3GPP TSG-RAN WG4 Meeting #107

Incheon, KR, May 22 – May 26, 2023

**Source: RAN4 Vice Chair (Intel)**

**Title: RAN4 #107 RRM session meeting report**

## 4 Up to Rel-16 maintenance for LTE and NR

*For Rel-15/16 maintenance, please submit formal CRs. When you reserve the tdoc number, please use the correct WI code rather than simply using TEI and fill the column of “Related WIs” in your reservation spreadsheet. If you submit a CR with TEI as WI code, please inform session chair.*

### 4.4 RRM requirements

**R4-2308518 Clarification to FR1 spatial relation activation**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3245 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2308519 Clarification to FR1 spatial relation activation**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3246 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2308520 Clarification to FR1 spatial relation activation**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3247 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

##### **Rel-15 NR core part**

**R4-2307620 CR of known cell condition for HO on 38.133 R15**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3154 rev Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2307621 CR of known cell condition for HO on 38.133 R16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3155 rev Cat: A (Rel-16)  
  
 Source: MediaTek Inc.*

**Decision: Agreed.**

**R4-2307622 CR of known cell condition for HO on 38.133 R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3156 rev Cat: A (Rel-17)  
  
 Source: MediaTek Inc.*

**Decision: Agreed.**

**R4-2307623 CR of known cell condition for HO on 38.133 R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3157 rev Cat: A (Rel-18)  
  
 Source: MediaTek Inc.*

**Decision: Agreed.**

**R4-2308279 Correction to inter-RAT NR measurement requirements\_R15**

*Type: CR For: Agreement  
 36.133 v15.19.0 CR-7211 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310100 (from R4-2308279).**

**R4-2310100 Correction to inter-RAT NR measurement requirements\_R15**

*Type: CR For: Agreement  
 36.133 v15.19.0 CR-7211 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308280 Correction to inter-RAT NR measurement requirements\_R16**

*Type: CR For: Agreement  
 36.133 v16.16.0 CR-7212 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308281 Correction to inter-RAT NR measurement requirements\_R17**

*Type: CR For: Agreement  
 36.133 v17.9.0 CR-7213 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308282 Correction to inter-RAT NR measurement requirements\_R18**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7214 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308556 Clarification to FR1 spatial relation activation**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3248 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Session chair: Rel-15?**

**Decision: Postponed.**

**R4-2308557 Clarification to FR1 spatial relation activation**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3249 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2308558 Clarification to FR1 spatial relation activation**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3250 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2308733 CR on R15 SCell activation**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3292 rev Cat: F (Rel-15)  
  
 Source: ZTE*

**Decision: Revised to R4-2310101 (from R4-2308733).**

**R4-2310101 CR on R15 SCell activation**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3292 rev Cat: F (Rel-15)  
  
 Source: ZTE*

**Decision: Agreed.**

**R4-2308735 CR on R15 SCell activation requirements**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3294 rev Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2308737 CR on R15 SCell activation requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3296 rev Cat: A (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2308738 CR on R15 SCell activation requirements**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3297 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2309110 38.133 CR on interruptions at SCell activation and deactivation**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3328 rev Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2309111 38.133 R16 Cat.A CR on interruptions at SCell activation and deactivation**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3329 rev Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2309112 38.133 R17 Cat.A CR on interruptions at SCell activation and deactivation**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3330 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2309113 38.133 R18 Cat.A CR on interruptions at SCell activation and deactivation**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3331 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

##### **Rel-15 NR performance part**

**R4-2307082 CR on relationship between SNR, RSRP level and thresholds for FR1 BFD and LR**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3109 rev Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Similar corrections with R4-2303204 are applied to FR1 TCs.

**Decision: Agreed.**

**R4-2307083 CR on relationship between SNR, RSRP level and thresholds for FR1 BFD and LR**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3110 rev Cat: F (Rel-16)  
  
 Source: Anritsu Corporation*

**Abstract:**

Similar corrections with R4-2303204 are applied to FR1 TCs.

Delta between Rel-15 CR is clause A.4.5.5.5, A.4.5.5.6, A.6.5.5.5, and A.6.5.5.6.

**Decision: Agreed.**

**R4-2307084 CR on relationship between SNR, RSRP level and thresholds for FR1 BFD and LR**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3111 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Similar corrections with R4-2303204 are applied to FR1 TCs.

Delta between Rel-16 CR is clause A.4.5.5.7, A.4.5.5.8, and A.6.5.5.7.

Also A.4.5.5.7 and A.6.5.5.7 are corrected to fix some inconsistencies between test purpose and associated parameters.

**Decision: Revised to R4-2310102 (from R4-2307084).**

**R4-2310102 CR on relationship between SNR, RSRP level and thresholds for FR1 BFD and LR**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3111 rev Cat: F (Rel-17)  
  
 Source: Anritsu Corporation*

**Abstract:**

Similar corrections with R4-2303204 are applied to FR1 TCs.

Delta between Rel-16 CR is clause A.4.5.5.7, A.4.5.5.8, and A.6.5.5.7.

Also A.4.5.5.7 and A.6.5.5.7 are corrected to fix some inconsistencies between test purpose and associated parameters.

**Decision: Agreed.**

**R4-2307085 CR on relationship between SNR, RSRP level and thresholds for FR1 BFD and LR**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3112 rev Cat: A (Rel-18)  
  
 Source: Anritsu Corporation*

**Abstract:**

Similar corrections with R4-2303204 are applied to FR1 TCs.

**Decision: Agreed.**

**R4-2307133 CR on R15 NR Inter-RAT measurements testcase correction**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3113 rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Discussion**

E///: need to check

**Decision: Agreed.**

**R4-2307134 CR (CAT-A) on R15 NR Inter-RAT measurements testcase correction**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3114 rev Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2307135 CR (CAT-A) on R15 NR Inter-RAT measurements testcase correction**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3115 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2307136 CR (CAT-A) on R15 NR Inter-RAT measurements testcase correction**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3116 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2307149 CR to TS 38.133: Corrections to NR RRM test cases (Rel 15)**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3121 rev Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Decision: Agreed.**

**R4-2307150 CR to TS 38.133: Corrections to NR RRM test cases (Rel 16)**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3122 rev Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Decision: Agreed.**

**R4-2307151 CR to TS 38.133: Corrections to NR RRM test cases (Rel 17)**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3123 rev Cat: A (Rel-17)  
  
 Source: Rohde & Schwarz*

**Decision: Agreed.**

**R4-2307152 CR to TS 38.133: Corrections to NR RRM test cases (Rel 18)**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3124 rev Cat: A (Rel-18)  
  
 Source: Rohde & Schwarz*

**Decision: Agreed.**

**R4-2307175 2AoA Relative angular offset between active probes for PC1 devices (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3125 rev Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd*

**Discussion**

QC: need further check

**Decision: Postponed.**

**R4-2307177 2AoA Relative angular offset between active probes for PC1 devices (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3126 rev Cat: A (Rel-16)  
  
 Source: Keysight Technologies UK Ltd*

**Decision: Withdrawn.**

**R4-2307178 2AoA Relative angular offset between active probes for PC1 devices (Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3127 rev Cat: A (Rel-17)  
  
 Source: Keysight Technologies UK Ltd*

**Decision: Withdrawn.**

**R4-2307182 2AoA Relative angular offset between active probes for PC1 devices (Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3130 rev Cat: A (Rel-18)  
  
 Source: Keysight Technologies UK Ltd*

**Decision: Withdrawn.**

**R4-2307267 CR to FR2 RLM In-syn test cases (Cat-F Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3140 rev Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2307268 CR to FR2 RLM In-syn test cases (Cat-A Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3141 rev Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2307269 CR to FR2 RLM In-syn test cases (Cat-A Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3142 rev Cat: A (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2307270 CR to FR2 RLM In-syn test cases (Cat-A Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3143 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2308283 Correction to inter-RAT NR measurement TCs\_R15**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3195 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310103 (from R4-2308283).**

**R4-2310103 Correction to inter-RAT NR measurement TCs\_R15**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3195 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308284 Correction to inter-RAT NR measurement TCs\_R16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3196 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308285 Correction to inter-RAT NR measurement TCs\_R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3197 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308286 Correction to inter-RAT NR measurement TCs\_R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3198 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308287 Correction to inter-frequency NR measurement TCs\_R15**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3199 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Agreed.**

**R4-2308288 Correction to inter-frequency NR measurement TCs\_R16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3200 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Agreed.**

**R4-2308289 Correction to inter-frequency NR measurement TCs\_R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3201 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Agreed.**

**R4-2308290 Correction to inter-frequency NR measurement TCs\_R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3202 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Agreed.**

**R4-2308680 CR on maintaining antenna connections for 4Rx capable UEs R15**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3274 rev Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308681 CR on maintaining antenna connections for 4Rx capable UEs R16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3275 rev Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308682 CR on maintaining antenna connections for 4Rx capable UEs R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3276 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308683 CR on maintaining antenna connections for 4Rx capable UEs R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3277 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

