN1 conclusions of on-demand SSB and SSB adaptation to define the corresponding SCell requirements if SSB adaptation is supported in SCells
  + Option 2: Apple, Xiaomi, CTC, Huawei, Intel
    - Wait until the concrete conclusion of RAN1 is available.
  + Agreement: SSB adaptation impact in RRM requirement
    - RAN4 to discuss the L1/L3 measurement requirement impact as starting point.
  + Tentative agreement: SSB adaptation impact in RRM requirement
    - RAN4 to discuss SSB periodicity adaptation in time-domain as starting point if it is agreed in RAN1. Other requirements are not precluded depending on RAN1 progress.

**Sub-topic 2-1: General On-demand SSB(OD-SSB) requirements**

**Issue 2-1-4: OD-SSB based L3 neighbour cell measurement**

* Proposals
  + Option 1: Huawei
    - RAN4 to deprioritize OD-SSB based L3 neighbour cell measurement, as feasibility and reliability are questionable and gain is not clear.
  + Option 2: Samsung
    - RAN4 needs to clarify if L3 measurements based on on-demand SSB is needed or not.
* Recommended WF
  + Moderator suggests the group to check whether the following proposal can be agreed.
    - RAN4 to focus on OD-SSB based L3 serving cell measurement and deprioritize OD-SSB based L3 neighbour cell measurement.

Apple: this issue is being discussed in RAN1.

**Issue 2-1-5: OD-SSB type**

* Background

|  |
| --- |
| **RAN1 #116bis Agreement**   * For a cell supporting on-demand SSB SCell operation,   + Note: It is up to gNB implementation whether always-on SSB (if transmitted) on the cell is cell-defining SSB or not.   + For on-demand SSB on the cell, downselect between the following alternatives     - Alt-1: It is up to gNB implementation whether on-demand SSB is cell-defining SSB or not.     - Alt-2: On-demand SSB is limited to non-cell-defining SSB.       * FFS: Further limitations to on-demand SSB |

* Proposals
  + Option 1: Qualcomm
    - RAN4 should start working on OD-SSB requirements for NCD-SSB.
    - Defining OD-SSB requirements for CD-SSB should be postponed till RAN1 has decided.
* Recommended WF
  + Moderator suggests the group to check whether the following proposal can be agreed.
    - RAN4 to define OD-SSB based requirements for NCD-SSB first

CATT: also under discussion in RAN1.

E///: at least NCD-SSB will be covered in RAN1.

CMCC: Share the same understanding as CATT. The difference for RAN4 discussion is not obvious for CD-SSB and NCD-SSB.

Apple: No agreement in RAN1. No much difference for RAN4 requirement.

QC: No agreement to include CD-SSB in RAN1.

Nokia: Same understanding as Apple.

**Deactivated SCell L3 measurement part**

**Issue 2-2-1: Case 1- OD-SSB based deactivated SCell measurement**

* Proposals
  + Option 1: Ericsson, Nokia, Intel, ZTE
    - RAN4 specifies enhanced deactivated SCell measurement requirements based on On-demand SSB considering following different aspects.
      * Aspect 1: Maximize the NES gain
      * Aspect 2: Reduce SCell activation delay
    - Option 1a: ZTE
      * To accelerate the SCell activation procedure, to apply reletive frequent on-demand SSB before SCell activation command.
* Recommended WF
  + Further discussion

Moderator: Case 1- OD-SSB based deactivated SCell measurement

* + - For deactivated SCell measurement requirements, follow the periodicity based on On-demand SSB (not the measurement cycle).

Apple: not agree on this enhancement at this stage. The WI is for network energy saving.

CMCC: It is for case 1 and scenario 2. We support the motivation of the option 1.

vivo: Share the view as Apple. No related agreement in RAN1.

QC: If on-demand SSB is configured, we need to discuss how to use the periodicity of on-demand SSB.

HW: Share the same as QC. It depends on whether the legacy measurement can work with OD SSB.

8.22 Low-power wake-up signal and receiver for NR (LP-WUS/WUR)

8.22.4 RRM core requirements for LP-WUS/WUR

8.22.4.1 Simulation assumptions and results

[**R4-2411361**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411361.zip) **Discussion on simulation assumptions for LP-WUR measurement**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411449**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411449.zip) **On simulation assumption for LP-WUR based measurement**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Apple*

**Decision: Noted.**

[**R4-2411616**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411616.zip) **Simulation assumptions and results for LP-WUS/WUR**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

[**R4-2412290**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412290.zip) **Consideration on simulation assumptions and results for LP-WUR**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412441**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412441.zip) **Simulation assumptions and results for LP-WUS/WUR measurement**

*Type: other For: Approval  
 Source: OPPO*

**Decision: Noted.**

[**R4-2412506**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412506.zip) **Simulation on LP-WUS RRM measurement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the LP-WUS RRM simulation assumption

**Decision: Noted.**

[**R4-2412669**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412669.zip) **Simulation assumption for LP-WUR measurement**

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

**Decision: Noted.**

[**R4-2412801**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412801.zip) **Discussion on LP-WUS RRM simulation assumptions and results**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Nokia*

**Decision: Noted.**

[**R4-2413324**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413324.zip) **Simulation assumptions for R19 LP-WUS**

*Type: other For: Approval  
 Source: MediaTek inc.*

**Decision: Noted.**

8.22.4.2 RRM core requirements

[**R4-2411362**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411362.zip) **Discussion on RRM requirements for LP-WUS/WUR**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411450**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411450.zip) **On RRM core requirements for LP-WUR**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Apple*

**Decision: Noted.**

[**R4-2411493**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411493.zip) **Discussion on core requirements for LP-WUS WUR**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision: Noted.**

[**R4-2411617**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411617.zip) **Discussion on RRM core requirements for LP-WUS/WUR**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

[**R4-2411683**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411683.zip) **Discussions on RRM core requirements for LP-WUS/WUR**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Decision: Noted.**

[**R4-2411762**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411762.zip) **(NR\_LPWUS-Core) Discussion on RRM impact of LP-WUR**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412041**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412041.zip) **Discussion on RRM requirements for LP-WUS/WUR**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: LG Electronics Inc.*

**Abstract:**

Discussion on RRM requirements for LP-WUS/WUR

**Decision: Noted.**

[**R4-2412121**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412121.zip) **Discussion on RRM core requirements for LP-WUS/WUR**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

[**R4-2412291**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412291.zip) **Consideration on RRM requirements for LP-WUR**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412505**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412505.zip) **Discussion on LP-WUS RRM requirement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the LP-WUS requirement

**Decision: Noted.**

[**R4-2412531**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412531.zip) **RRM impact for Rel-19 LP-WUS/WUR**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

[**R4-2412670**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412670.zip) **Discussion on RRM requirements for LP-WUR**

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

**Decision: Noted.**

[**R4-2412802**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412802.zip) **Discussion on LP-WUS RRM core requirements**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Nokia*

**Decision: Noted.**

[**R4-2413041**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413041.zip) **Discussion on LP-WUS for core part**

*Type: discussion For: Discussion  
 Source: ZTECorporation,Sanechips*

**Decision: Noted.**

[**R4-2413325**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413325.zip) **Discussion on the RRM core requirements for LP-WUS**

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

**Decision: Noted.**

[**R4-2413452**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413452.zip) **RRM requirements for LP-WUR**

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

**Decision: Noted.**

8.22.5 Moderator summary and conclusions

Topic: [112][223] NR\_LPWUS

[**R4-2411818**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411818.zip) **Topic summary for [112][223] NR\_LPWUS**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

[**R4-2413898**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413898.zip) **Coffee break discussion minutes for [112][223] NR\_LPWUS**

*Type: other For: Approval  
 Source: vivo*

**Decision: Return to.**

[**R4-2413899**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2413899.zip) **WF for RRM core requirements for LP-WUSWUR**

*Type: other For: Approval  
 Source: vivo*

**Decision: Return to.**

**Online session (Tuesday Aug 20, 2024)**

**Issue 1-1-1: Cases/states to be considered for RRM relaxation and serving cell measurement offloading**

*Background:*

*The RAN4 #111 meeting’s agreement for this issue are copied below [R4-2410296]*

Agreement: Discuss the RAN4 requirements first for the following case #1, and FFS for case #2 to #5.

|  |  |  |  |
| --- | --- | --- | --- |
| **RRM measurement case index** | **MR serving cell measurement** | **MR neighboring cell measurement** | **LR measurement** |
| #1 Fully offloading case | Off | Off: FFS the condition and the details | ON |

RAN4 to further discuss case #2 to #4:

|  |  |  |  |
| --- | --- | --- | --- |
| RRM measurement case index | MR serving cell measurement | MR neighboring cell measurement | LR measurement |
| #2 Relaxed case a | On with relaxation measurement | Off | ON |
| #3 Relaxed case b | On with relaxation measurement | On with relaxation measurement | ON |
| #4 Relaxed case c | Off | On, FFS the condition and the details | ON |

* Proposals

Case 2: Supported (CT LG vivo Ericsson Samsung); not supported (Apple Huawei QC)

Case 3: Supported (CATT Apple oppo xiaomi CMCC CT LG vivo Ericsson Samsung Huawei Nokia MTK, ZTE); not supported (QC)

Case 4: (a) Case 4 MR neighbour cell measurements include equal or low priority frequency layers

Supported with relaxed neighbour cell measurements (QC); not supported (Apple vivo Nokia)

(b) Case 4 MR neighbour cell measurements intends for higher priority frequency layers

Supported when case 4 is for higher priority frequency layers (CMCC Huawei, ZTE, Ericsson)

Issues are related to higher priority frequency layers are discussed separately/later (Apple oppo vivo Samsung Nokia)

* Other related proposals:
  + P1: Whether any LR based serving cell RRM relaxation cases are valid is fully up to NW’s configuration, such as NW can enable/disable any RRM relaxation scenario based on the configured thresholds. Serving cell measurement relaxation/offloading with LR measurement is independent with neighbour cell measurement relaxation/offloading, su\ch as NW can control serving and neighbour cell measurement with different thresholds. (Ericsson)
  + P2: RAN4 shall specify the whole procedure based on serving cell measurement and specify the UE behaviour when it satisfies the entry/exit condition (ZTE)
  + P3: For fully offloading case, MR is Off and LR is ON, LR should at least perform wake-up signal monitoring and serving cell measurements in IDLE/INACTIVE mode (Nokia MTK)
  + P4: It is better to wait RAN2 outcome of neighboring cell measurement to select case 2 to 4 (Docomo)
  + P5: LR measurement can be used to check the criteria for neighbor cell measurement triggering/relaxation. LR measurement result shall be comparable to MR measurement result or shall be equivalent to MR measurement result with certain offset/margin (e.g., LR *threshold* is MR threshold + offset/margin). (Apple)
  + P6: RAN4 should have conclusion on whether to support or how to handle extra relaxed cases, case #5 and #6. (vivo)

|  |  |  |  |
| --- | --- | --- | --- |
| RRM measurement case index | MR serving cell measurement | MR neighbouring cell measurement | UE with LR-WUR capability however LP-WUR is off |
| #5 Relaxed case | On with relaxation measurement | Off | OFF |
| #6 Relaxed case | On with relaxation measurement | On with relaxation measurement | OFF |

***Recommendations:***

|  |  |  |  |
| --- | --- | --- | --- |
| RRM measurement case index | MR serving cell measurement | MR neighboring cell measurement | LR measurement |
| #2 Relaxed case a | On with relaxation measurement | Off | ON |
| #3 Relaxed case b | On with relaxation measurement | On with relaxation measurement | ON |
| #4 Relaxed case c | Off | On, FFS the condition and the details | ON |

Determine whether the following cases will be supported:

Case 3:

* Supported (CATT Apple oppo xiaomi CMCC CT LG vivo Ericsson Samsung Huawei Nokia MTK, ZTE)
* not supported (QC)
  + QC: Combining measurements across the two radios, i.e., MR and WUR increases the implementation complexity of the UE.

QC: This is the first release for LP-WUS. Let us keep it simple. Not combine measurements across the two radios. OK with case 4 without combination the measurements.

vivo: No need to combine. The measurement results are used separately. For case 4, it is for high priority carrier.

E///: For case 3, neighbouring cell relaxation is to follow the legacy. Is it common understanding?

OPPO: relaxation measurement can include the relaxation on time domain and frequency layer. Case 4 can be also considered.

ZTE: Combine case 2 and case 3. To E///, RAN2 is discussing the condition for neighbouring cell relaxation.

MTK: For case 3, MR is turned on to do neighbouring cell measurement, why cannot use it for serving cell. case 4 is not simple.

Samsung: For case 3, whether to combine the measurement, it is for further discussion. Case 2 is included in case 3, in the case that neighbouring cell measurement is triggered based on the defined conditions.

CATT: Case 3 should be the baseline. Share the view of Samsung that Case 2 is included in case 3. Case 4 is a special case for case 3.

Apple: Case 3 makes sense to us. When MR is waking up to do neighbouring cell measurement, it can do serving cell measurement as well. No consider case 4 in the first release of LP-WUS.

HW: Case 3 should be supported. Otherwise, with only case 1, it means LP-WUS cannot used when neighbouring cell measurement is needed.

LGE: Case 3 can be the baseline. On whether to combine the measurement, it is for further discussion.

Nokia: Case 3 can be the baseline. case 4 is for higher priority carrier, which can be discussed separately. Combining the two measurements is too complicated, and should be avoided in this release.

CMCC: Case 3 can bring power saving gain. Case 4 is for higher priority carrier, and it is for inter-frequency measurement. MR for inter-frequency and LR for intra-frequency serving cell measurement.

Xiaomi: Support case 3. The benefit of case 2 is not clear, but we are open for further discussion. Case 4 is under discussion in RAN2 as well.

vivo: Case 2 can be discussed later. If case 4 is only for high priority carrier, it can be discussed later.

Nokia: MR measurement is used to compare with the neighbouring cell, and LR is used for serving cell measurement.

Apple: understanding #1, use the LR for serving cell measurement criteria check only. understanding #2, MR measurement is used when it is available, otherwise LR measurement is used.

OPPO: For option 2, it is not clear whether to have one or two criteria.

E///, QC: We can only support case 3 if the legacy criteria is followed in RAN2.

vivo: RAN4 is the leading WG for this objective.

QC: we wonder how the UE requirement will be defined.

* Support case #3
  + For serving cell measurement, further discuss:
    - Option 1: Further discuss whether to combine the measurements across the two radios, i.e., MR and WUR (Samsung, LGE)
    - Option 2: From RAN4 requirement perspective, not consider combining the measurements across the two radios, i.e., MR and WUR (QC, MTK, E///, ZTE, HW, [Apple], Xiaomi, Nokia)
    - Option 3: It is up to UE implementation whether to combine the measurement across the two radios.

Agreement:

* Support case #3
  + For serving cell measurement, further discuss:
    - Option 1: Further discuss whether to combine the measurements across the two radios, i.e., MR and WUR
    - Option 2: From RAN4 requirement perspective, not consider combining the measurements across the two radios, i.e., MR and WUR
    - Option 3: It is up to UE implementation whether to combine the measurement across the two radios.
    - Other options are not precluded.

|  |  |  |  |
| --- | --- | --- | --- |
| RRM measurement case index | MR serving cell measurement | MR neighboring cell measurement | LR measurement |
| #3 Relaxed case b | On with relaxation measurement | On with relaxation measurement | ON |

* + Note: In RAN4 understanding, the discussion of the related measurement criteria (i.e., whether to use the legacy or new criteria) is out of RAN4 responsibility.

Further clarify on case 4 and determine the procedure on how to handle higher priority frequency layer

Case 4:

(a) Case 4 MR neighbour cell measurements include equal or low priority frequency layers

* Supported with relaxed neighbour cell measurements (QC)
* not supported (Apple vivo Nokia)

(b) Case 4 MR neighbour cell measurements intends for higher priority frequency layers

* Supported when case 4 is for higher priority frequency layers (CMCC Huawei, ZTE, Ericsson)
* Issues are related to higher priority frequency layers are discussed separately/later (Apple oppo vivo Samsung Nokia)

Discuss case 2 or case 5, 6

**Issue 2-1-1: SINR setting**

* Proposals
  + P1: -3 dB Ês/Iot value is used for serving cell in the simulation for both OOK based and OFDM based LP-WUR. (CMCC vivo Huawei)
  + P2: RAN4 RRM session to decide which target SINR can be chosen from RAN1 candidate list [-3dB, -0.5dB, 2dB] after RAN4 RF conclusion on noise figure. (CATT Apple)
  + P3: Follow RAN1 conclusion on target SINR condition, and further evaluate measurement accuracy and measurement period: Target SINR for OOK based LR: -3dB; Target SINR for OFDM based on LR: -0.5dB and/or 2dB (Samsung)
  + P4: RAN4 to define -6dB as the final side condition (MTK)

*Recommendations:*

*Suggest to consider P1*

Samsung: RAN1 has 3 target values [-3dB, -0.5dB, 2dB]. Also consider RF noise figure assumptions.

vivo: We have 3 nosie figure values, which corresponding to the 3 SINR values.

MTK: We prefer one single value for the requirement. Consider the worst case. Ran1 value is just the starting point.

E///: -6dB is for cell reselection. Use of LP-WUS is for UE in cell center. Pick one value from RAN1 discussion. -3 can be the starting point.

Apple: -3 is based on 8 dB noise figure.

Agreement:

* + As starting point for RAN4 RRM simulation purpose only, -3dB, 0.5dB, 2dB dB Ês/Iot value is used for serving cell for both OOK based and OFDM based LP-WUR.
    - The SINR value can be updated if any update on the noise figure value in RF session.
  + FFS the side condition for RAN4 requirement.

**Issue 2-1-1-1: SNR setting for serving and interference cell derivation from SINR setting**

* Proposals
  + P1: Use two cells for RAN4 simulation. To derive SNR for serving cell and interference cell from serving cell Ês/Iot, a relationship for the SNR or transmission power between serving cell and interference cell need be pre-defined. Suggest to consider the SNR/transmission power of the interference cell is 9 dB or 6 dB lower compared with that of the serving cell. (vivo, Ericsson)
  + P2: Discuss what is the meaning of Cell 1 and Cell 2 in the simulated scenario as the LP-WUR only supports serving cell measurements. (Nokia)

*Recommendations:*

*Suggest to check the methodology in P1 is agreeable or not.*

MTK: no need to model the interference, just consider the noise.

vivo: one interference cell is closer to the practical network.

Option 1: Model one interference cell. (Apple, vivo, HW, ZTE, E///, QC, CATT, LGE, Nokia)

Option 2: Not model interference cell. (MTK)

Agreement:

* + Consider two cells for RAN4 simulation: one serving cell and one interference cell.

8.23 NR mobility enhancements Phase 4

8.23.1 General aspects and work plan

[**R4-2411437**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411437.zip) **RAN4 Work Plan for R19 NR mobility enhancement phase 4**

*Type: Work Plan For: Approval  
 Source: Apple, China Telecom*

**Decision: Return to.**

8.23.2 RRM core requirements

[**R4-2411354**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411354.zip) **Discussion on Rel-19 RRM requirement for mobility enhancements**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411422**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411422.zip) **On CSI-RS based L1 measurement**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

[**R4-2411438**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411438.zip) **Discussion on impact of inter-CU on LTM RRM requirements**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Withdrawn.**

[**R4-2411439**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411439.zip) **Discussion on potential RRM requirements to support R19 mobility event triggered L1 reporting**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Withdrawn.**

[**R4-2411473**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411473.zip) **RRM Core requirements on NR mobility enhancements Phase 4**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

[**R4-2411705**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411705.zip) **Discussion on R19 mobility**

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

**Decision: Noted.**

[**R4-2411973**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411973.zip) **Discussion on NR mobility enhancements Phase 4**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412113**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412113.zip) **Discussion on RRM impacts on Rel-19 mobility enhancement Phase 4**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Samsung*

**Decision: Noted.**

[**R4-2412222**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412222.zip) **Discussion on NR mobility enhancements Phase 4**

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

**Decision: Noted.**

[**R4-2412387**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412387.zip) **Discussion on NR mobility enhancements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2412491**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412491.zip) **On RRM requirements for Phase 4 mobility enhancements**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

[**R4-2412525**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412525.zip) **Discussion on RRM requirement impacts for R19 NR Mobility Phase 4**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2413018**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413018.zip) **Discussion on Rel-19 mobility RRM requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on Rel-19 mobility RRM requirements

**Decision: Noted.**

[**R4-2413186**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413186.zip) **(NR\_Mob\_Ph4-Core) Impact on RRM requirements**

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

**Decision: Noted.**

8.23.3 Moderator summary and conclusions

Topic: [112][224] NR\_Mob\_Ph4

[**R4-2411819**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411819.zip) **Topic summary for [112][224] NR\_Mob\_Ph4**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Wednesday Aug 21, 2024)**

**Issue 2-1-1: RAN4 scope of inter-CU LTM**

* Candidate solutions:
  + Option 1: existing R18 LTM related RRM requirements also apply to same procedures in inter-CU scenario. (Apple, MTK, CMCC, Samsung, Nokia, E///, CTC)
  + Option 1a: No RRM impact is foreseen to support inter-CU LTM. RAN4 can revisit this if any new procedure is introduced by RAN1/2. (Apple)
  + Option 2: RAN4 should discuss whether to update TLTM-Processing in inter-CU LTM due to PDCP re-establishment and security key update. (ZTE)
  + Option 3: RAN4 to postpone the discussion on the topic of Inter-CU Layer1/Layer 2 Triggered Mobility (LTM) until the group can get more clarity on the impact of the topic on RRM requirements. (QC)
* Agreement:
  + Existing R18 LTM related RRM requirements also apply to same procedures in inter-CU scenario.
  + No RRM impact is foreseen to support inter-CU LTM. RAN4 can revisit this if any issue identified.

**Issue 2-2-3: filtering assumption in event evaluation**

* Candidate solutions:
  + Option 1: Define additional SSB based L1 measurement delay requirements with filtering for event triggered L1 report. Wait for more RAN1/2 progress to discuss the detailed requirements. (MTK)
* Recommended WF
  + Discussion is needed.

MTK: RAN2 is discussing whether to introduce L1 filtering. L1 filtering will impact RAN4 measurement delay.

CMCC: We have different as MTK. RAN2 is discussing L3 filtering but not L1 filtering.

China Telecom: We can wait more details from RAN1/2.

Nokia: Agree that it is under discussion in RAN1/2.

E///: RAN1 is discussing in this meeting.

**Issue 2-3-1: RRM scope of CSI-RS based L1 RSRP measurement on candidate cell(s)**

* Candidate solutions:
  + Option 1: (CATT)
    - All requirments defined based on SSB will be defined for CSI-RS, which includes the following requirments:
      * PDCCH ordered Random Access for LTM
      * LTM PCell/ PSCell Cell Switch
      * Link Recovery Procedures
      * TRP specific Link Recovery Procedures
      * TCI state activation for LTM candidate cell
      * L1-SINR measurements for Reporting
      * Intra-frequency L1-RSRP measurements for neighbor cell
      * NR inter-frequency L1 measurement
  + Option 2: define measurement period requirements for CSI-RS based L1 measurement, and the SSB based L1 measurement period requirements can be used as baseline. (CMCC)
  + Option 3: For CSI-RS measurement and based beam management for LTM, RAN4 should define new RRM requirements. Need further RAN1 progress. (Samsung)
  + Option 4: Define early DL sync requirements for using CSI-RS once RAN1 approval, and SSB based DL sync in LTM can be used as baseline. (ZTE)
  + Option 5: RAN4 can start the requirements discussion of CSI-RS on periodic measurements while RAN1 is discussing about aperiodic and semi-persistent measurement support. (Nokia, vivo)
  + Option 6: RAN4 to discuss at least the following set of requirements for CSI-RS based LTM measurements: (Nokia)
    - Measurement delay
    - Measurement reporting requirements
    - Measurement restrictions
    - Scheduling availability
  + Option 7: For the topic of ‘Measurements related enhancements for the purpose of supporting LTM,’ RAN4 to wait for further progress to be made in other working groups under this WI . (QC)
* Recommended WF
  + The following requirements need to be introduce for CSI-RS based L1 RSRP measurement on LTM candidate cell(s)
    - Measurement delay
    - Measurement reporting requirements
    - Measurement restrictions
    - Scheduling availability
  + FFS on other potential impact.