##### **LTE\_NR\_DC\_CA\_enh-Core**

**R4-2308634 CR on direct SCell activation requirements**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3255 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308635 CR on direct SCell activation requirements R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3256 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308636 CR on direct SCell activation requirements R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3257 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2307240 Updation of RRM DCCA SCell activation and deactivation test cases**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3137 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2310151 (from R4-2307240).**

**R4-2310151 Updation of RRM DCCA SCell activation and deactivation test cases**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3137 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2308934 Update (Rel-17) of RRM DCCA SCell activation and deactivation test cases**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3324 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2309038 Update (Rel-18) of RRM DCCA SCell activation and deactivation test cases**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3325 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

##### **NR\_eMIMO-Core**

**R4-2308684 CR on maintaining PL-RS switching delay requirements R16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3278 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310104 (from R4-2308684).**

**R4-2310104 CR on maintaining PL-RS switching delay requirements R16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3278 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308685 CR on maintaining PL-RS switching delay requirements R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3279 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308686 CR on maintaining PL-RS switching delay requirements R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3280 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308751 Discussion on eMIMO and maintained PL-RS**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2308752 CR for definition of PL-RS maintained in section 8.14**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3298 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The conditions for maintenance of PL-RS is missing from the specification

**Decision: Revised to R4-2310105 (from R4-2308752).**

**R4-2310105 CR for definition of PL-RS maintained in section 8.14**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3298 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The conditions for maintenance of PL-RS is missing from the specification

**Decision: Agreed.**

**R4-2308753 CR for definition of PL-RS maintained in section 8.14**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3299 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The conditions for maintenance of PL-RS is missing from the specification

**Decision: Agreed.**

**R4-2308754 CR for definition of PL-RS maintained in section 8.14**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3300 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The conditions for maintenance of PL-RS is missing from the specification

**Decision: Agreed.**

##### **NR\_HST-Perf**

**R4-2307179 Corrections to RRM HST A.6.1.1.7 (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3128 rev Cat: F (Rel-16)  
  
 Source: Keysight Technologies UK Ltd*

**Decision: Revised to R4-2310106 (from R4-2307179).**

**R4-2310106 Corrections to RRM HST A.6.1.1.7 (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3128 rev Cat: F (Rel-16)  
  
 Source: Keysight Technologies UK Ltd*

**Decision: Agreed.**

**R4-2307180 Corrections to RRM HST A.6.1.1.7 (Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3129 rev Cat: A (Rel-17)  
  
 Source: Keysight Technologies UK Ltd*

**Decision: Agreed.**

**R4-2307183 Corrections to RRM HST A.6.1.1.7 (Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3131 rev Cat: A (Rel-18)  
  
 Source: Keysight Technologies UK Ltd*

**Decision: Agreed.**

**R4-2307260 Update to RRM idle mode HST test cases**

*Type: CR For: Approval  
 38.133 v16.15.0 CR-3138 rev Cat: F (Rel-16)  
  
 Source: Qualcomm Inc,*

**Decision: Revised to R4-2310107 (from R4-2307260).**

**R4-2310107 Update to RRM idle mode HST test cases**

*Type: CR For: Approval  
 38.133 v16.15.0 CR-3138 rev Cat: F (Rel-16)  
  
 Source: Qualcomm Inc,*

**Session chair: need to check on what are the Cat A CRs**

**Decision: Agreed.**

**R4-2307261 Update to RRM idle mode HST test cases**

*Type: CR For: Approval  
 38.133 v17.9.0 CR-3139 rev Cat: A (Rel-17)  
  
 Source: Qualcomm, Inc.*

**Decision: Agreed.**

**R4-2309547 Update to RRM idle mode HST test cases**

*Type: CR For: Approval  
 38.133 v18.1.0 CR-3352 rev Cat: A (Rel-18)  
  
 Source: Qualcomm, Inc.*

**Decision: Agreed.**

##### **NR\_IAB-Perf**

**R4-2308301 CR on maintenance for IAB R16**

*Type: CR For: Agreement  
 38.174 v16.7.0 CR-0046 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308302 CR on maintenance for IAB R17**

*Type: CR For: Agreement  
 38.174 v17.3.0 CR-0047 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308303 CR on maintenance for IAB R18**

*Type: CR For: Agreement  
 38.174 v18.0.0 CR-0048 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

##### **NR\_Mob\_enh-Core**

**R4-2307713 Discussion on correction of CHO and CPC requirements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307714 CR to TS 38.133: Correction to CHO and CPC requirements(Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3164 rev Cat: F (Rel-16)  
  
 Source: vivo*

**Decision: Postponed.**

**R4-2307715 CR to TS 38.133 Correction to CHO and CPC requirements(Rel-17)**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3165 rev Cat: A (Rel-17)  
  
 Source: vivo*

**Decision: Withdrawn.**

**R4-2307716 CR to TS 38.133 Correction to CHO and CPC requirements(Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3166 rev Cat: A (Rel-18)  
  
 Source: vivo*

**Decision: Withdrawn.**

##### **NR\_RRM\_enh-Perf**

**R4-2308291 Correction to UE specific CBW RMCs\_R16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3203 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310108 (from R4-2308291).**

**R4-2310108 Correction to UE specific CBW RMCs\_R16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3203 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308292 Correction to UE specific CBW RMCs\_R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3204 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308293 Correction to UE specific CBW RMCs\_R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3205 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

##### **NR\_unlic-Perf**

**R4-2307201 Analysis of NR-U infra frequency RSRP test cases**

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

**Decision: Noted.**

**R4-2307202 CR correcting NR-U infra frequency RSRP test cases**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3134 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Nokia: some TBD values need to be further discussed

Session chair: we can endorse the CR in this meeting and resolve TBD later

**Decision: Endorsed.**

**R4-2307203 CR correcting NR-U infra frequency RSRP test cases**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3135 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2307204 CR correcting NR-U infra frequency RSRP test cases**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3136 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2308298 CR on TC maintenance for NR-U R16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3210 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

**R4-2308299 CR on TC maintenance for NR-U R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3211 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2308300 CR on TC maintenance for NR-U R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3212 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

##### **MRTD/MTTD maintenance**

**R4-2307659 On MRTD/MTTD requirement applicability for EN-DC/NE-DC**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307660 Clarification on MRTD/MTTD requirement for EN-DC/NE-DC in Rel-15**

*Type: CR For: Agreement  
 38.133 v15.21.0 CR-3158 rev Cat: F (Rel-15)  
  
 Source: Apple*

**Decision: Not pursued.**

**R4-2307661 Clarification on MRTD/MTTD requirement for EN-DC/NE-DC in Rel-16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3159 rev Cat: F (Rel-16)  
  
 Source: Apple*

**Decision: Revised to R4-2310169 (from R4-2307661).**

**R4-2310169 Clarification on MRTD/MTTD and interruption requirement for EN-DC in Rel-16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3159 rev Cat: F (Rel-16)  
  
 Source: Apple, Huawei, HiSilicon, Nokia, Ericsson, Samsung*

**Decision: Agreed.**

**R4-2307662 Clarification on MRTD/MTTD and interruption requirement for EN-DC in Rel-17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3160 rev Cat: A (Rel-17)  
  
 Source: Apple, Huawei, HiSilicon, Nokia, Ericsson, Samsung*

**Decision: Agreed.**

**R4-2307663 Clarification on MRTD/MTTD and interruption requirement for EN-DC in Rel-18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3161 rev Cat: A (Rel-18)  
  
 Source: Apple, Huawei, HiSilicon, Nokia, Ericsson, Samsung*

**Decision: Agreed.**

**R4-2307664 LS on update for “interBandMRDC-WithOverlapDL-Bands-r16” in 38.306**

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

**Decision: Revised to R4-2310109 (from R4-2307664).**

**R4-2310109 LS on update for “interBandMRDC-WithOverlapDL-Bands-r16” in 38.306**

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

**Decision: Revised to R4-2310170 (from R4-2310109).**

**R4-2310170 LS on update for “interBandMRDC-WithOverlapDL-Bands-r16” in 38.306**

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

**Decision: Approved.**

**R4-2308687 CR on interruption requirements due to UE capability interBandMRDC-WithOverlapDL-Bands R16**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3281 rev Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Decision: Merged**

**R4-2308688 CR on interruption requirements due to UE capability interBandMRDC-WithOverlapDL-Bands R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3282 rev Cat: A (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2308689 CR on interruption requirements due to UE capability interBandMRDC-WithOverlapDL-Bands R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3283 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2309117 R16 MRTD/MTTD requirement for non-collocated inter-band EN-DC with overlapping bands**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3334 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

**Decision: Merged.**

**R4-2309118 R17 Cat.A MRTD/MTTD CR for non-collocated inter-band EN-DC with overlapping bands**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3335 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