Apple: this is the minimal set of requirement. Very high level proposal.

QC: Depend on the framework of the CSI-RS based measurement. It is up to RAN4 further discussion on the scenarios to be considered for CSI-RS based measurement.

MTK: we agree with QC the discussion for CSI-RS based measurement will be very complicated. Limit the scenario.

Apple: we can limit the scenario, but it is in a separate issue.

Agreement:

* + The following requirements need to be discussed for CSI-RS based L1 RSRP measurement on LTM candidate cell(s)
    - Measurement delay
    - Measurement reporting requirements
    - Measurement restrictions
    - Scheduling availability
  + FFS on other potential impact.

**Issue 2-3-2: definition of intra-frequency and inter-frequency for CSI-RS based L1 measurement**

* Candidate solutions:
  + Option 1: following CSI-RS based L3 measurement, (Apple)
    - A measurement is defined as a CSI-RS based intra-frequency L1 measurement provided that:
      * the SCS of the CSI-RS resource of the neighbour cell configured for L1 measurement is the same as the SCS of the CSI-RS resource on the serving cell indicated for L1 measurement, and
      * the CP type of the CSI-RS resource of neighbour cell configured for L1 measurement is the same as the CP type of the CSI-RS resource of the serving cell indicated for L1 measurement, and
        + It is applied for SCS = 60KHz
      * the centre frequency of the CSI-RS resource of the neighbour cell configured for L1 measurement is the same as the centre frequency of the CSI-RS resource of the serving cell indicated for L1 measurement
  + Option 2: Categorize CSI-RS based L1-RSRP measurement into CSI-RS based L1-RSRP measurement within active BWP and outside active BWP for further discussion. (MTK)
  + Option 3: For CSI-RS based L1 measurement, RAN4 not to introduce definition of intra-frequency/inter-frequency candidate cell measurement. (vivo)
* Recommended WF
  + Discussion is needed.

HW: It is too early to discuss this issue. For L3 measurement, it is configured in MO, the center frequency is clear to the UE. It is not clear to L1 measurement. Wait for RAN1/2.

CATT: Prefer option 1 following the definition for L3 measurement, and further discuss the details.

China Telecom: Support option 1.

vivo: Most companies in RAN1 support to reuse the CSI-RS configuration for beam management, which is not related to intra- or inter-frequency.

CMCC: For now, support option 1. Align the definition L1 and L3 measurement. Fine to wait RAN1/2.

QC: It is straightforward to follow the existing definition.

ZTE: Support option 1. Also ok to wait RAN1/2.

MTK: Support option 2. For L1 measurement, it is not clear how to define inter- or intra- frequency. In Rel-18, the requirement of intra-frequency and inter-frequency without MG are almost the same.

E///: No center frequency for the CSI-RS configuration for beam management. Wait RAN1/2.

Apple: All the previous discussion for measurement has the definition of inter- and intra-frequency definition. Use the L3 definition as starting point.

**Issue 2-3-3: supported measurement types**

* Candidate solutions:
  + Option 1: (CATT)
    - Intra-frequency
    - Inter-frequency without gap
    - Inter-frequency with gap
  + Option 2: (Apple)
    - Intra-frequency without gap
    - Inter-frequency with gap
  + Option 3: deprioritize CSI-RS based L1-RSRP measurement outside active BWP in R19. (MTK)
  + Option 4: (vivo)
    - For CSI-RS based L1 measurement on candidate cell with periodic reporting, RRM requirements are specified for the following cases:
      * CSI-RS based L1 measurement without gap
* Recommended WF
  + Discussion is needed.

Moderator: Discuss the with and without gap aspect.

CATT: Cover both with and without gap. The CSI-RS can be configured in the whole frequency.

CMCC: Cover both with and without gap.

vivo: the CSI-RS configuration is per cell. Wait for RAN1/2 progress.

OPPO: The issue is closely related to the definition of intra- and inter- frequency. Prefer to reuse the approach for L3 measurement.

MTK: Prefer to only consider without gap case. If consider with gap case, it is questionable whether the current gap can cover the CSI-RS configuration from the same frequency layer. Concurrent gap may be needed, which is complicated.

HW: With gap, for L3 CSI-based measurement, although there are many CSI-RS configurations, we defined a window to restrict the CSI-RS within gap. We can reuse this approach.

E///: This is neighboring cell measurement. Cover both with and without gap.

ZTE: Cover both with and without gap.

QC: Even with the same frequency layer, there are many CSI-RS configurations. We are worried that if we spend large efforts to define complicated requirements, but no UE will implement it.

CATT: Use of concurrent gap is possible.

Apple: It could consider at least without gap.

QC: We can consider scenario for which CSI-RS based measurement is feasible.

**Issue 2-3-5: RTD assumption**

* Candidate solutions:
  + Option 1: RTC<CP is taken as baseline. For the case of RTD>CP between serving cell and neighbour cell on the same carrier, UE capability should be introduced. (Apple)
  + Option 2: Further study whether to support RTD>CP case for CSI-RS based L1-RSRP measurement. (MTK)
* Recommended WF
  + Discussion is needed.

Whether to support RTD>CP & Whether to allow UE to process CSI-RS based on the timing of serving cell

CATT: Prefer not support RTD>CP. CSI-RS can be the whole frequency with larger FFT size.

CMCC: Support RTD>CP. Otherwise, it is too limited.

QC: Whether to allow UE to process CSI-RS based on the timing of serving cell.

MTK: support single FFT. Not consider RTD>CP. The bandwidth of CSI-RS is larger, with additional efforts for UE implementation.

China Telecom: Share the same view as CMCC.

E///: Different FFT for RTD>CP.

vivo: RTD>CP is a typical case. But we need to consider UE implementation. Maybe not measure the CSI-RS in the whole frequency.

ZTE: We support RTD>CP.

QC: CSI-RS based measurement with different FFT is very complicated, which is related to numerology, bandwidth.

Apple: The complexity is much higher than SSB based. SSB-based measurement is already defined.

**Issue 2-3-10: other applicability of RRM requirements for CSI-RS based L1 RSRP measurement**

* Candidate solutions:
  + P1: Consider SSB based L3 measurement as the pre-requisite condition to determine the target cells for CSI-RS based L1-RSRP measurement. (Apple)
  + P1a:In FR1, UE shall first perform SSB based L3 measurement on candidate neighbour cells. Then UE performs configured CSI-RS L1 measurement on these candidate neighbour cells. (HW)
  + P2: For L1 CSI-RS measurement on candidate neighbour cells in FR2, RAN4 needs to further discuss two possible options: (HW)
    - Option 1: UE performs SSB based L3 measurements and acquires SSB index information of the candidate cells. And then UE receives the configured CSI-RS resources and perform L1 CSI-RS measurement with Rx beam sweeping on candidate cells.
    - Option 2: UE performs SSB based L3 measurements and acquires SSB index information of the candidate cells. And then UE performs SSB based L1 measurement to refine the RX beam (with RX beam sweeping) which is the same as R18 LTM. Afterwards UE perform measurements without RX beam sweeping on the configured CSI-RS resources of candidate cells where each CSI-RS resource is QCL-typeD with SSB for L1-RSRP measurement.
  + P3: For CSI-RS resources with repetition OFF, L1-RSRP measurement is performed only after UE has performed L1-RSRP measurement on the associated SSB. (MTK)
* Recommended WF
  + Discussion is needed.

Discussion:

* + *P1: Consider SSB based L3 measurement as the pre-requisite condition to determine the target cells for CSI-RS based L1-RSRP measurement if defined.*
  + *P1a:**UE shall first perform SSB based L3 measurement on candidate neighbour cells. Then UE performs configured CSI-RS L1 measurement on these candidate neighbour cells.*

CMCC: what is the spec impact of this proposal.

Apple: There may be some clarification in the spec.

HW: Support P1 and P1a.

E///: We can agree P1 and P1a, which will be reflected in the spec as for SSB based in Rel-18.

QC: We don’t define UE behavior, but define the corresponding requirement.

CATT: P1a description is more clear.

ZTE: Support P1 and P1a.

CMCC: prefer more time to check.

* + *P2: For L1 CSI-RS measurement on candidate neighbour cells in FR2, RAN4 needs to further discuss two possible options: (HW)*
    - *Option 1: UE performs SSB based L3 measurements and acquires SSB index information of the candidate cells. And then UE receives the configured CSI-RS resources and perform L1 CSI-RS measurement with Rx beam sweeping on candidate cells.*
    - *Option 2: UE performs SSB based L3 measurements and acquires SSB index information of the candidate cells. And then UE performs SSB based L1 measurement to refine the RX beam (with RX beam sweeping) which is the same as R18 LTM. Afterwards UE perform measurements without RX beam sweeping on the configured CSI-RS resources of candidate cells where each CSI-RS resource is QCL-typeD with SSB for L1-RSRP measurement.*

QC: Too specific UE behavior. Not sure whether they can work. For option 1/2, the Rx beam for SSB based L3 measurements and CSI-RS based L1 measurement might be different.

China Telecom: Prefer option 1. Larger delay for option 2.

E///: Option 1 is only feasible when CSI-RS repetition ON. Option 2 works when CSI-RS repetition OFF. Depending on the RAN1 agreement on CSI-RS repetition ON or OFF.

OPPO: The intention is to shorten the delay in spatial domain. Option 1 is also feasible without Rx beam sweeping for L1 CSI-RS measurement. Large delay in option 2.

Apple: For option 1, if CSI-RS repetition OFF, UE will use the same beam as SSB based L3 measurement, i.e., rough beam. For option 2, they are system restriction. And if UE already performed SSB based L1 measurement, the benefit of further CSI-RS based L1 measurement is not clear.

MTK: For option 2, in our understanding, UE will use the same beam for SSB based and CSI-RS based L1 measurement. The benefit is shorter time for CSI-RS based L1 measurement. This is related to whether RAN1 will support CSI-RS repetition ON or OFF.

QC: It is very complicated to support FR2 CSI-RS based L1 measurement. FR2 is TDD, there are measurement restriction, some resource cannot be used for DL.

8.24 XR for NR Phase 3

[**R4-2411440**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411440.zip) **Discussion of RRM impact of XR for NR Phase 3**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

[**R4-2411441**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411441.zip) **Reply LS to RAN1 on UE assistance information**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: Apple*

**Decision:** The document was **not treated**.

8.24.1 General aspects and work plan

[**R4-2413021**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413021.zip) **Workplan for Rel-19 XR phase 3**

*Type: Work Plan For: Approval  
 Source: Nokia*

**Decision: Revised to R4-2414027 (from R4-2413021).**

[**R4-2414027**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_112/Inbox/R4-2414027.zip) **Workplan for Rel-19 XR phase 3**

*Type: Work Plan For: Approval  
 Source: Nokia*

**Decision: Return to.**

[**R4-2413393**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413393.zip) **Draft LS response on UE assistance information**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: Ericsson*

**Abstract:**

Draft LS response on UE assistance information

**Decision:** The document was **not treated**.

8.24.2 RRM core requirements

[**R4-2411296**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411296.zip) **On UE assistance information for gap skipping occasions - NR XR**

*Type: other For: Approval  
 Source: InterDigital Finland Oy*

**Abstract:**

In this contribution, we share our preliminary impact analysis on UE assistance information related to measurements occasions for NR XR case and make several recommendations.

**Decision: Noted.**

[**R4-2411684**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411684.zip) **Discussions on enabling transmission/reception in gaps/restrictions**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Decision: Noted.**

[**R4-2411974**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411974.zip) **Discussion on XR (eXtended Reality) for NR Phase 3**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412206**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412206.zip) **Discussion on RRM impacts for R19 XR**

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

**Decision: Noted.**

[**R4-2412247**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412247.zip) **Reply LS on UE assistance information for XR**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: vivo*

**Abstract:**

MCC: This is a discussion paper on Reply LS on UE assistance information for XR with a draft LS out Reply LS on UE assistance information in the appendix. A formal LS out will be required, but it was changed to LS out as it had a LS in the appendix.

**Decision:** The document was **not treated**.

[**R4-2412248**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412248.zip) **Discussion on RRM impacts for XR**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412261**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412261.zip) **Discussion on UE Assistance Information for RRM Performance**

*Type: discussion For: Discussion  
 Source: Meta*

**Decision: Noted.**

[**R4-2413082**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413082.zip) **Discussion on RRM aspects of R19 XR**

*Type: discussion For: Discussion  
 Source: ZTE Corporation, Sanechips*

**Decision: Noted.**

[**R4-2413210**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413210.zip) **Discussion on XR (eXtended Reality) for NR Phase 3**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: MediaTek inc.*

**Decision: Noted.**

[**R4-2413314**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413314.zip) **Discussion on RRM requirements for XR phase 3**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Noted.**

[**R4-2413392**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413392.zip) **On RRM core requirements for XR**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On RRM core requirements for XR

**Decision: Noted.**

[**R4-2413453**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413453.zip) **RRM requirements for XR enhancements**

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

**Decision: Noted.**

8.24.3 Moderator summary and conclusions

Topic: [112][225] NR\_XR\_Ph3

[**R4-2411820**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411820.zip) **Topic summary for [112][225] NR\_XR\_Ph3**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Thursday Aug 22, 2024)**

**Issue 1-1: Workplan**

* Proposals
  + Please consider the following workplan proposal

|  |  |
| --- | --- |
| **RAN4 meeting** | **Tasks** |
| RAN4 #112 - August 2024 | * Approval of workplan * Initial discussion on scenarios for measurement skipping based on RAN1 conclusions. |
| RAN4 #112bis - October2024 | * Conclusions on scenarios for measurement skipping based on RAN1 conclusions. |
| RAN4 #113 - November 2024 | * Discussion on measurement delay calculation with measurement skipping. * Discussion on the need for UE assistance information regarding measurements occasions needed. |
| RAN4 #114 - February 2025 | * Discussion on measurement delay calculation with measurement skipping. * Discussion on the need for UE assistance information regarding measurement skipping. * Agreement of CR work split. |
| RAN4 #114bis - April 2025 | * Conclusion on measurement delay calculation with measurement skipping. * Conclusion on the need for UE assistance information regarding measurement skipping. * First Draft CRs for RRM core requirements.   + Draft CRs for 38.133 expected. * First big Draft CR. |
| RAN4 #115 - May 2025 | * Discussion on remaining open issues for RRM core |
| RAN4 #116 - August 2025 | * Discussion on remaining open issues for RRM core . * Revision of CRs for RRM core requirements. * Planning of RRM performance.   + Initial discussion on RRM test cases. |

* Recommended WF
  + Discuss if revisions of the workplan are necessary and approve the workplan.

vivo: The UAI discussion should be started from this meeting, based on the LS. For measurement delay calculation, one possible option is to reuse the existing requirements.

Apple: In general fine.

QC: UAI discussion can be started from this meeting. Ok with other parts.

Meta: UAI discussion can be started from this meeting. The measurement gap is also discussed in RAN1.

**Issue 2-1-1: Workscope**

* Proposals
  + Proposal 1: RAN4 shall proactively participate in solution design to enable Tx/Rx in gap/restriction. At least the following aspects could be led by RAN4:
    - Proposal 1a: Tx/Rx in occasions of L1 operation including RLM, BFD, CBD and L1 measurement.
    - Proposal 1b: Impact on measurement performance due to measurement cancellation and corresponding solution to address the impact.
    - Proposal 1c: Possible UE assistance information.
    - Proposal 1d: Possible pattern for measurement cancellation.
  + Proposal 2: Since there are still many FFS points in RAN1 discussions about how to enable Tx/Rx in gaps/restrictions, RAN4 should wait for RAN1 conclusions before going into details.
  + Proposal 3: RAN4 to study whether and how to define new core requirements when some of gaps that need to be used for measurements are enabled for data transmission/reception.
  + Proposal 4: It is necessary to clarify which types of measurement are in the scope mentioned by “RRM measurements”.
  + Proposal 5: It is better to consider whether existing mechanisms, such as measurement without gaps, NCSG can be reused or not for transmission/reception in gaps as a starting point.
  + Proposal 6: RAN4 shall define corresponding RRM behavior/performance when the measurement occasion is skipped/canceled for data transmission/reception.
* Recommended WF
  + Please discuss the proposals above. For the proponents of Proposal 3 and 4, please check if we can discuss based on Proposal 1 to simplify the discussion.
  + *Proposal 1: RAN4 shall proactively participate in solution design to enable Tx/Rx in gap/restriction. At least the following aspects could be led by RAN4:*

vivo: Support the main bullet, since it is highly related to UE implementation and RAN4 design.

HW: only keep P1b and P1c. For P1a and P1d, other WG is the primary responsible WG.

ZTE: It is important which gap should be considered, for example, MG, concurrent gap.

IDC: Start with the selection of the gap pattern, for example, not consider positioning gap.

CMCC: According to the WID, RAN4 discussion is triggered by LS.

Meta: RAN4 scope is mainly on P1b and other scope triggered by LS.

Nokia: RAN4 may discuss the following aspects, and keep all the 4 bullets.

* + - *Proposal 1a: Tx/Rx in occasions of L1 operation including RLM, BFD, CBD and L1 measurement.*
      * QC: Deprioritize L1 measurement. Focus on L3 measurement gap.
      * vivo: agree with QC. For L1, Difficult to indicate such kind of restriction given multiple different types of L1 measurement.
      * MTK: agree with QC, vivo. L1 measurement is based on symbol level. Not discuss at this stage.
      * HW: agree with QC, vivo, MTK. No significant benefit for L1 measurement.
      * ZTE: both L1, L3 and LTM measurements are possible, and we can discuss the prioritization.
      * E///: Not include L1 measurement.
      * IDC: L1 can be discussed later.
      * CMCC: Consider L1 measurement. L1 impact by XR cannot be ignored.
      * Meta: Keep L1 measurement.
      * Nokia: From workload perspective, as moderator, only 0.5 TU for this WI. Figure out which is more important. Company perspective, the benefit of L1 measurement is small.
      * QC: start within the measurement gap. RAN1 has not discussed measurement without gap.
      * vivo: support QC view.
      * CMCC: not further discuss with measurement without gap.

Option a: (QC, vivo, Nokia, E///, IDC)

* As starting point, RAN4 to discuss the Tx/Rx in occasions of L3 measurement gap.
* Further discuss whether to support Tx/Rx in occasions of L3 measurement outside gap.

Option b: (CMCC, NTT DCM, Apple, ZTE, HW, MTK, Meta)

* As starting point, RAN4 to discuss the Tx/Rx in occasions of L3 measurement.

Agreement:

* As starting point, RAN4 to discuss the Tx/Rx in occasions of L3 measurement.
  + The progress in RAN1/2 should be taken into account.
* FFS whether/when to start the discussion of Tx/Rx in occasions of scheduling restriction due to L1 operation.
  + - *Proposal 1b: Impact on measurement performance due to measurement cancellation and corresponding solution to address the impact.*
      * Apple: 1) extend the delay, 2) keep the delay and enhance the measurement.
      * QC: support.
      * vivo: the impact to mobility due to extended measurement delay should be considered.
      * MTK: The mobility performance should be considered. Keep the two options open.
      * HW: Straightforward.
      * ZTE: It is necessary to consider the performance impact.
      * E///, IDC: The performance includes the accuracy. The core requirement in terms of delay also to be considered.
      * CMCC: Straightforward.
      * Meta: Support.
      * Nokia: *Impact on measurement requirements due to measurement cancellation and corresponding solution to address the impact.*

Agreement: RAN4 to discuss

* The potential impact on measurement requirements due to measurement cancellation
* The corresponding solution to address the impact if needed.
  + - *Proposal 1c: Possible UE assistance information.* 
      * Apple, QC, vivo: can be discussed based on the LS from RAN1.
      * vivo: only UE knows which measurement gap can be skipped.
      * MTK: We can discuss. RAN4 can also discuss other options not mentioned in RAN1 LS.
      * HW: RAN4 to discuss how UAI can be useful, and what kind of UE performance is expected.
      * ZTE: The basic principle of UAI should be followed. We need to discuss which kind of UAI can be helpful to UE. The additional overhead and delay due to UAI need also to be considered.
      * E///: Need to conclude the need first, and then go to the details if necessary.
      * CMCC: Support.
      * Meta: RAN4 to discuss, and RAN2 to decide the content of UAI.
      * Nokia: already being discussed. We need to understand the benefit at first.
    - *Proposal 1d: Possible pattern for measurement cancellation.*
      * QC: is it related UAI or measurement cancellation pattern? If the later one, this is related to RAN1/2 discussion.
      * vivo: It is related to RAN1 discussion. We can provide RAN4 view.
      * MTK: beneficial to have some measurement cancellation pattern.
      * HW: further discuss the details.
      * ZTE: RAN1 scope.
      * E///: First discuss the need.
      * CMCC: Under RAN1 discussion.
      * Meta: Under RAN1 discussion.
      * Nokia: In RAN1, a alternative c is discussed. RAN1 scope.
      * Apple: the reason and importance of RAN4 discussion in to prevent some complicated pattern defined in RAN1. We need to consider the UE implementation feasibility from RAN4 perspective.

8.25 Non-Terrestrial Networks (NTN) for NR Phase 3

8.25.4 RRM core requirements

[**R4-2411356**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411356.zip) **Discussion on RRM requirements for Rel-19 NTN phase3**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

[**R4-2411452**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411452.zip) **On RRM core for R19 NTN Phase 3**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Apple*

**Decision: Noted.**

[**R4-2411469**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411469.zip) **Discussion on RRM requirements for NR NTN phase 3**

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

**Decision: Noted.**

[**R4-2411618**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411618.zip) **Initial discussion on RRM core requirements in NTN for NR Phase 3**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

[**R4-2411686**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411686.zip) **Discussion on RRM requirements for NTN phase 3**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

[**R4-2411763**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411763.zip) **(NR\_NTN\_Ph3-Core) Discussion on the RRM requirement for Redcap over NTN**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412112**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412112.zip) **Discussion on RRM impacts on Rel-19 NTN phase 3**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Samsung*

**Decision: Noted.**

[**R4-2412234**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412234.zip) **Discussion RRM requirements on NTN for NR phase 3**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discuss NR NTN for Rel-19.

**Decision: Noted.**

[**R4-2412601**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412601.zip) **Consideration on RRM impacts for R19 NR NTN Phase 3**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412672**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412672.zip) **Initial discussion on RRM impacts of R19 NR NTN**

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

**Decision: Noted.**

[**R4-2413042**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413042.zip) **Discussion on RRM requirements for RedCap NTN and regenerative mode**

*Type: discussion For: Discussion  
 Source: ZTECorporation,Sanechips*

**Decision: Noted.**

[**R4-2413188**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413188.zip) **(NR\_NTN\_Ph3-Core) Impact on RRM requirements**

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

**Decision: Noted.**

[**R4-2413231**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413231.zip) **Beam switching delay aspects for DL Coverage Enhancements**

*Type: discussion For: Discussion  
 Source: Inmarsat, Viasat*

**Abstract:**

MCC: This was not made available at tdoc submission deadline.

**Decision: Noted.**

8.25.5 Moderator summary and conclusions

Topic: [112][226] NR\_NTN\_Ph3

[**R4-2411821**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411821.zip) **Topic summary for [112][226] NR\_NTN\_Ph3**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Thursday Aug 22, 2024)**

**Topic #5: Support of regenerative payload**

**Issue 5-1-1: RRM requirements to be defined for regenerative payload**

* Proposals
  + Proposal 1 (CATT, Samsung, Ericsson, QC, ZTE):
    - RAN4 to wait for further progress on regenerative payload-based NTN until the group can get more clarity on the impact of the feature on RRM requirement definition.
  + Proposal 2 (LG):
    - No additional RRM requirements for regenerative payload are required.
  + Proposal 3 (CATT, HW, ZTE):
    - RAN4 need to discuss whether all of existing requirements defined for NR NTN will be defined for regenerative architecture.
      * RAN4 will define specific RRM requirements at least for the parts that effected by regenerative architecture.
      * The existing requirements for NR NTN can be a baseline and it can be revisited based on RAN2 agreements. (HW)
* Recommended WF

*Check the following is agreeable or not.*

* + Recommend agree on:
    - The existing requirements for NR NTN can be a baseline and it can be revisited based on agreements from other groups.