**Decision: Withdrawn.**

**R4-2309119 R16 38133CR on interruption requirement for FR1 non-collocated EN-DC**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3336 rev Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

**R4-2309120 R17 38133CR on interruption requirement for FR1 non-collocated EN-DC**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3337 rev Cat: A (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2309121 Impact on legacy MRTD/MTTD requirements for non-collocated FR1 inter-band EN-DC with overlapping bands**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309320 Discussion on non-collocated FR1 inter-band EN-DC/NE-DC with overlapping DL bands**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2309321 CR to TS38.133 on MTTD/MRTD requirements for inter-band EN-DC/NE-DC with overlapping DL bands for Rel-16 Type-2 UE**

*Type: CR For: Agreement  
 38.133 v16.15.0 CR-3347 rev Cat: F (Rel-16)  
  
 Source: Samsung*

**Decision: Merged.**

**R4-2309322 CR to TS38.133 on MTTD/MRTD requirements for inter-band EN-DC/NE-DC with overlapping DL bands for Rel-16 Type-2 UE**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3348 rev Cat: A (Rel-17)  
  
 Source: Samsung*

**Decision: Withdrawn.**

**R4-2309323 CR to TS38.133 on MTTD/MRTD requirements for inter-band EN-DC/NE-DC with overlapping DL bands for Rel-16 Type-2 UE**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3349 rev Cat: A (Rel-18)  
  
 Source: Samsung*

**Decision: Withdrawn.**

##### **A-GNSS**

**R4-2307153 CR to TS 38.171: Corrections to NR A-GNSS requirements (Rel 15)**

*Type: CR For: Agreement  
 38.171 v15.4.0 CR-0020 rev Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Decision: Not pursued.**

**R4-2307154 CR to TS 38.171: Corrections to NR A-GNSS requirements (Rel 16)**

*Type: CR For: Agreement  
 38.171 v16.4.0 CR-0021 rev Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Decision: Withdrawn.**

**R4-2307155 CR to TS 38.171: Corrections to NR A-GNSS requirements (Rel 17)**

*Type: CR For: Agreement  
 38.171 v17.2.0 CR-0022 rev Cat: A (Rel-17)  
  
 Source: Rohde & Schwarz*

**Decision: Withdrawn.**

**R4-2307420 CR on TS 38.171 requirements for relative signal power levels of BDS**

*Type: CR For: Agreement  
 38.171 v16.4.0 CR-0023 rev Cat: F (Rel-16)  
  
 Source: CATT, CAICT, CENC*

**Decision: Agreed.**

**R4-2310125 CR on TS 38.171 requirements for relative signal power levels of BDS**

*Type: CR For: Agreement  
 38.171 v17.2.0 CR-TBA rev Cat: A (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Withdrawn.**

**R4-2307422 CR on TS 38.171 requirements for relative signal power levels of BDS**

*Type: CR For: Agreement  
 38.171 v17.2.0 CR-0024 rev Cat: F (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Agreed.**

**R4-2310124 CR on TS 38.171 requirements for relative signal power levels of BDS**

*Type: CR For: Agreement  
 38.171 v17.2.0 CR-0024 rev Cat: F (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Withdrawn.**

**R4-2307421 CR on TS 36.171 requirements for relative signal power levels of BDS**

*Type: CR For: Agreement  
 36.171 v16.5.0 CR-0029 rev Cat: F (Rel-16)  
  
 Source: CATT, CAICT, CENC*

**Decision: Agreed.**

**R4-2310126** **CR on TS 36.171 requirements for relative signal power levels of BDS**

*Type: CR For: Agreement  
 36.171 v17.2.0 CR-TBA rev Cat: A (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Withdrawn.**

**R4-2307423 CR on TS 36.171 requirements for relative signal power levels of BDS**

*Type: CR For: Agreement  
 36.171 v17.2.0 CR-0030 rev Cat: F (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Agreed.**

**R4-2310127 CR on TS 36.171 requirements for relative signal power levels of BDS**

*Type: CR For: Agreement  
 36.171 v17.2.0 CR-0030 rev Cat: F (Rel-17)  
  
 Source: CATT, CAICT, CENC*

**Decision: Withdrawn.**

### 4.7 Moderator summary and conclusions

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**Topic: [107][201] Maintenance\_up\_to\_R16**

**Summary documents**

**R4-2309946 Topic summary for [107][201] Maintenance\_up\_to\_R16**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**R4-2310089 Ad-hoc minutes for [107][201] Maintenance\_up\_to\_R16**

*Type: other For: Approval  
 Source: Huawei*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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## 5 Rel-17 maintenance for LTE and NR

The following contributions have been moved and will be treatedi n the respective email topic threads.

*- Session Chair: 1) R4-2307454/55 will be postponed due to CR cover sheet issues.*

*- Session Chair: 1) R4-2308115/16 will be postponed due to CR cover sheet issues.*

*For Rel-17 maintenance, at most two CRs per specification per company per lowest AI except for AI 5.1.1, AI 5.1.2, AI 5.2.10, and AI 5.3. Contributions shall be limited by existing open issues or critical issues. For AI 5.1.1, AI 5.1.2, AI 5.2.10 and AI 5.3, follow the approved guideline, i.e., maximum one discussion paper per WI/TEI topic per company/organization. If the similar changes are proposed for a number of specifications, those CRs will be counted as one CR for the quota. And Cat F and Cat A CRs for the same changes are counted as one CR for the quota. It is not expected to pack maintenance topics of multiple Rel-17 closed WIs into one CR or one discussion paper.*

*The contributions corresponding to incoming LS for Rel-17 are expected to be submitted in AI 11.1.*

*For Rel-17 maintenance, please submit formal CRs. When you reserve the tdoc number, please use the correct WI code rather than simply using TEI and fill the column of “Related WIs” in your reservation spreadsheet. If you submit a CR with TEI as WI code, please inform session chair.*

### 5.2 Rel-17 non-spectrum related WI maintenance

#### 5.2.3 Further enhancements on MIMO for NR

##### 5.2.3.1 RRM core requirements

**R4-2308209 Discussion on maintenance issues in R17 feMIMO RRM requirements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308210 CR on maintenance of feMIMO RRM requirements in R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3193 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Revised to R4-2310136 (from R4-2308210).**

**R4-2310136 CR on maintenance of feMIMO RRM requirements in R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3193 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2308211 CR on maintenance of feMIMO RRM requirements in R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3194 rev Cat: A (Rel-18)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2308692 Discussion on RRM remaining issues for NR FeMIMO**

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

**Decision: Noted.**

**R4-2308693 CR on maintaining RRM requirements for NR FeMIMO R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3286 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310137 (from R4-2308693).**

**R4-2310137 CR on maintaining RRM requirements for NR FeMIMO R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3286 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308694 CR on maintaining RRM requirements for NR FeMIMO R17**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3287 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308732 Discussion on remaining RRM requirements for FeMIMO**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308755 Remaining issues on unified TCI switching delay requirement**

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

**Decision: Noted.**

**R4-2308756 CR for definition of PL-RS maintained and time tracking for unified TCI**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3301 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Definition of PL-RS maintained and clarification to the UE time tracking requirements for unified TCI

**Decision: Merged.**

**R4-2308757 CR for definition of PL-RS maintained and time tracking for unified TCI**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3302 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Definition of PL-RS maintained and clarification to the UE time tracking requirements for unified TCI

**Decision: Withdrawn.**

**R4-2309373 On FeMIMO RRM Core Requirements**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2309374 CR for Unified TCI State switching requirements**

*Type: CR For: Approval  
 38.133 v17.9.0 CR-3350 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2310138 (from R4-2309374).**

**R4-2310138 CR for Unified TCI State switching requirements**

*Type: CR For: Approval  
 38.133 v17.9.0 CR-3350 rev Cat: F (Rel-17)  
  
 Source: Apple, Nokia, Samsung, vivo*

**Decision: Agreed.**

**R4-2309375 CR for Unified TCI State switching requirements (Rel-18)**

*Type: CR For: Approval  
 38.133 v18.1.0 CR-3351 rev Cat: A (Rel-18)  
  
 Source: Apple, Nokia, Samsung*

**Decision: Agreed.**

**R4-2309581 Remaining issues in FeMIMO**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on remaining issues in FeMIMO

**Decision: Noted.**

**R4-2309582 CR on maintenance of FeMIMO**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3359 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This contribution provides CR on remaining issues in FeMIMO

**Decision: Revised to R4-2310139 (from R4-2309582).**

**R4-2310139 CR on maintenance of FeMIMO**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3359 rev Cat: F (Rel-17)  
  
 Source: Ericsson, vivo*

**Abstract:**

This contribution provides CR on remaining issues in FeMIMO

**Decision: Agreed.**

**R4-2309583 CR on maintenance of FeMIMO**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3360 rev Cat: A (Rel-18)  
  
 Source: Ericsson, vivo*

**Abstract:**

This contribution provides CR on remaining issues in FeMIMO

**Decision: Agreed.**

**R4-2309743 Discussion on RRM requirements maintenance of FeMIMO**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

##### 5.2.3.2 RRM performance requirements

**R4-2307137 CR on R17 TRP specific BFD testcase correction**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3117 rev Cat: F (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

**R4-2307138 CR (CAT-A) on R17 TRP specific BFD testcase correction**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3118 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Agreed.**

#### 5.2.5 Support of reduced capability NR devices

##### 5.2.5.2 RRM core requirements

**R4-2307454 CR on RRC Re-establishment for RedCap**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3152 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Discussion:**

Session Chair: 1) R4-2307454/55 will be postponed due to CR cover sheet issues.