**Issue 5-2-1: Timing requirements for regenerative payload**

* Proposals
  + Proposal 1 (CATT, Apple, ZTE):
    - will be considered as 0 for regenerative mode of NTN.
    - Proposal 1a (Apple, ZTE):
      * RAN4 to clarify common TA = 0 in timing requirement for regenerative mode of NTN.
    - Proposal 1b (CATT):
      * FFS: Due to is defined in TS 38.211, so it may not affect the spec of TS 38.133 in RAN4.
* Recommended WF

*Check the following is agreeable or not, and discuss other proposals.*

* + Recommend agree on:
    - will be considered as 0 for regenerative mode of NTN.
  + To be discussed:
    - Whether to clarify = 0 for timing requirements in TS 38.133 for regenerative mode of NTN ?
      * Option 1: Yes
      * Option 2: No, it may not affect the spec of TS 38.133 in RAN4.

**Topic #6: Support of (e)RedCap UEs with NR FR1-NTN**

**Issue 6-2-1: The general principle for defining the RRM requirements for (e)RedCap UE with FR1-NTN**

* Proposals
  + Proposal 1 (CATT, MTK, Xiaomi, Samsung, HW, vivo, ZTE):
    - A general principle is that to define the RRM requirements for (e)RedCap UE with FR1-NTN bands based on the existing requirements for FR1-NTN.
  + Proposal 2 (Ericsson):
    - RRM requirements for RedCap UE in NTN can be started by taking RedCap UE in TN as baseline.
    - The requirements and enhancements for NR NTN in Rel-17 and Rel-18 shall be introduced for RedCap UE in NTN.
* Recommended WF
  + To be discussed

**Issue 6-2-2: What RRM requirements are defined for (e)RedCap UE with FR1-NTN**

* Proposals
  + Proposal 1 (CATT):
    - The common requirements for both NTN and (e)RedCap UE requirements should be defined for (e)RedCap UE with FR1-NTN bands.
    - For the requirements that have only been defined for NTN, RAN4 needs to discuss whether to define the following FR1-NTN requirements for (e)Redcap:
      * FFS: Minimization of Drive Tests (MDT) in RRC\_IDLE state and RRC\_INACTIVE state
      * FFS: NR Conditional Handover
      * FFS: NR SAN Satellite switching with re-synchronization
      * FFS: Pathloss reference signal switching delay
    - For the requirements that have only been defined for (e)Redcap and has no relevant definition in FR1-NTN, RAN4 will not discuss them under this objective.
    - FR2 related requirements shall not be defined for (e)RedCap UE with FR1-NTN bands.
    - Proposal 1a (ZTE):
      * RAN4 shall decide whether to consider the requirements which are only defined in RedCap UE.
      * RAN4 shall firstly study the shared requirements for RedCap and NTN, then consider whether to define the requirements only defined in NTN scenario or not.
  + Proposal 2 (MTK):
    - RAN4 to revisit the following NR NTN RRM requirements, for the impact from (e)Redcap:
      * IDLE/INACTIVE mode, including SDT
      * CONNECTED Mobility (Handover) and Control
      * Signaling characteristics, including RLM and Link Recovery
      * Measurement Procedure
  + Proposal 3 (CMCC):
    - Consider the mobility between TN and NTN network for Redcap UE.
  + Proposal 4 (Samsung):
    - RAN4 should discuss and specify requirements for RedCap/eRedCap for FR1-NTN including:
      * HO based RACH
      * RACH-less HO
      * Time/location-based CHO with/without L3 measurement
      * Satellite switching with re-sync

to consider 1Rx and NCD-SSB

* + - To support RedCap/eRedCap in FR1-NTN, for RRC Re-establishment/RRC connection Release with re-direction, new requirements should be introduced.
    - For RLM/BFD/CBD requirements, to support RedCap/eRedCap in FR1-NTN.
    - For Scell/PSCell/Interruption etc, no RRM impacts because NTN only supports single carrier.
    - For measurement procedure requirements, to support RedCap/eRedCap in FR1-NTN.
    - For CSI-RS based L3 measurement, to support RedCap/eRedCap in FR1-NTN, no RRM impacts.
    - For L1-RSRP requirements, to support RedCap/eRedCap in FR1-NTN.
  + Proposal 5 (vivo):
    - Determine mobility related, e.g., RACH-less (C)HO, time-based/location cell reselection/CHO, Unchanged PCI are supported
  + Proposal 6 (HW):
    - For RedCap UE operating in NTN, RAN4 to start with the following requirements.
      * Cell reselection
      * Connected mode mobility: HO, RACH, Re-establishment and Re-direction
      * Timing
      * BWP and TCI switching
      * RLM/BFD
      * L1-RSRP and CBD
      * L3 measurement
  + Proposal 7 (ZTE):
    - RAN4 shall consider R17 legacy NR NTN requirements and R18 normal UE mobility requirements with RedCap UE, and VSAT UE above 10GHz shall not be considered.
    - RAN4 shall study feasibility issues when considering to define conditional handover for RedCap UEs in FR1-NTN bands.
    - RAN4 shall define the handover requirements for RedCap UEs in NR NTN scenario.
    - RAN4 shall consider the timing requirements for RedCap UEs in NTN scenario and the legacy NR NTN timing requirements shall be as the baseline.
    - RAN4 shall define the Qout requirements for RedCap UEs in FR1-NTN bands.
    - RAN4 shall define time period of PSS/SSS detection and time index detection.
* Recommended WF

*Discuss start with the following.*

* + To be discussed:
    - P1: FR2 related requirements shall not be defined for (e)RedCap UE with FR1-NTN bands.
    - P2: The common requirements for both NTN and (e)RedCap UE requirements should be defined for (e)RedCap UE with FR1-NTN bands, including the following:
      * Cell Re-selection for RRC\_IDLE state mobility
      * Cell Re-selection for RRC\_INACTIVE state mobility
      * NR Handover
* NR FR1 – NR FR1 Handover (include RACH-based and RACH-less handover)
  + - * RRC Connection Mobility Control
* SA: RRC Re-establishment
* Random access
* SA: RRC Connection Release with Redirection
  + - * Timing
* UE transmit timing
* UE timer accuracy
* Timing advance
  + - * Signalling characteristics
* Radio Link Monitoring
* Link Recovery Procedures
* Active BWP switch delay
* Active TCI state switching delay
* UE-specific CBW change
  + - * Measurement Procedure
* General measurement requirement
* NR intra-frequency measurements
* NR inter-frequency measurements
* L1-RSRP measurements for Reporting
* NR measurements for positioning
  + - P3: For the requirements that have only been defined for NTN, RAN4 needs to discuss whether to define the following FR1-NTN requirements for (e)Redcap:
      * FFS: Minimization of Drive Tests (MDT) in RRC\_IDLE state and RRC\_INACTIVE state
      * FFS: NR Conditional Handover
      * FFS: NR SAN Satellite switching with re-synchronization
      * FFS: Pathloss reference signal switching delay
    - P4: The requirements that have only been defined for (e)Redcap and not been defined for FR1-NTN will not be discussed in this objective, including the following:
      * Configured Grant based Small Data Transmissions (CG-SDT)
      * NR measurements for positioning in RRC\_INACTIVE state
      * Random access based Small Data Transmissions (RA-SDT)
      * NR Handover to other RATs
      * RRC connection release with redirection to E-UTRAN
      * deriveSSB-IndexFromCell tolerance
      * Uplink spatial relation switch delay
      * Inter-RAT measurements
      * PRS-RSRPP measurements
      * NR measurements with autonomous gaps

**Issue 6-3-1: The principle for defining the requirements for 2Rx/1Rx (e)Redcap UE with FR1-NTN**

* Proposals
  + Proposal 1 (CATT, Samsung, ZTE):
    - For RRM requirements, the number of Rx considered for (e)Redcap UE with FR1-NTN bands support both 1Rx and 2Rx.
    - RAN4 should define separate sets of RRM requirements for 1Rx and 2 Rx (e)Redcap UE.
  + Proposal 2 (CATT, Xiaomi, ZTE):
    - For 2Rx (e)RedCap UEs with FR1-NTN: Reuse the existing requirements for NTN as a baseline.
    - For 1Rx (e)RedCap UEs with FR1-NTN: Consider the relaxation on the above requirements for 2Rx UEs.
    - Proposal 2a (CATT):
      * At least the following requirements will be defined separately for 1Rx and 2 Rx UE:

|  |
| --- |
| **SA: RRC\_IDLE/ RRC\_INACTIVE state mobility** |
| * Cell Selection in RRC\_IDLE state * Cell Re-selection in RRC\_IDLE/ RRC\_INACTIVE state |
| **SA: RRC\_CONNECTED state mobility** |
| * NR Handover   + NR FR1 - NR FR1 Handover * RRC Connection Mobility Control   + SA: RRC Re-establishment   + Random access   + SA: RRC Connection Release with Redirection |
| **Signalling characteristics** |
| * Radio Link Monitoring * Link Recovery Procedures |
| **Measurement Procedure** |
| * NR intra-frequency measurements * NR inter-frequency measurements * L1-RSRP measurements for Reporting * NR measurements for positioning |

* + Proposal 3 (LG):
    - For 2Rx RedCap UE: Reuse the principle from legacy FR1 NTN RRM requirements
    - For 1Rx RedCap UE: Add new NTN RRM requirements should be defined, and the requirements could be based on 1Rx RedCap UE RRM requirements.
  + Proposal 4 (ZTE):
    - 2Rx redcap UE measurement capability in NTN shall be same as normal UE in legacy TN.
    - 1Rx RedCap UE measurement capability in NTN shall be the same as legacy RedCap 1Rx UE.
    - The cell re-selection inter-frequency and inter-RAT measurement requirements in legacy NTN can be reused for 2Rx and 1Rx RedCap UEs considering TN to NTN and NTN to TN.
    - The cell re-selection intra-frequency and inter-frequency measurement requirements in legacy NTN can be reused for 2Rx and 1Rx RedCap UEs considering NTN to NTN cell re-selection.
    - RAN4 shall define time period of PSS/SSS detection and time index detection. The requirements for 1Rx and 2Rx RedCap UE shall reuse the legacy RedCap requirements.
    - The RedCap UEs with 1Rx and 2Rx in NTN shall own the same measurement period requirements as legacy RedCap UE.
* Recommended WF

*Check Proposal 1 is agreeable or not, and discuss the other proposals.*

* + Recommend agree on:
    - For RRM requirements, the number of Rx considered for (e)Redcap UE with FR1-NTN bands support include both 1Rx and 2Rx.
    - RAN4 should define separate sets of RRM requirements for 1Rx and 2 Rx (e)Redcap UE.
  + To be discussed:
    - For 2Rx (e)RedCap UEs with FR1-NTN: Reuse the existing requirements for NTN as a baseline.
    - For 1Rx (e)RedCap UEs with FR1-NTN: Consider the relaxation on the above requirements for 2Rx UEs.
      * At least the following requirements will be defined separately for 1Rx and 2 Rx UE:
* Cell Selection in RRC\_IDLE state
* Cell Re-selection in RRC\_IDLE/ RRC\_INACTIVE state
* NR Handover
* RRC Connection Mobility Control

- SA: RRC Re-establishment

- Random access

- SA: RRC Connection Release with Redirection

* Signalling characteristics

- Radio Link Monitoring

- Link Recovery Procedures

* Measurement Procedure

- NR intra-frequency measurements

- NR inter-frequency measurements

- L1-RSRP measurements for Reporting

- NR measurements for positioning

**Issue 6-4-1: The specific impact of HD-FDD for (e)Redcap UE with FR1-NTN**

* Proposals
  + Proposal 1 (CATT, Xiaomi, ZTE):
    - RAN4 need to consider the impact of HD-FDD, and to check whether existing HD-FDD applicable conditions can be reused after RAN1 reaching further conclusions.
    - Proposal 1a (CATT): RAN4 need to consider the impact of HD-FDD, and the following RRM requirements will be affected by HD-FDD for (e)RedCap UE with FR1-NTN bands:
      * Paging reception requirements in RRC\_IDLE/ RRC\_INACTIVE state
      * Handover interruption time
      * Random access
      * SA: RRC Connection Release with Redirection
      * Minimum requirement for L1 indication for RLM and LR
      * MAC-CE/DCI/RRC based uplink spatial relation switch delay
      * Scheduling availability of UE performing intra/inter measurements
      * Scheduling availability of UE during L1-RSRP measurement
    - Proposal 1b (ZTE):
      * The legacy requirements and applicable conditions can be as baseline for defining requirements of RedCap UE in NTN scenario.
  + Proposal 2 (Ericsson):
    - RedCap and eRedCap UE are less capable devices, by definition and we prefer not to add a more detailed total TA-report at this stage and instead focus on adding a fixed rule in specification, in RAN1, in order to to handle HD-FDD (e)RedCap collision cases in NTN for collision cases 3 & 4.
  + Proposal 3 (LG, QC):
    - For HD-FDD, RAN4 needs to check whether the outcome from RAN1 is affect RRM requirements.
    - Proposal 3a: RAN4 to wait for further RAN1 process on the enhancements for HD RedCap and eRedCap Ues which may potentially impact on the following aspects:
      * Additional latencies, Scheduling/Measurement restrictions, etc. due to DL/UL collisions.
* Recommended WF

*Check the following are agreeable or not.*

* + Recommend agree on:
    - RAN4 need to consider the impact of HD-FDD for (e)Redcap UE with FR1-NTN.
      * The legacy HD-FDD related requirements and applicable conditions defined for (e)RedCap UE can be as a baseline.
    - RAN4 to wait for further RAN1 process on mitigating issues caused by TA mismatch between actual TA used by the UE and assumed TA for the UE at the gNB for HD-FDD (e)RedCap UEs, and check whether the conclusions will further affect RRM requirements.