**Decision: Postponed.**

**R4-2307455 CR on RRC Re-establishment for RedCap**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3153 rev Cat: A (Rel-18)  
  
 Source: vivo*

**Discussion:**

Session Chair: 1) R4-2307454/55 will be postponed due to CR cover sheet issues.

**Decision: Withdrawn.**

**R4-2307923 Disscussion on Mobility procedures with NCD-SSBs**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308420 On Redcap RRM maintenance**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308446 CR on NR RedCap Idle mode (TS36.133)**

*Type: CR For: Agreement  
 36.133 v17.9.0 CR-7218 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

To fix the Idle mode spec for RedCap

**Decision: Agreed.**

**R4-2308447 CR on RedCap Idle mode(36.133)**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7219 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

To fix the Idle mode spec for RedCap

**Decision: Agreed.**

**R4-2308448 CR on NR RedCap L1-RSRP measurement**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3232 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

To update the NCD-SSB based L1-RSRP measurement for RedCap

**Decision: Agreed.**

**R4-2308449 CR on RedCap L1-RSRP**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3233 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

To update the NCD-SSB based L1-RSRP measurement for RedCap

**Decision: Agreed.**

**R4-2308450 CR on NR RedCap HO**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3234 rev Cat: F (Rel-17)  
  
 Source: Ericsson, Mediatek Inc.*

**Abstract:**

To update the HO for RedCap

**Decision: Revised to R4-2310144 (from R4-2308450).**

**R4-2310144 CR on NR RedCap HO**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3234 rev Cat: F (Rel-17)  
  
 Source: Ericsson, Mediatek Inc.*

**Abstract:**

To update the HO for RedCap

**Decision: Agreed.**

**R4-2308451 CR on RedCap HO**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3235 rev Cat: A (Rel-18)  
  
 Source: Ericsson, Mediatek*

**Abstract:**

To update the HO for RedCap

**Decision: Agreed.**

**R4-2309574 Formal CR to Rel-17 TS 38.133: on RedCap maintenance in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3355 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2310143 (from R4-2309574).**

**R4-2310143 Formal CR to Rel-17 TS 38.133: on RedCap maintenance in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3355 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2309575 Formal CR to Rel-18 TS 38.133: on RedCap maintenance in TS 38.133**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3356 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2309576 Formal CR to Rel-17 TS 36.133: on RedCap maintenance in TS 36.133**

*Type: CR For: Agreement  
 36.133 v17.9.0 CR-7223 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2309577 Formal CR to Rel-18 TS 36.133: on RedCap maintenance in TS 36.133**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7224 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2309604 Corrections to RedCap Measurement Requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3363 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2309605 Corrections to RedCap Measurement Requirements**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3364 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2309667 Open issues on RRM core requirements for RedCap**

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

**Decision: Noted.**

**R4-2309668 Correction of RedCap UE behaviour in case of overlap of paging occasion and CG-SDT transmission**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3367 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2309669 Correction of RedCap UE behaviour in case of overlap of paging occasion and CG-SDT transmission**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3368 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2309708 Mobility issues for RedCap UEs**

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

**Decision: Noted.**

##### 5.2.5.3 RRM performance requirements

**R4-2307440 Correction to performance part requirements for RedCap**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3150 rev Cat: F (Rel-17)  
  
 Source: R4*

**Abstract:**

Removal of TBDs.

**Decision: Revised to R4-2310145 (from R4-2307440).**

**R4-2310145 Correction to performance part requirements for RedCap**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3150 rev Cat: F (Rel-17)  
 Source: Ericsson*

**Abstract:**

Removal of TBDs.

**Decision: Postponed.**

**R4-2307441 Correction to performance part requirements for RedCap**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3151 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Removal of TBDs.

**Decision: Withdrawn.**

**R4-2307924 Disscussion on configuring margin for 1 Rx RedCap UEs**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308294 Correction to FR1 RedCap test cases RMCs and side conditions**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3206 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Revised to R4-2310146 (from R4-2308294).**

**R4-2310146 Correction to FR1 RedCap test cases RMCs and side conditions**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3206 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Agreed.**

**R4-2308295 Correction to FR1 RedCap test cases RMCs and side conditions\_R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3207 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308296 Correction to FR2 RedCap test cases\_R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3208 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, Starpoint*

**Decision: Agreed.**

**R4-2308297 Correction to FR2 RedCap test cases\_R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3209 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308422 CR: Correction of Measurement conditions for RedCap for 1Rx**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3230 rev Cat: F (Rel-17)  
  
 Source: Ericsson, Anritsu*

**Abstract:**

This CR corrects the TBDs for Measurement conditions for RedCap for 1Rx.

**Decision: Agreed.**

**R4-2308423 CR: Correction of Measurement conditions for RedCap for 1Rx**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3231 rev Cat: A (Rel-18)  
  
 Source: Ericsson, Anritsu*

**Abstract:**

This CR corrects the TBDs for Measurement conditions for RedCap for 1Rx.

**Decision: Agreed.**

**R4-2309578 Formal CR to Rel-17 TS 38.133: on RedCap Perf maintenance in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3357 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2310147 (from R4-2309578).**

**R4-2310147 Formal CR to Rel-17 TS 38.133: on RedCap Perf maintenance in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3357 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2309579 Formal CR to Rel-18 TS 38.133: on RedCap Perf maintenance in TS 38.133**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3358 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2309650 Updates to offset for cell specific RSRP thresholds for 1Rx Redcap UE**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper further analyzes the applicability of cell-specific RSRP thresholds based on RAN2 LS in R2-2213069 e.g. offset is removed for s-SearchDeltaP-r16 and s-SearchDeltaP-Stationary-r17.

**Decision: Noted.**

**R4-2309651 Correction to offset for cell specific RSRP thresholds for 1Rx Redcap UE in 38.133**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3365 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR corrects applicability of cell-specific RSRP thresholds based on RAN2 LS in R2-2213069/R4-2300016. The offset is removed for some thresholds and added for the missing thresholds.

**Decision: Revised to R4-2310148 (from R4-2309651).**

**R4-2310148 Correction to offset for cell specific RSRP thresholds for 1Rx Redcap UE in 38.133**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3365 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR corrects applicability of cell-specific RSRP thresholds based on RAN2 LS in R2-2213069/R4-2300016. The offset is removed for some thresholds and added for the missing thresholds.

**Decision: Agreed.**

**R4-2309652 Correction to offset for cell specific RSRP thresholds for 1Rx Redcap UE in 38.133**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3366 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

The CR corrects applicability of cell-specific RSRP thresholds based on RAN2 LS in R2-2213069/R4-2300016. The offset is removed for some thresholds and added for the missing thresholds.

**Decision: Agreed.**

**R4-2309670 Discussion on configuring margins for 1 Rx RedCap UE**

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

**Decision: Noted.**

**R4-2309671 Corrections of SDT Test Case Parameters for RedCap**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3369 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2310141 (from R4-2309671).**

**R4-2310141 Corrections of SDT Test Case Parameters for RedCap**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3369 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2309672 Corrections of SDT Test Case Parameters for RedCap**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3370 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2309726 CR on RedCap test cases**

*Type: CR For: Approval  
 38.133 v17.9.0 CR-3371 rev Cat: F (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Withdrawn.**

**R4-2309727 CR on RedCap test cases**

*Type: CR For: Approval  
 38.133 v18.1.0 CR-3372 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Withdrawn.**

#### 5.2.6 Enhanced IIoT and URLLC support

##### 5.2.6.1 RRM core requirements

**R4-2308758 CR for Measurement period requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3303 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Clarification of the PRS and TRS measurement period for Propagation Delay Compensation

**Decision: Agreed.**

**R4-2308759 CR for Measurement period requirements**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3304 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Clarification of the PRS and TRS measurement period for Propagation Delay Compensation

**Decision: Agreed.**

##### 5.2.6.2 RRM performance requirements

#### 5.2.7 NR small data transmissions in INACTIVE state

##### 5.2.7.1 RRM core requirements

**R4-2309559 Formal CR to Rel-17 TS 38.133 on SDT maintenance**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3353 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2309560 Formal CR to Rel-18 TS 38.133 on SDT maintenance (Mirror)**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3354 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

##### 5.2.7.2 RRM performance requirements

**R4-2307139 CR on R17 CG-SDT for FR1 testcase correction**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3119 rev Cat: F (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Decision: Merged.**

**R4-2307140 CR (CAT-A) on R17 CG-SDT for FR1 testcase correction**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3120 rev Cat: A (Rel-18)  
  
 Source: Qualcomm Incorporated*

**Decision: Withdrawn.**

**R4-2307193 Remaining issues on SDT test cases**

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

**Decision: Noted.**

**R4-2307194 CR correction of SDT test cases**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3132 rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

**R4-2307195 CR correction of SDT test cases**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3133 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

**R4-2307330 On remaining issues for R17 SDT testing**

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

**Decision: Noted.**

**R4-2308655 Discussion on RRM test cases for SDT**

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

**Decision: Noted.**

**R4-2308656 CR on SDT RRM test case**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3272 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, Apple*

**Decision: Revised to R4-2310112 (from R4-2308656).**

**R4-2310112 CR on SDT RRM test case**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3272 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, Apple, Qualcomm, Nokia, MediaTek*

**Decision: Agreed.**

**R4-2308657 CR on SDT RRM test case R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3273 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon, Apple, Qualcomm, Nokia, MediaTek*

**Decision: Agreed.**

#### 5.2.8 Solutions for NR to support non-terrestrial networks (NTN)

##### 5.2.8.4 RRM core requirement maintenance

**R4-2307271 Ambiguity on UL transmissions in scheduling restriction and MG**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307329 On remaining issues for R17 NTN**

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

**Decision: Noted.**

**R4-2307884 Discussion on RRM core requirements maintenance for NR NTN**

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

**Decision: Noted.**

**R4-2307885 CR on measurement capability for NR NTN**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3167 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2307886 CR on measurement capability for NR NTN**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3168 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2307887 CR on MGRP in Inter-frequency measurement requirement for NR NTN**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3169 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Merged.**

**R4-2307888 CR on MGRP in Inter-frequency measurement requirement for NR NTN**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3170 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2307912 CR for editorial modification for 4.2C.2.3 Measurements of intra-frequency NR cells in 38.133**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3175 rev Cat: D (Rel-17)  
  
 Source: LG Electronics UK*

**Decision: Agreed.**

**R4-2307922 CR for editorial modification for 4.2C.2.3 Measurements of intra-frequency NR cells in 38.133**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3176 rev Cat: A (Rel-18)  
  
 Source: LG Electronics UK*

**Decision: Agreed.**

**R4-2308052 CR to TS 38.133:Supplement the conditions for requirements applicability of measurement of neighbouring cell**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3179 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2308053 CR to TS 38.133:Supplement the conditions for requirements applicability of measurement of neighbouring cell**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3180 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2308060 CR to TS 38.133: Supplement the values of factor K in interruption time**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3187 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2308061 CR to TS 38.133: Supplement the values of factor K in interruption time**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3188 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2308351 CR on Cell Reselection for RRC Inactive in NTN (Cat. F)**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3226 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2308352 CR on Cell Reselection for RRC Inactive in NTN (Cat. A)**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3227 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2308642 Discussion on remaining issues in NTN core requirements**

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

**Decision: Noted.**

**R4-2308643 CR on mobility requirements for NTN**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3262 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310133 (from R4-2308643).**

**R4-2310133 CR on mobility requirements for NTN**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3262 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, Nokia*

**Decision: Agreed.**

**R4-2308644 CR on mobility requirements for NTN R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3263 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon, Nokia*

**Decision: Agreed.**

**R4-2308645 CR on MG requirements for NTN**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3264 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308646 CR on MG requirements for NTN R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3265 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308647 Discussion on remaining issues in NTN performance requirements**

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

**Decision: Noted.**

**R4-2308734 CR on R17 NTN**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3293 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Agreed.**

**R4-2308736 CR on R17 NTN CHO**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3295 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

**R4-2309138 CR to TS 38.133:Supplement the conditions for requirements applicability of measurement of neighbouring cell**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3338 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Not pursued.**

**R4-2309142 CR to TS 38.133: Supplement the values of factor K in interruption time**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3342 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Not pursued.**

**R4-2309291 Discussion on remaining open issues for the core part in NTN**

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

**Decision: Noted.**

**R4-2309293 CR on K\_multi\_SMTC scaling for inter-frequency cell reselection (Cat. F)**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3345 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

**R4-2309294 CR on K\_multi\_SMTC scaling for inter-frequency cell reselection (Cat. A)**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3346 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

##### 5.2.8.5 RRM performance requirements

**R4-2307272 Configuration of NTN specific parameters and open issues**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307889 CR on general setup for SIB19**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3171 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Merged.**

**R4-2307890 CR on general setup for SIB19**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3172 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2308353 CR on Duration for reselection test cases in NGSO scenarios (Cat. F)**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3228 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2310134 (from R4-2308353).**

**R4-2310134 CR on Duration for reselection test cases in NGSO scenarios (Cat. F)**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3228 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell, Xiaomi*

**Decision: Agreed.**

**R4-2308354 CR on Duration for reselection test cases in NGSO scenarios (Cat. A)**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3229 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell, Xiaomi*

**Decision: Agreed.**

**R4-2308597 CR on NTN specific parameters configuration for NTN test cases**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3251 rev Cat: F (Rel-17)  
  
 Source: Xiaomi*

**Decision: Agreed.**

**R4-2308598 (Cat A) CR on NTN specific parameters configuration for NTN test cases**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3252 rev Cat: A (Rel-18)  
  
 Source: Xiaomi*

**Decision: Agreed.**

**R4-2308599 Maintenance CR on intra-frequency cell reselection test cases for NTN**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3253 rev Cat: F (Rel-17)  
  
 Source: Xiaomi*

**Decision: Merged.**

**R4-2308600 (Cat A) Maintenance CR on intra-frequency cell reselection test cases for NTN**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3254 rev Cat: A (Rel-18)  
  
 Source: Xiaomi*

**Decision: Withdrawn.**

**R4-2308695 CR on UE transmit timing tests for NTN R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3288 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

**R4-2308696 CR on maintaining UE transmit timing tests for NTN R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3289 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2308920 Reference Time Instances for UL Timing Accuracy Requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion and proposal for time reference during test.

**Decision: Noted.**

**R4-2309292 Discussion on transmit timing accuracy test cases**

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

**Decision: Noted.**

#### 5.2.9 Extending current NR operation to 71GHz

##### 5.2.9.4 RRM core requirement maintenance

**R4-2308304 CR on Random access on carrier with CCA in FR2-2 R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3213 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310113 (from R4-2308304).**

**R4-2310113 CR on Random access on carrier with CCA in FR2-2 R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3213 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308305 CR on Random access on carrier with CCA in FR2-2 R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3214 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

##### 5.2.9.5 RRM performance requirement maintenance

**R4-2308306 CR on test case maintenance for FR2-2 R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3215 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308307 CR on test case maintenance for FR2-2 R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3216 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

#### 5.2.10 Other NR/LTE WIs

##### 5.2.10.3 RRM requirements

**R4-2308050 CR to TS 38.133: Modification of the value of Nsample**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2308051 CR to TS 38.133: Modification of the value of Nsample**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2308054 CR to TS 38.133: Supplement the impact of the measurement period(RSTD, PRS-RSRP, UE Rx-Tx) in general aspects of gapless measurement**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3181 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2308056 CR to TS 38.133: Supplement the requirement applicability of UE Rx-Tx time difference measurement accuracy requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3183 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2308057 CR to TS 38.133: Supplement the requirement applicability of UE Rx-Tx time difference measurement accuracy requirements**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3184 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2308058 CR to TS 38.133: Supplement the requirements applicability of UE Rx-Tx time difference measurement reporting**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3185 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2308059 CR to TS 38.133: Supplement the requirements applicability of UE Rx-Tx time difference measurement reporting**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3186 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2308115 CR on NR inter frequency measurements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3189 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Discussion:**

Session Chair: 1) R4-2308115/16 will be postponed due to CR cover sheet issues.

**Decision: Postponed.**

**R4-2308116 CR on NR inter frequency measurements**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3190 rev Cat: A (Rel-18)  
  
 Source: vivo*

**Discussion:**

Session Chair: 1) R4-2308115/16 will be postponed due to CR cover sheet issues.