**Issue 6-5-1: How to consider the impact of eDRX enhancement for (e)Redcap UE with FR1-NTN?**

* Proposals
  + Proposal 1 (CATT, CMCC, Samsung):
    - The eDRX enhancement introduced for (e)RedCap UEs should be considered when defining RRC\_IDLE or/and RRC\_INACTIVE state mobility requirements for (e)RedCap UEs with FR1-NTN bands.
    - Proposal 1a (CATT): RAN4 need to discuss whether the eDRX enhancement for both Rel-17 RedCap and Rel-18 eRedCap UEs should be introduced for (e)RedCap UEs with FR1-NTN bands.
      * Option 1: Only introduce the eDRX enhancement for Rel-17 RedCap UEs.
      * Option 2: Introduce the eDRX enhancement for both Rel-17 RedCap and Rel-18 eRedCap UEs.
    - Proposal 1b (CMCC): Support eDRX configuration for Redcap over NTN, and define following applicability rule for each deployment scenario:
      * For GEO deployment, all DRX and eDRX cycle can be supported.
      * For earth-fixed LEO deployment, requirements are applicable for up to 10.24s eDRX cycle
      * For earth-moving LEO deployment, requirements are not applicable for eDRX cycle
    - Proposal 1c (Samsung):
      * RAN4 to discuss and specify the requirements related to eDRX for GSO and NGSO (LEO) separately. Not all eDRX cycle can be applicable for NGSO (LEO) scenario.
    - Proposal 1d (QC): For eRedCap UE, RAN4 can consider the following aspect for RRM requirement definition if necessary and applicable for NR NTN support.
      * Enhanced eDRX in RRC INACTIVE
  + Proposal 2 (LG):
    - For NTN RRM requirements for RedCap UE,
      * For IDLE/INACTIVE mode: Preclude eDRX\_IDLE cycle configuration for RedCap NTN
* Recommended WF

*Check Proposal 1 is agreeable or not, and discuss the detail start with Proposal 1b/1c.*

* + Recommend agree on:
    - The eDRX enhancement introduced for (e)RedCap UEs should be considered when defining RRC\_IDLE or/and RRC\_INACTIVE state mobility requirements for (e)RedCap UEs with FR1-NTN bands.
  + To be discussed.

**Issue 6-6-1: The impact of NCD-SSB for (e)RedCap UEs with FR1-NTN**

* Proposals
  + Proposal 1 (Apple):
    - For NCD-SSB, the legacy RedCap/eRedCap requirement can be used as baseline for R19 NTN.
  + Proposal 2 (CMCC, QC):
    - For Redcap over NTN, no need to define NCD-SSB specific measurement requirements.
* Recommended WF
  + To be discussed

**Issue 6-7-1: The impact of bandwidth reduction for (e)Redcap UE with FR1-NTN**

* Proposals
  + Proposal 1 (CATT):
    - RAN4 needs to discuss whether to consider the specific RRM requirements when the RedCap specific initial BWP is configured in NTN network.
  + Proposal 2 (QC):
    - Unless NCD-SSB based RedCap support is justified in NR NTN, RAN4 to not discuss the following aspects which were considered in RedCap due to limited UE BW up to 20MHz.
      * Measurements with NCD-SSB
      * BWP specific serving cell MO
      * RedCap specific initial UL/DL BWP

Recommended WF

* + To be discussed:
    - Whether to consider the following aspects which were considered in RedCap due to limited UE BW up to 20MHz?
      * Measurements with NCD-SSB
      * BWP specific serving cell MO
      * RedCap specific initial UL/DL BWP

**Issue 6-8-1: Specification structure for (e)Redcap UE with FR1-NTN**

* Proposals
  + Proposal 1 (CATT, CMCC):
    - Use the following principles to define the RRM requirements for (e)RedCap UEs with FR1-NTN bands:
      * Define them in the new sections of section number with new suffix X in the specification.
      * Utilize the reference method for the requirements that can be reused.
  + Proposal 2 (CMCC):
    - Slightly prefer to introduce the Redcap over NTN requirements in new subsections in TS 38.133 or new subclauses in current NTN section.
* Recommended WF

*Check Proposal 1 is agreeable or not.*

* + Recommend agree on:
    - Use the following principles to define the RRM requirements for (e)RedCap UEs with FR1-NTN bands:
      * Define them in the new sections of section number with new suffix X in the specification.
      * Utilize the reference method for the requirements that can be reused.

8.26 Non-Terrestrial Networks (NTN) for Internet of Things (IoT) Phase 3

8.26.3 RRM core requirements

[**R4-2411472**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411472.zip) **Discussion on RRM requirements for IoT NTN phase 3**

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

**Decision: Noted.**

[**R4-2411619**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411619.zip) **Initial discussion on RRM core requirements in NTN for IoT Phase 3**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

[**R4-2411764**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411764.zip) **(IoT\_NTN\_Ph3-Core) Discussion on LS from RAN2 of Msg3 transmission timing**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

[**R4-2412207**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412207.zip) **Discussion on RRM impacts for R19 IoT NTN**

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

**Decision: Noted.**

[**R4-2412232**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412232.zip) **Discussion on RRM requirements on Non-Terrestrial Networks (NTN) for Internet of Things (IoT) Phase 3**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discuss IoT NTN for Rel-19.

**Decision: Noted.**

[**R4-2412233**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412233.zip) **Rreply LS to RAN2 on UL synchronization for contention based Msg3 transmission without Msg1/Msg2**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: Ericsson*

**Abstract:**

Discuss a LS from RAN2. MCC: This is discussion paper on reply LS to RAN2 on UL synchronization for contention based Msg3 transmission without Msg1/Msg2. There is a draft LS reply in the appendix. A formal LS out would be required as draft LS is in the appendix.

**Decision:** The document was **not treated**.

[**R4-2412602**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412602.zip) **Consideration on RRM impacts for R19 IoT NTN Phase 3**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

[**R4-2412603**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412603.zip) **Reply LS on UL synchronization for contention based Msg3 transmission without Msg1/Msg2**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: vivo*

**Abstract:**

MCC: This was changed to LS out since it is a formal LS out.

**Decision:** The document was **not treated**.

[**R4-2412865**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412865.zip) **Reply to RAN2 LS on contention based Msg3 transmission**

*Type: discussion For: Discussion  
 Source: Nokia*

**Abstract:**

MCC: This paper discusses whether it is possible for a UE in IDLE mode to skip MSG1 in the RACH procedure and still obtain timing synchronization before MSG3 and provides Nokia views on the request posed by RAN2 and suggest it to the LS Reply.

**Decision: Noted.**

[**R4-2413187**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413187.zip) **(IoT\_NTN\_Ph3-Core) Impact on RRM requirements and response to RAN2 LS**

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

**Decision: Noted.**

8.26.4 Moderator summary and conclusions

Topic: [112][227] IoT\_NTN\_Ph3

[**R4-2411822**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411822.zip) **Topic summary for [112][227] IoT\_NTN\_Ph3**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Thursday Aug 22, 2024)**

**Issue 1-2-1: Reply LS**

Background: RAN2 LS R2-2405769

**1. Overall Description:**

In RAN2#126 meeting, the following agreements related to Msg3 transmission for uplink capacity enhancement for R19 IoT NTN have been achieved:

|  |
| --- |
| Agreements:  => RAN2 focusses the study on contention-based Msg3 transmission to complete an EDT-like transaction (FFS on the details of Msg3. FFS on the procedural steps, e.g. how much we reuse of EDT and PUR procedures. FFS on allocation of resources).  => If an IoT NTN UE in IDLE state is to use the new R19 contention-based procedure, the UE needs to verify/update the uplink synchronization (e.g. get GNSS fix, acquire TA) just before sending msg3. |

Based on the above agreements, RAN2 kindly asks RAN4 and RAN1:

Q1: Whether an RRC Idle UE with a pre-compensated TA (i.e., the one used for Msg1 transmission during random access for IoT NTN) can satisfy the required timing accuracy for Msg3 transmission without Msg1/Msg2?

Q2: If the answer for Q1 is no, from RAN4 and RAN1 perspective, how the required timing accuracy for Msg3 transmission can be satisfied in this case?

Proposals:

* Proposal 1a (Xiaomi): An RRC Idle UE with a pre-compensated TA can satisfy the required timing accuracy for Msg3 transmission without Msg1/Msg2 if SIB31 is acquired before the transmission.
* Proposal 1b (MTK): with the valid and applicable parameters such as ephemeris information, common TA, UE can maintain uplink synchronization by updating pre-compensated TA for the Msg3 transmission without Msg1/Msg2.
* Proposal 1c (Huawei): For Msg3 transmission without Msg1/Msg2, from RAN4 perspective in terms of UE UL transmit timing error requirements, UE shall meet same timing error requirements as defined for IoT NTN, where the reference point is the downlink timing of the serving NB-IoT cell minus , and  is assumed as 0 if there is no further RAN1/2 agreements.
* Proposal 1d (vivo):
  + From UE perspective, RAN4 to confirm that an RRC Idle UE with a pre-compensated TA (i.e., the one used for Msg1 transmission during legacy random access) can satisfy the requirement on UE transmit timing for NB-IoT for Satellite Access specified in section 7.20A in TS36.133 for Msg3 transmission without Msg1/Msg2
  + Proposal 2: From network perspective, the reception timing accuracy for Msg3 transmission may be different for the cases with and without Msg1/Msg2. It is expected that this timing difference should be handled by network implementation
* Proposal 1e (Qualcomm): RAN4 to reply to the question from RAN2 that a UE meeting the current timing requirements in TS 36.133 should be able to successfully transmit contention-based Msg3 without Msg1/Msg2.
* Proposal 2a (Ericsson): Reply to Q1 as follows:
  + For NB-IoT with 3.75 kHz SCS and for LTE-MTC, CE mode A, the existing timing requirements (i.e., initial transmission timing error) can satisfy the required timing accuracy for Msg3 transmission without Msg1/Msg2.
  + For NB-IoT with 15 kHz SCS and for LTE-MTC CE mode B with max (245 ns) channel dispersion, the existing timing requirements (i.e., initial transmission timing error) cannot satisfy the required timing accuracy for Msg3 transmission without Msg1/Msg2.
* Proposal 2b (Nokia): Reply to RAN2 that it is not possible to initiate a NPUSCH transmission that satisfy timing requirements at the receiver with non-initiated network-controlled part of the timing advance.
* Proposal 3 (CMCC):
  + For NB-IoT, further study the performance degradation caused by ISI is tolerable or not, and if not, following methods can be considered:
    - 1. For contention-based Msg3 transmission to complete an EDT-like transaction, use ECP by default
    - 2. Define enhanced UL transmit timing requirement assuming UE can perform FFT with larger size.
  + For eMTC over NTN contention-based Msg3 transmission to complete an EDT-like transaction, the required timing accuracy can be satisfied.

Moderator’s Note:

* The timing accuracy requirement (as in 7.20A.2/NB-IoT, 7.24A.2/eMTC) has covered PUR/PUSCH.

7.20A.2 Requirements

The UE initial transmission timing error shall be less than or equal to ±Te where the timing error limit value Te is specified in Table 7.20A.2-1. This requirement applies when it is the first transmission in a DRX cycle or the first transmission in a repetition period (R>1) for NPUSCH and NPRACH, the first transmission after an uplink transmission gap in a repetition period (R>1) for NPUSCH and NPRACH transmission, or it is the transmission on PUR. The reference point for the UE initial transmit timing control requirement shall be the downlink timing of the serving NB-IoT cell minus .

* Note that the UE transmit timing accuracy requirement was 80\*Ts for TN NB-IoT with 15 kHz SCS (since Rel-13) and it is 97\*Ts for NTN.
* Regarding the value of , it is recommended to defer the discussion to RAN1/RAN2. There seems to be no impact on the performance regarding the UE timing accuracy.

Recommended WF:

* For a IoT NTN UE that meets the existing UE transmit timing requirement in TS 36.133 should be able to maintain uplink synchronization for the Msg3 transmission without Msg1/Msg2.
* At least for NB-IoT with 3.75 kHz SCS and for LTE-MTC CE mode A.
* Further discuss the following cases during the meeting
  + NB-IoT with 15 kHz SCS and
  + LTE-MTC CE mode B
* The determination of the value NTA\_Ref is left for RAN1/2 discussion.

Q1: Whether an RRC Idle UE with a pre-compensated TA (i.e., the one used for Msg1 transmission during random access for IoT NTN) can satisfy the required timing accuracy for Msg3 transmission without Msg1/Msg2?

Q2: If the answer for Q1 is no, from RAN4 and RAN1 perspective, how the required timing accuracy for Msg3 transmission can be satisfied in this case?

HW: this is only NB-IoT NTN, not include MTC.

MTK: MTC is also in the scope.

QC: the discussion in other WG also cover MTC.

HW: Without demodulation simulation, we cannot say half CP is the correct criteria. The question from other WG talks only about timing requirement.

ZTE: Half CP criteria need to be considered.

E///: Focus on Te requirement asked by other WG.

QC: Already have requirement PUR without Msg1/2, which is already more than CP/2.

CMCC: “Required timing accuracy” is half CP in our understanding.

CMCC: For MTC, we don’t agree Te is larger than CP/2. It depends on the propagation delay.

QC: the required timing accuracy is the Te. How does the CP/2 come from? What’s the performance impact of more than CP/2. The performance degradation is very small.

Option A (CMCC, ZTE, E///, Nokia)

* UE can meet UL transmit timing error requirements defined for IoT NTN in TS 36.133.
* In addition, the UE UL transmit timing error is within CP/2 for NB-IoT with 3.75 kHz SCS and for LTE-MTC, and the UE UL transmit timing error can be larger than CP/2 for NB-IoT with 15 kHz SCS.

Option B (QC, HW, vivo Apple, Xiaomi, MTK)

* UE can meet UL transmit timing error requirements defined for IoT NTN in TS 36.133.

Q1: Whether an RRC Idle UE with a pre-compensated TA (i.e., the one used for Msg1 transmission during random access for IoT NTN) can satisfy the required timing accuracy for Msg3 transmission without Msg1/Msg2?

Session Chair proposal:

* UE can meet UL transmit timing error requirements defined for IoT NTN in TS 36.133.
* In addition, the UE UL transmit timing error is within CP/2 for NB-IoT with 3.75 kHz SCS and for LTE-MTC, and the UE UL transmit timing error can be larger than CP/2 for NB-IoT with 15 kHz SCS.
* Capture the above agreements for reply LS.

**Issue 1-1-2: RRM impact from other objectives**

Background: The latest WID RP-241624

* Support of Store&Forward (S&F) satellite operation with full eNB as regenerative payload, therefore:
  + Define the necessary enhancements into E-UTRAN (network & UE) to support S&F operation for delay-tolerant services [RAN3, RAN2]
    - At least specify necessary enhancements e.g. related to S1 protocol, especially to address the feeder link switch over as needed [RAN3]

Note: Strive to minimise UE impact.

Note: Coordination with SA2 (Rel-19 SA2 led Sat-Arch ph3 SI) is needed on the detail requirements (e.g. traffic type, or QoS parameters for S&F), network architecture (e.g. whether consider (partial) core network on satellite) etc.; further coordination with CT1 might be required

* Support of Capacity enhancements for uplink  
  + Study then specify, if beneficial, enhancements to enable multiplexing of multiple UEs (e.g. up to the min of 4 and the maximum allowed by the existing UL and DL signalling) in a single 3.75 kHz or 15 kHz subcarrier via orthogonal cover codes (OCC) for NPUSCH format 1 and NPRACH [RAN1, RAN2, RAN4]
    - Multi-tone support for 15 kHz SCS should also be considered
    - Specify necessary signalling, if needed
    - Update RF requirements accordingly, if needed

Note: Impact of impairment shall be taken into account

* + Study and specify, if beneficial the following enhancements to reduce the necessary uplink and downlink signaling to complete an Early Data Transmission (EDT) transaction [RAN2]:
    - Msg3 transmission without msg1/ Random Access Response (RAR)
    - Efficient delivery (reduced overhead) of msg4 / RRCEarlyDataComplete
    - Study and specify RRM requirement, if identified [RAN4]

Proposals:

* Proposal 1 (Huawei): The work scope of RRM for Rel-19 IoT NTN is to discuss whether and how to define timing requirements for Msg3 transmission without msg1/ Random Access Response (RAR).
* [Proposal 2 (Xiaomi): RAN4 to wait for more progress on the OCC enhancements in RAN1 to see if there is RRM impact.](file:///C:\\Users\\mtk12330\\Desktop\\2402%20R4_110_Local\\%5b203%5d%5b202%5d%5b224%5d%5b233%5d%5bNTN%20evo%5d\\%5bM233%5d%20R18%20IoT%20NTN%20enh%20-%20Disc1ok\\TDoc%20-%20Core%20Disc\\R4-2402699%20Discussion%20on%20mobility%20requirements%20for%20IoT%20NTN%20enhancements.docx" \l "_Toc159273392)
* Proposal 3a (Ericsson): Regarding S&F, RAN4 to monitor and wait for more concrete agreements in other WGs before determining impact to RRM requirements.
  + In the contribution: From RRM perspective, the S&F operation may define plenty of time instants for indicating starting or ending of the S&F operation, the UE may potentially update measurement behavior/limitation accordingly.
* [Proposal 3b (Qualcom): RAN4 to postpone the discussion on the topic of Store&Forward satellite operation until the group can get more clarity on the impact of the topic on RRM requirements.](file:///C:\Users\mtk12330\Desktop\2402%20R4_110_Local\%5b203%5d%5b202%5d%5b224%5d%5b233%5d%5bNTN%20evo%5d\%5bM233%5d%20R18%20IoT%20NTN%20enh%20-%20Disc1ok\TDoc%20-%20Core%20Disc\R4-2402699%20Discussion%20on%20mobility%20requirements%20for%20IoT%20NTN%20enhancements.docx#_Toc159273392)

Moderator’s Note: According to the latest WID, RRM are not included in the objective of the support of Store&Forward (S&F) and OCC code.

Recommended WF:

* The work scope of RRM for Rel-19 IoT NTN is to discuss whether and how to define timing requirements for Msg3 transmission without msg1/ Random Access Response (RAR).
* Note: It can be revisited if the RRM impact from other objectives has been identified.

9 Liaison output to other groups and related issues

The following guidance are provided for maintenance work under AI 4 ~ AI 5:

‒ For maintenance agenda AI 4 (Rel-15/16/17) and AI 5 (Rel-18), formal CRs are expected and multiple 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 5.2, AI 5.34, 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 draft CR with TEI as WI code, please inform session chair.

‒ For all the endorsed draft CRs in this bis meeting, please re-submit them in the next ordinary meeting.

‒ The contributions corresponding to incoming LS for Rel-15/16/17 are expected to be submitted in AI 9.

‒ The contributions corresponding to incoming LS for Rel-18/19 are expected to be submitted to (sub-) agenda dedicated to the individual WIs. If there is no dedicated agenda, please submit to AI 5.2 or AI 5.34 depending on whether it is spectrum related topic or non-spectrum related topic.

9.3 Moderator summary and conclusions

[**R4-2411823**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411823.zip) **Topic summary for [112][228] Reply\_LS**

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

**Abstract:**

Topic summary in RRM session.

MCC: This was shown as not used in the session chair moderator list.

**Decision:** The document was **Withdrawn**.

10 RAN task and other topics

10.1 Specification quality improvement (RP-240782)

It is expected to focus on identifying the key issues. No CR or draft CR is expected for TS 38.101-1/-2/-3. The draft CR for TS 38.133 can be submitted according to the work split for offline discussion only. No need to propose an SI to capture the agreements.

Topic: [112][229] RRM\_Spec\_Improvement

[**R4-2411824**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411824.zip) **Topic summary for [112][229] RRM\_Spec\_Improvement**

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

**Abstract:**

Topic summary in RRM session

**Decision: Noted.**

**Online session (Thursday Aug 22, 2024)**

RAN4 Chair:

* For CRs submitted to Q4 meetings, use WI code of “TEI18” and Category of “B”. For CRs submitted in 2025, use WI code of “TEI18” and Category of “F or D”.
* Companies are encouraged to carefully review the CRs, and cross checking can be arranged if needed.

Moderator: with 5G timeframe, not touch the complicated technical discussion, but focus on the editorial aspect. Agreeing the CRs based on the work plan is already a big achievement for this work.

**Topic #1: Identified Issues in RAN4#111**

* **References or mapping tables in the core part requirements that point to the relevant test cases from Rel-19**
  + Huawei: If new mapping approach is needed, whether the new mapping is captured as part of the requirements, or maintained in a separate clause (e.g. Annex), or even separately from the spec.
  + Ericsson:
    - It is clarified (in the specification) that the mapping is for information purpose only and presents the information from the test cases description in a more compact and structured way.
    - Given the informative purpose of the mapping and its potential length, including such mapping in a new Annex D (informative) of TS 38.133 may be preferred.
    - *The mapping can be in a table format and contain, e.g., <requirement clause ID><test case clause IDs> columns. If needed, the column <test case clause IDs> can be further broken into sub-columns, e.g., for SA, EN-DC, and NE-DC.*
    - *The mapping can focus on core requirements and corresponding test cases, but potentially may also be extended to performance requirements and corresponding test cases.*
    - *Upon each test case introduction, the mapping can be updated with the corresponding reference*

Moderator: How we prioritize this one? Important or nice to have?

Nokia: It is one way to improve the spec.

MTK: Huge work if we want to do from Rel-15. Start from Rel-19.

HW: Not have clear understanding on how to do it. The principle/reference is needed.

CATT: If start from Rel-19 features. This would cause misalignment between R19 feature and legacy features.

E///: We have detailed proposal. It might be useful, not only now, but also for the future. It is in informative section. Potentially this will trigger additional work to us. We firstly consider this for new features.

QC: Currently it is clear which test cases corresponding to which core requirements. To have one separate section on the mapping, but not under the core requirement. Start from one clause for the mapping.

China Telecom: Start from Rel-19 to control the workload.

Xiaomi: Discuss whether to have the mapping table. Start from the new feature.

Agreement: Deprioritized. Meanwhile, interested companies can bring examples on how to implement.

* **Hierarchy of indent (Target release/section, approach)**
  + China Telecom: No-use of indentation and instead using **pseudo-code** **for the CRs of at least one Rel-19 WI**. The use of indentation may bring confusion or reduce the readability in some cases
  + Qualcomm: RAN4 should **select a few example sections of TS 38.133** and try to improve readability by **proper indentation** and restructuring of the existing text.
  + Nokia: RAN4 should **correct indentation errors**, which are present many places in the current specification, at least in some of the sections. RAN4 should start using **similar numbering approach as in RAN2** when **defining Rel-19 requirements**, where possible.
  + Huawei: Hierarchy of indent is supposed to be used to describe split cases and sub-cases of a requirement. Hierarchy of indent is supposed to be used to describe parameters of requirements. **Setup drafting rule for formats and bullet** marks for different indentation levels
  + LGE: RAN4 to make a principle of this issue and address it **in Rel-19 specification** instead of Rel-18 specification change

vivo: this is important. Ran2 approach might not be good for Ran4. We can discuss some potential options and provide examples.