**Decision: Withdrawn.**

**R4-2308455 Remaining issues on IDLE mode**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the IDLE mode cell selection remaining issue

**Decision: Noted.**

**R4-2308815 CR to TS 38.133: Modification of the value of Nsample**

*Type: CR For: Approval  
 38.133 v17.9.0 CR-3317 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2309139 CR to TS 38.133: Supplement the impact of the measurement period(RSTD, PRS-RSRP, UE Rx-Tx) in general aspects of gapless measurement**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3339 rev Cat: F (Rel-17)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

##### **LTE\_NR\_DC\_enh2-Core**

**R4-2307711 CR on Interruption requirements due to SCG activation/deactivation**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3162 rev Cat: F (Rel-17)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2307712 CR on Interruption requirements at SCG activation/deactivation(Rel-18)**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3163 rev Cat: A (Rel-18)  
  
 Source: vivo*

**Decision: Agreed.**

**R4-2308345 Clause number update for MRDC**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3224 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310114 (from R4-2308345).**

**R4-2310114 Clause number update for MRDC**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3224 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308346 Clause number update for MRDC**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3225 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308763 Aspects on Efficient activation/de-activation mechanism for one SCG**

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

**Decision: Noted.**

**R4-2308764 CR corrections for SCG Activation and Deactivation Delay**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3307 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

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

**Decision: Postponed.**

**R4-2310115 CR corrections for SCG Activation and Deactivation Delay**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3307 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

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

**Decision: Withdrawn.**

**R4-2308765 CR corrections for SCG Activation and Deactivation Delay**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3308 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

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

**Decision: Withdrawn.**

**R4-2308766 CR correcting TCI state activation command at SCell activation**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3309 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Alignment of RAN4 requirements with RAN2 procedures

**Decision: Postponed.**

**R4-2308767 CR correcting TCI state activation command at SCell activation**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3310 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Alignment of RAN4 requirements with RAN2 procedures

**Decision: Withdrawn.**

**R4-2308781 CR correcting RRM DCCA SCell activation and deactivation test case**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3311 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2308782 CR correcting RRM DCCA SCell activation and deactivation test case**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3312 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2308817 Discussion on remaining issues for Rel-17 MR-DC**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discuss the remaining MR-DC issues

**Decision: Noted.**

**R4-2308818 CR to 38.133 for rel-17 MRDC remaining issues**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3319 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This CR is correcting some issues related to the Rel-17 MRDC RRM requirements

**Decision: Merged.**

##### **NR\_MG\_enh**

**R4-2308452 Remaining issues on Rel-17 MG enh**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the Rel-17 remaining requirements

**Decision: Noted.**

**R4-2308453 CR on ConMGs’ association**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3236 rev Cat: F (Rel-17)  
  
 Source: Ericsson, Mediatek inc.*

**Abstract:**

To update the association rule for ConMGs

**Decision: Revised to R4-2310116 (from R4-2308453).**

**R4-2310116 CR on ConMGs’ association**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3236 rev Cat: F (Rel-17)  
  
 Source: Ericsson, Mediatek inc., OPPO*

**Abstract:**

To update the association rule for ConMGs

**Decision: Agreed.**

**R4-2308454 CR on ConMGs**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3237 rev Cat: A (Rel-18)  
  
 Source: Ericsson, Mediatek*

**Abstract:**

To update the association rule for ConMGs

**Decision: Agreed.**

**R4-2308458 CR on concurrent gaps in Rel-17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3238 rev Cat: F (Rel-17)  
  
 Source: OPPO*

**Decision: Merged.**

**R4-2308459 CR on concurrent gaps in Rel-17**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3239 rev Cat: A (Rel-18)  
  
 Source: OPPO*

**Decision: Withdrawn.**

**R4-2308509 Maintenance core part CR on of MG enh R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3241 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2310117 (from R4-2308509).**

**R4-2310117 Maintenance core part CR on of MG enh R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3241 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Discussion**

MTK/Huawei/Apple/Nokia: support CR

CATT: object

**Decision: Revised to R4-2310171 (from R4-2310117).**

**R4-2310171 Maintenance core part CR on of MG enh R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3241 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Discussion**

**Decision: Agreed.**

**R4-2308510 Maintenance core part CR on of MG enh R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3242 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2308511 Maintenance perf part CR on of MG enh R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3243 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2310118 (from R4-2308511).**

**R4-2310118 Maintenance perf part CR on of MG enh R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3243 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2308512 Maintenance core part CR on of MG enh R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3244 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2308637 Discussion on remaining issues in Rel-17 MGE**

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

**Decision: Noted.**

**R4-2308638 CR on NCSG related requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3258 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308639 CR on NCSG related requirements R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3259 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308640 CR on concurrent MG related requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3260 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310119 (from R4-2308640).**

**R4-2310119 CR on concurrent MG related requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3260 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, OPPO*

**Decision: Agreed.**

**R4-2308641 CR on concurrent MG related requirements R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3261 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon, OPPO*

**Decision: Agreed.**

**R4-2308731 Discussion on remaining issues of R17 MG enhancement**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309136 RRM maintenance for Rel-17 measurement gaps enhancements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

##### **NR\_pos\_enh**

**R4-2309137 RRM maintenance for Rel-17 NR positioning enhancements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307424 CR on R17 positioning performance requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3148 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Revised to R4-2310123 (from R4-2307424).**

**R4-2310123 CR on R17 positioning performance requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3148 rev Cat: F (Rel-17)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2307425 CR on R17 positioning performance requirements**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3149 rev Cat: A (Rel-18)  
  
 Source: CATT*

**Decision: Agreed.**

**R4-2308460 Discussion on maintenance Rel-17 positioning**

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

**Decision: Noted.**

**R4-2308648 CR on PRS measurement requirements for INACTIVE**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3266 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308649 CR on PRS measurement requirements for INACTIVE R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3267 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308650 CR on measurement requirements for TEG**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3268 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310128 (from R4-2308650).**

**R4-2310128 CR on measurement requirements for TEG**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3268 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308651 CR on measurement requirements for TEG R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3269 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308652 Updated simulation results for PRS-RSRPP**

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

**Decision: Noted.**

**R4-2308653 CR on accuracy requirements for Rel-17 positioning**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3270 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310129 (from R4-2308653).**

**R4-2310129 CR on accuracy requirements for Rel-17 positioning**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3270 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308654 CR on accuracy requirements for Rel-17 positioning R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3271 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308797 Remaining issues related to PRS-RSRPP accuracy requirement**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution is discusses remaining issues related to PRS-RSRPP measurement.

**Decision: Noted.**

**R4-2308798 CR to 38.133 Corrections to PRS-RSRPP measurement accuracy requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3313 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Accuracy requirement for 4sample PRS-RSRPP measurement based on simulation result is proposed. CR to Rel. 17 spec.

**Decision: Revised to R4-2310130 (from R4-2308798).**

**R4-2310130 CR to 38.133 Corrections to PRS-RSRPP measurement accuracy requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3313 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Accuracy requirement for 4sample PRS-RSRPP measurement based on simulation result is proposed. CR to Rel. 17 spec.

**Decision: Agreed.**

**R4-2308799 CR to 38.133 Corrections to PRS-RSRPP measurement accuracy requirements**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3314 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Accuracy requirement for 4sample PRS-RSRPP measurement based on simulation result is proposed. CR to Rel. 18 spec.

**Decision: Agreed.**

**R4-2308800 CR to 38.133 Corrections to positioning measurement core requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3315 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Following changes are proposed in this CR. 1. IE for UE capability to support parallel RRM and PRS measurement in RRC\_INACTIVE state is updated. CR to Rel. 17 spec.

2. Tlast notation in RRC\_INACTIVE state positioning measurement delay requirements is rect

**Decision: Revised to R4-2310131 (from R4-2308800).**

**R4-2310131 CR to 38.133 Corrections to positioning measurement core requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3315 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Following changes are proposed in this CR. 1. IE for UE capability to support parallel RRM and PRS measurement in RRC\_INACTIVE state is updated. CR to Rel. 17 spec.

2. Tlast notation in RRC\_INACTIVE state positioning measurement delay requirements is rect

**Decision: Agreed.**

**R4-2308801 CR to 38.133 Corrections to positioning measurement core requirements**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3316 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

Following changes are proposed in this CR. 1. IE for UE capability to support parallel RRM and PRS measurement in RRC\_INACTIVE state is updated. CR to Rel. 18 spec.

2. Tlast notation in RRC\_INACTIVE state positioning measurement delay requirements is rect

**Decision: Agreed.**

**R4-2308956 Summary of PRS-RSRPP simulations**

*Type: other For: Information  
 Source: Ericsson Inc.*

**Decision: Noted.**

##### **NR\_pos\_enh2**

**R4-2309143 CR to TS 38.133: Modification of the value of Nsample**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3343 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Merged.**

**R4-2308816 CR to TS 38.133: Modification of the value of Nsample**

*Type: CR For: Approval  
 38.133 v18.1.0 CR-3318 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Withdrawn.**

**R4-2309140 CR to TS 38.133: Supplement the requirement applicability of UE Rx-Tx time difference measurement accuracy requirements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3340 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Not pursued.**

**R4-2309141 CR to TS 38.133: Supplement the requirements applicability of UE Rx-Tx time difference measurement reporting**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3341 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Not pursued.**

**R4-2309232 CR to TS 38.133: Supplement the impact of the measurement period(RSTD, PRS-RSRP, UE Rx-Tx) in general aspects of gapless measurement**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3344 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Revised to R4-2310132 (from R4-2309232).**

**R4-2310132 CR to TS 38.133: Supplement the impact of the measurement period(RSTD, PRS-RSRP, UE Rx-Tx) in general aspects of gapless measurement**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3344 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Revised to R4-2310172 (from R4-2310132).**

**R4-2310172 CR to TS 38.133: Supplement the impact of the measurement period(RSTD, PRS-RSRP, UE Rx-Tx) in general aspects of gapless measurement**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3344 rev Cat: F (Rel-17)  
  
 Source: ZTE*

**Decision: Agreed.**

**R4-2308055 CR to TS 38.133: Supplement the impact of the measurement period(RSTD, PRS-RSRP, UE Rx-Tx) in general aspects of gapless measurement**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3182 rev Cat: A (Rel-18)  
  
 Source: ZTE Corporation*

**Decision: Agreed.**

##### **NR\_RRM\_enh2**

**R4-2307359 Maintenance on PUCCH SCell activation delay**

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

**Decision: Noted.**

**R4-2307360 38.133 CR on PUCCH SCell activation delay requirement**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3146 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2310120 (from R4-2307360).**

**R4-2310120 38.133 CR on PUCCH SCell activation delay requirement**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3146 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

**Decision: Agreed.**

**R4-2307361 38133 Cat.A CR on PUCCH SCell activation delay**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3147 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

**Decision: Agreed.**

**R4-2307880 CR on SRS antenna port switching requirements 36.133**

*Type: CR For: Agreement  
 36.133 v17.9.0 CR-7205 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Session chair: the common understanding is that RLM is a part of E-UTRAN measurements. No need for change.**

**Decision: Not pursued.**

**R4-2307881 CR on SRS antenna port switching requirements 36.133**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7206 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2308308 Discussion on maintenance for R17 RRM enhancement**

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

**Decision: Noted.**

**R4-2308309 CR on PUCCH SCell activation requirements R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3217 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

**R4-2308310 CR on PUCCH SCell activation requirements R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3218 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Withdrawn.**

**R4-2309584 Remaining issues on PUCCH SCell activation**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on remaining issues on PUCCH SCell activation

**Decision: Noted.**

**R4-2309585 Maintenance CR on SCell activation/deactivation with PUCCH**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3361 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This contribution provides CR on remaining issues on PUCCH SCell activation

**Decision: Merged.**

**R4-2309586 Maintenance CR on SCell activation/deactivation with PUCCH**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3362 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This contribution provides CR on remaining issues on PUCCH SCell activation

**Decision: Withdrawn.**

##### **NR\_HST\_FR1\_enh**

**R4-2307910 CR on test cases for HST FR1**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3173 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR on test cases for HST FR1

**Decision: Agreed.**

**R4-2307911 CR on test cases for HST FR1**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3174 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR on test cases for HST FR1

**Decision: Agreed.**

##### **NR\_HST\_FR2**

**R4-2308040 CR to TR 38.854 on HST FR2 RA-Based Timing Adjustment**

*Type: CR For: Agreement  
 38.854 v17.1.0 CR-0004 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Resubmission of R4-2211087 that was not implmented

**Decision: Agreed.**

**R4-2308041 CR to TR 38.854 on Throughput Performance in HST FR2 Scenarios**

*Type: CR For: Agreement  
 38.854 v17.1.0 CR-0005 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Resubmission of R4-2207881 that was not implemented

**Decision: Agreed.**

**R4-2308343 Correction on Nserv for FR2 HST**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3222 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308344 Correction on Nserv for FR2 HST R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3223 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Agreed.**

**R4-2308915 CR on L1-SINR and SS-SINR measurement accuracy requirements for R17 FR2 HST**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3320 rev Cat: F (Rel-17)  
  
 Source: Samsung*

**Abstract:**

formal CR

**Decision: Not pursued.**

**R4-2308916 CR on L1-SINR and SS-SINR measurement accuracy requirements for R17 FR2 HST**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3321 rev Cat: A (Rel-18)  
  
 Source: Samsung*

**Abstract:**

formal CR

**Decision: Withdrawn.**

**R4-2308917 CR on test cases for L1-SINR measurement for FR2 HST PC6 UE in TS 38.133**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3322 rev Cat: F (Rel-17)  
  
 Source: Samsung*

**Abstract:**

formal CR

**Decision: Not pursued.**

**R4-2308918 CR on test cases for L1-SINR measurement for FR2 HST PC6 UE in TS 38.133**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3323 rev Cat: A (Rel-18)  
  
 Source: Samsung*

**Abstract:**

formal CR

**Decision: Withdrawn.**

##### **NR\_UE\_pow\_sav\_enh**

**R4-2308697 Discussion on maintaining issues for RLM/BFD relaxation requirements**

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

**Decision: Noted.**

**R4-2308698 CR on maintaining RLM/BFD relaxation requirements R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3290 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, MediaTek inc.*

**Decision: Postponed.**

**R4-2308699 CR on maintaining RLM/BFD relaxation requirements R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3291 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon, MediaTek inc.*

**Decision: Withdrawn.**

##### **NR-U**

**R4-2309227 Discussions on eDRX based measurements for NR**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the missing requirements for LTE UE configured with eDRX to measure on inter-RAT NR cells.

**Decision: Noted.**

**R4-2309228 Inter-RAT NR cell reselection requiremetns under eDRX for NR-U and NR**

*Type: CR For: Agreement  
 36.133 v17.9.0 CR-7221 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we introduce the missing requirements for LTE UE configured with eDRX to measure on inter-RAT NR cells.

**Decision: Revised to R4-2310121 (from R4-2309228).**

**R4-2310121 Inter-RAT NR cell reselection requiremetns under eDRX for NR-U and NR**

*Type: CR For: Agreement  
 36.133 v17.9.0 CR-7221 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we introduce the missing requirements for LTE UE configured with eDRX to measure on inter-RAT NR cells.

**Decision: Revised to R4-2310173 (from R4-2310121).**

**R4-2310173 Inter-RAT NR cell reselection requiremetns under eDRX for NR-U and NR**

*Type: CR For: Agreement  
 36.133 v17.9.0 CR-7221 rev Cat: F (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we introduce the missing requirements for LTE UE configured with eDRX to measure on inter-RAT NR cells.

**Decision: Postponed.**

**R4-2309229 Inter-RAT NR cell reselection requiremetns under eDRX for NR-U and NR-R17**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7222 rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

In this contribution we introduce the missing requirements for LTE UE configured with eDRX to measure on inter-RAT NR cells.

**Decision: Withdrawn.**

##### **Rel-15 NR**

**R4-2308760 Discussion on suitable cell search in Idle mode**

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

**Decision: Noted.**

**R4-2308761 CR Correction for suitable cell search in Idle mode**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3305 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Correction for suitable cell search in Idle mode

**Decision: Not pursued.**

**R4-2308762 CR Correction for suitable cell search in Idle mode**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3306 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Correction for suitable cell search in Idle mode

**Decision: Withdrawn.**

##### **NR\_RF\_FR2\_req\_enh2**

**R4-2308690 CR on correction to interruption requirements for inter-band CA R17**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3284 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon, Nokia*

Session chair: moved from AI 4.4 to AI 5.2.10.3

**Decision: Agreed.**

**R4-2308691 CR on correction to interruption requirements for inter-band CA R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3285 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon, Nokia*

Session chair: moved from AI 4.4 to AI 5.2.10.3

**Decision: Agreed.**

### 5.3 Rel-17 TEI

*The tdoc submitted under this agenda is supposed not to be related to any other closed or existing WIs. It is expected for companies who proposed TEI to contact session Chairs first because the TEI topic is under monitoring in RAN.*

##### **Inter-RAT NR-U measurement with LTE eDRX**

**R4-2307331 On inter-RAT NR-U measurement with LTE eDRX**

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

**Decision: Noted.**

##### **Spec update for R17 per-FR gap capability R17**

**R4-2307352 Discussion on updates for R17 per-FR gap capability**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307353 CR on updates for R17 per-FR gap capability**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3144 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Revised to R4-2310110 (from R4-2307353).**

**R4-2310110 CR on updates for R17 per-FR gap capability**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3144 rev Cat: F (Rel-17)  
  
 Source: Apple*

**Decision: Agreed.**

**R4-2307354 CR on updates for R17 per-FR gap capability**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3145 rev Cat: A (Rel-18)  
  
 Source: Apple*

**Decision: Agreed.**

##### **FR1/LTE+FR2 test**

**R4-2309580 List of R17 FR1/LTE+FR2 test cases in annex A**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides list of R17 FR1/LTE+FR2 test cases in annex A