Xiaomi: Also think it is important. RAN2 approach can be taken as one option. Consider to develop a tool to implement this.

LGE: It is important. RAN2 approach can be taken as one option. We can do it for Rel-19.

QC: All these proposals are similar. Pick some examples first (either the existing requirement or Rel-19 requirement), and see how it looks like. For Rel-19, does it mean Rel-19 feature or Rel-19 spec? We prefer to do it for the existing features.

MTK: This is important.

QC: the new feature impacts the existing requirement.

Moderator: after we agree with this direction, we need the contribution from all interested companies. Huge workload.

* + Target section/feature:
    - Option 1: one or multiple Rel-19 new features.
    - Option 2: one or multiple sections, including the legacy and Rel-19 new features
    - Option 3: one specific example, e.g., section x.x.x.x

Agreement:

* RAN4 to discuss the potential improvement of Hierarchy of indent
  + Target release: Rel-19 specification
  + Target section/feature: one specific example, i.e., one sub-section
    - Option 1 (preferred): select one example during the meeting.
    - Option 2: Each interested company can pick one example.
  + Approach
    - Option 1: RAN2 pseudo-code
    - Other options, which can be reflected in the example provide by each interested company.
* **Suffix alignment**
  + China Telecom: Suffix misalignment does not cause any confusion as long as the sub-clause title is clear. RAN4 to discuss the need of aligning the suffix for R19 new features.
  + Huawei: If heading of some clauses are changed, the existing references in the spec needs to be investigated
  + LGE: RAN4 to make a principle of this issue and address it in Rel-19 specification instead of Rel-18 specification change

QC: does it conflict with the drafting rule.

Apple: The proponent can bring a example, then we can discuss in more details.

Agreement: Deprioritized.

* **Unused test configurations**
  + LGE: RAN4 to make a principle of this issue and address it in Rel-19 specification instead of Rel-18 specification change

Agreement: Deprioritized.

* **Undefined abbreviations**
  + Ericsson: RAN4 to review the used but undefined abbreviations and update clause 3.3 of TS 38.133 upon the need, e.g., for the following cases:
    - “PRB” or “RB”: both are used, choose one of them? None of them is in Abbreviation of TS 38.133,
    - “BW”: used, but not in the Abbreviation section in TS 383.133,
    - “TRS”: is used but not defined in Abbreviations section in TS 38.133.
* **Duplicated requirements**
  + China Telecom
    - For core requirement, align the rule of adding similar requirements, e.g., add new sub-clause or update the existing sub-clause.
    - For performance requirement, e.g., use differential approach (baseline + delta) or specify separate test configurations for different test cases.
  + Nokia: RAN4 to remove duplicated requirements and move and capture those in one existing section. This section can then be referred to from where those requirements are currently (initially) defined. Any additional feature specific requirements or difference to the baseline requirements can be kept/addressed in the current sections.
  + Huawei: The changes need to be reviewed carefully to avoid any technical change
  + Ericsson:
    - For situations where similar text needs to be repeated across multiple sections (or specifications), the general text could firstly be agreed as a reference and then used across different sections/CRs/specifications to improve consistency.
    - Any medium- or large-scale changes, including restructuring, to the existing NR requirements shall be avoided.
    - Any non-editorial changes to the existing NR requirements shall be avoided, unless really necessary for completeness of the specification or requested by RAN5, e.g., test cases clean up.
  + LGE: RAN4 to make a principle of this issue and address it in Rel-19 specification instead of Rel-18 specification change

Apple: We provided the background why there are duplications in the first meeting of this discussion. Whether the duplication causes any confusion. If the spec is clear, low priority for this work.

vivo: The duplication is the best decision for the previous discussion. There are new situations in the recent release.

HW: Firstly to identify which duplication cause any confusion.

CATT: We should careful about the duplicated issue.

Agreement:

* Duplicated requirements: deprioritized.
* **Modal verbs**
  + RAN4 to review the use of modal verbs in normative text in requirements and make corrections as needed (Ericsson)
  + LGE: RAN4 to make a principle of this issue and address it in Rel-19 specification instead of Rel-18 specification change

Agreement: deprioritized.

**Topic #2: On CR**

*Moderator: since we have agreed in RAN#111 to continue big CR approach, the proposals beyond this approach will be deprioritized*

* Rapporteur or Moderator can prepare a table for mapping the requirements of a WI to the specific clauses in the spec (Huawei)
* Assign multiple editors for cross-check (China Telecom)
* WI Rapporteurs present a CR implementation plan (e.g., similar to the workplan, but focused on CR handling for the WI), discuss, and get it approved. (Ericsson)
* Reference draftCR (China Telecom, Huawei)
* Early start on CR discussion (e.g. >2 meeting cycles) (Huawei)
* A big maintenance CR running over the first quarter after closing the core WI. Allocate separate AI/TU(Ericsson)
* RAN4 to trial the running Draft BigCR process in some selected Rel-19 work items.

Moderator: stick to the previous agreement.

QC: Running CR and big CR are not exclusive.

**Topic #3: New Proposals**

*Moderator: to maintain the efficiency and reasonable workload, the proposals beyond the list of identified issues can be discussed after the idenfied issue is resolved. Exceptional case can be considered based on the consensus.*

* Nokia: During the Rel-19 specification clean up, parameters and formulas that are included in the specification as figures should be modified into text format or formulas.
* Qualcomm: RAN4 to develop guidelines for drafting requirements with complex logic, including adopting a pseudo-code approach (e.g. similar to the way RAN2 procedures are specified). RAN4 should develop guidelines how parameters are defined in TS 38.133. RAN4 should select a few example sections of TS 38.133 and try to improve readability by proper indentation and restructuring of the existing text.
* Ericsson: Creating a checkbox list of key specification editing aspects to remember and check while preparing CRs and/or extend the Forword section of the specification to ensure consistent usage of frequently used terms, notation, abbreviation, CA configuration vocabulary, etc.
* Ericsson: Creating a 3GPP repository of figure templates, editable diagrams, and formulae. The link with templates could be included in the checkbox list described in Proposal 5.
* Ericsson: Inform RAN5 by sending an LS to RAN5 listing the relevant RAN4 CRs agreed during this RAN4 framework on RRM specification quality improvement.

10.1.2 RRM specification TS 38.133

10.1.2.1 Specification improvement in R19 timeframe

[**R4-2411047**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411047.zip) **DraftCR 38.133 Editorial corrections to sections 7 and 8**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: D (Rel-18)  
  
 Source: BeammWave*

**Abstract:**

At RAN4#111 it was agreed that editorial corrections aiming at improving the specification quality were to be identified and proposed to RAN4#112 according to a work split, as specified in [R4-2410715](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2410715.zip). This DraftCR covers editorial corrections for sections 7 and 8.

**Decision: Return to.**

[**R4-2411475**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411475.zip) **Views on RRM specification improvement in R19 timeframe**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Abstract:**

The contribution presented China Telecom views on RRM specification improvement in R19 timeframe, and made the following proposals:

- Observation 1: In the last meeting, RAN4 has reached good progress on the RRM specification improvements to be implemented for the up to Rel-18 legacy features.

- Proposal 1: RAN4 to further discuss the potential RRM specification improvements for Rel-19 new features, which can be implemented in the CRs for one, multiple or all Rel-19 WIs.

- Observation 2: The use of indentation may bring confusion or reduce the readability in some cases.

- Proposal 2: No-use of indentation and instead using pseudo-code for the CRs of at least one Rel-19 WI.

- Observation 3: Suffix misalignment does not cause any confusion as long as the sub-clause title is clear.

- Proposal 3: RAN4 to discuss the need of aligning the suffix for R19 new features.

- Proposal 4: For R19 new features, align the drafting rule at least for different requirements under the same WI:

- For core requirement, align the rule of adding similar requirements, e.g., add new sub-clause or update the existing sub-clause.

- For performance requirement, e.g., use differential approach (baseline + delta) or specify separate test configurations for different test cases.

**Decision: Noted.**

[**R4-2411689**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411689.zip) **Discussion on specification quality improvement for TS38.133**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

[**R4-2411690**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411690.zip) **Draft CR on specification quality improvement for clause A.4 in TS38.133**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: LG Electronics Inc.*

**Decision: Return to.**

[**R4-2411785**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411785.zip) **On improvements of Rel-19 RRM specifications**

*Type: discussion For: Discussion  
 Source: Qualcomm Technologies Ireland*

**Abstract:**

In this contribution we provide our views and additional proposals to improve the quality of the RRM spec.

**Decision: Noted.**

[**R4-2411969**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411969.zip) **Specification improvements in R19 timeframe**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Nokia*

**Decision: Noted.**

[**R4-2411971**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411971.zip) **DraftCR Section 9 specification quality improvement**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: (Rel-19)  
  
 Source: Nokia*

**Decision: Return to.**

[**R4-2412673**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412673.zip) **On other issues for RRM specification quality improvement**

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

**Decision: Noted.**

[**R4-2413394**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413394.zip) **On RRM specification quality improvement – general aspects**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On RRM specification quality improvement – general aspects

**Decision: Noted.**

10.1.2.2 CR handling

[**R4-2411474**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411474.zip) **Further details on RRM Big CR approach**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

[**R4-2411970**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2411970.zip) **Specification improvements on CR handling**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-19)  
  
 Source: Nokia*

**Abstract:**

In this paper Nokia gave views on how to progress on CR handling improvements which can be addressed in Rel-19 timeframe, accounting the discussions and proposals on the table.

The following Observations and Proposals were made:

- Observation 1: Utilizing a running CR process can in general help RAN4 specification quality by allowing draft CRs to be available earlier and allowing all companies more time to review the changes.

- Observation 2: Utilizing a running CR process can help RAN4 improve the quality of new requirements developed in a WI by allowing companies to review the needed requirements and spot any missing ones as early as possible.

- Proposal 1: RAN4 to trial the running CR process in some selected Rel-19 work items.

**Decision: Noted.**

[**R4-2412674**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2412674.zip) **On CR handling for RRM specification quality improvement**

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

**Decision: Noted.**

[**R4-2413165**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413165.zip) **Draft CR for RRM SpecImprovement (section 1~6)**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: D (Rel-18)  
  
 Source: Apple*

**Decision: Return to.**

[**R4-2413208**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413208.zip) **Draft CR on NR standalone tests with all NR cells in FR1 for RedCap**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Return to.**

[**R4-2413395**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413395.zip) **On RRM specification quality improvement – CR handling**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On RRM specification quality improvement – CR handling.

Ericsson have made the following proposals:

- Proposal 1: A big maintenance CR running over the first quarter after closing the core WI.

- Proposal 2: Allocate separate AI/TU for discussing and finalizing the feature CRs after the technical discussions are over.

- Depending on the feature and the amount of specification impact, the time allocation can vary and can be up to the entire meeting week in the worst case.

- Proposal 3: WI Rapporteurs present a CR implementation plan (e.g., similar to the workplan, but focused on CR handling for the WI), discuss, and get it approved. This applies also when there is no work split.

- Proposal 4: For situations where similar text needs to be repeated across multiple sections (or specifications), the general text could firstly be agreed as a reference and then used across different sections/CRs/specifications to improve consistency.

- Proposal 5: Creating a checkbox list of key specification editing aspects to remember and check while preparing CRs and/or extend the Forword section of the specification to ensure consistent usage of frequently used terms, notation, abbreviation, CA configuration vocabulary, etc.

- Proposal 6: Creating a 3GPP repository of figure templates, editable diagrams, and formulae. The link with templates could be included in the checkbox list described in Proposal 5.

**Decision: Noted.**

[**R4-2413396**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413396.zip) **Draft CR 38133 RRM specification improvement for clauses 10 to A\_3**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR 38133 RRM specification improvement for clauses 10 to A\_3

**Decision: Return to.**

[**R4-2413397**](ftp://10.10.10.10/ftp/tsg_ran/WG4_Radio/TSGR4_111/Inbox/R4-2413397.zip) **Draft CR 38133 RRM specification improvement for clause A\_6**

*Type: draftCR For: Endorsement  
 38.133 v18.6.0 CR- rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Draft CR 38133 RRM specification improvement for clause A\_6

**Decision: Return to.**