**Decision: Noted.**

##### **deriveSSB-IndexFromCellInter**

**R4-2308027 CR on UE capability when deriveSSB-IndexFromCellInter is configured**

*Type: CR For: Approval  
 38.133 v17.9.0 CR-3177 rev Cat: F (Rel-17)  
  
 Source: CMCC*

**Decision: Agreed.**

**R4-2308029 CR on UE capability when deriveSSB-IndexFromCellInter is configured**

*Type: CR For: Approval  
 38.133 v18.1.0 CR-3178 rev Cat: A (Rel-18)  
  
 Source: CMCC*

**Decision: Agreed.**

##### **NR\_redcap**

**R4-2308207 CR on eDRX requriements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3191 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2310122 (from R4-2308207).**

**R4-2310122 CR on eDRX requriements**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3191 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2308208 CR on eDRX requirements**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3192 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2310181 (from R4-2308208).**

**R4-2310181 CR on eDRX requirements**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3192 rev 1 Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

##### **Other**

**R4-2307882 CR on eDRX requirements**

*Type: CR For: Agreement  
 36.133 v17.9.0 CR-7207 rev Cat: F (Rel-17)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2307883 CR on eDRX requirements**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7208 rev Cat: A (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Withdrawn.**

**R4-2309108 38.133 corrections to interruptions at SCell addition/release**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3326 rev Cat: F (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Merged.**

**R4-2309109 38.133 Cat.A corrections to interruptions at SCell addition/release**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3327 rev Cat: A (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Withdrawn.**

### 5.4 Moderator summary and conclusions (for Agenda 5)

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**Topic: [107][202] Maintenance\_R17**

**Summary documents**

**R4-2309947 Topic summary for [107][202] Maintenance\_R17**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**R4-2310090 Ad-hoc minutes for [107][202] Maintenance\_R17**

*Type: other For: Approval  
 Source: Apple*

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Thursday, 5/25/2023)**

**Topic #2: Rel-17 NR SDT in INACTIVE state**

Sub-topic 2-5: Test case

Agreements: Parameters for CG SDT transmission test cases

|  |  |  |  |
| --- | --- | --- | --- |
|  | Formula | FR1 | FR2 |
| W1 |  | 640 | 480 |
| W2 |  | 640 | 480 |
| W3 |  | 860 | 1060 |
| T\_delay\_modeB |  | 4000 | 4000 |
| CG-SDT resource period |  | 320 | 320 |
| T1 |  | 400 | 800 |
| T2 | 2xW1 | 1280 | 960 |
| T3 | T\_timer\_modeB-W1-W2 | 2720 | 3040 |
| T4 | w1+w2+w3+100 | 2240 | 2120 |
| T5 | T3+W2+W3 | 4220 | 4580 |

**Topic #4: Other Rel-17 NR/LTE WIs: MR-DC**

Sub-topic 4-1

Agreement

* For RACH less based PSCell activation, no requirements are specified for unknown cases.

Issue 1: Tsearch for RACH-less PSCell activation

Tentative agreements

* For RACH-less PSCell activation Tsearch = 0ms if all side conditions below are met
  + the target cell is known
  + TCI state is known
  + UE is configured with bfd-and-RLM with value true and without detecting RLF
* No requirement will be specified if BF and/or RLF are detected during RACH-less PSCell activation

Issue 2: Tsearch for RACH-based case

Proposal

* For RACH based, if the target cell is an unknown FR2 PSCell configured with BFD-and-RLM with value true and no RLM has occurred, then Tsearch = [12]\* Trs ms, if Es/Iot ≥ -2 dB, otherwise Tsearch = 24\* Trs ms

Agreements

* Conclusion: no consensus to update the requirements

Issue 3: Other proposals

* Proposals
  + P1: UE shall start monitoring PDCCH on the activated PSCell immediately after the SCG activation delay. (Nokia)
  + ~~P2: If Beam failure has been declared or TCI become unknown during SCG activation procedure, the SCG failure procedure shall be followed. (Ericsson)~~
  + ~~P3: RACH-less activation delay shall maintain the previous agreement as PL-RS monitoring is not required by specification and uncertainty of any 1st UL transmission is already covered in the requirement. (Ericsson)~~
* Discussion
  + Proposal 1
    - MTK: is it for DRX?
      * Nokia: yes
    - MTK: we are ok, but we need to further discuss whether to capture this in RAN4 or RAN2 spec
* Tentative agreements
  + For DRX case UE shall start monitoring PDCCH on the activated PSCell immediately after the SCG activation delay.
    - FFS whether and how to capture this in the specification

**Topic #5: Other Rel-17 NR/LTE WIs: MG enhancement**

Sub-topic 5-1: For an MO that can be measured outside MG and associated with an MG

Agreement

* MO should be measured outside of associated MG when MO is partially or no overlapping with union of co-MG
* A MO is measured only within the associated MG if the MO can be measured outside of associated MG but fully overlap with the union of the con-MG and partially overlap with the associated MG.

Sub-topic 5-3: E-UTRAN measurement with conMG

Conclusion: discuss in next meetings. ZTE/CATT need to check details.

**Topic #6: Other Rel-17 NR/LTE WIs: On RRC\_IDLE requirement**

Sub-topic 6-1: On RRC\_IDLE requirement

Conclusion: No consensus to change the existing specification. No further discussion is expected.

**Topic #8: Other Rel-17 NR/LTE WIs:RRM enhancement**

Sub-topic 8-1: X1 for PL-RS evaluation

* Proposals
  + Option 1: X=1 (Nokia)
  + Option 2: X=2 for known PUCCH SCell. X=5 for other cases (Ericsson)
* Agreement
  + X = 3
  + Note: X = 3 only applies to PUCCH SCell activation requirements

Sub-topic 8-2: Other issue

* Agreement: The parallel processing of PL-RS measurement and DL CSI-RS reception/processing shall be also applied to the valid TA case.

**Topic #11: Rel-17 TEI**

Sub-topic 11-1: inter-RAT NR-U measurement with LTE eDRX

Agreements

For a LTE UE to perform inter-RAT NR cell measurement with CCA and with eDRX≥10.24s, the following criteria shall be considered when design the PTW window in the requirement:

* The extension shall not exceed the upper limit threshold (Mm,max, Md,max, or Me,max), and
* The extension of measurement/evaluation period due to CCA shall be limited in the single PTW window

Agreements

For a LTE UE to perform inter-RAT NR cell measurement with CCA and with eDRX≥10.24s, the lower bound of PTW window shall be derived based on .

Note: is the legacy inter-RAT NR cell evaluation period without any extension due to CCA, as same as in Table 4.2.2.5.6-3.

**Topic #7: Other Rel-17 NR/LTE WIs: Positioning**

Sub-topic 7-2: PRS-RSRP accuracy

Agreements

* Reuse PRS-RSRP RF calibration margin of 2.5dB to define absolute accuracy requirement for PRS-RSRPP in FR1 for both Nsample = 4 and Nsample = 1.
* Reuse PRS-RSRP RF calibration margin of 4dB to define absolute accuracy requirement for PRS-RSRPP in FR2 for both Nsample = 4 and Nsample = 1.

**WF/LS for approval**

**R4-2310111 WF on R17 FR1/LTE+FR2 test cases**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][203] NR\_NTN\_solutions**

**Summary documents**

**R4-2309948 Topic summary for [107][203] NR\_NTN\_solutions**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Thursday, 5/25/2023)**

Issue 1-7: Additional delay for acquisition of epoch time during HO/CHO

* Proposals
  + Option 1: (QC, Nokia)
    - Consider the additional delay in inter-satellite HO and CHO delay requirements
      * Proposal from QC
        + RAN4 to add an additional delay to inter-satellite HO and CHO delay requirements to account for MIB reading time from the target cell to obtain SFN sync and select a proper RO (RACH Occasion) for PRACH transmission.
      * Proposal from Nokia
        + For conditional HO and blind HO, when the UE cannot determine the validity of the ephemeris of the target cell or it has expired, the handover delay requirement must be postponed to include the time required for the UE to acquire and apply a new valid epoch time information.
  + Option 2: (Huawei)
    - Add a general clarification that the requirements would be longer.
    - Proposal from Huawei
      * Add a clarification that HO/CHO interruption time may be longer when UE does not have valid and applicable target cell assistance data during HO/CHO procedure.

**WF/LS for approval**

**R4-2310135 WF on R17 NR NTN RRM maintenance**

*Type: other For: Approval  
 Source: Xiaomi*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][204] NR\_feMIMO**

**Summary documents**

**R4-2309949 Topic summary for [107][204] NR\_feMIMO**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Thursday, 5/25/2023)**

Issue 1-1-1: Whether UE need to track UL time/frequency if source RS in UL TCI state is not in the DL active TCI list

Agreement

Add applicability in spec for active uplink TCI state switching delay for unified TCI:

The requirements in this clause are applicable when the source RS of the active UL TCI state is a DL-RS and this DL-RS is included as one of the source RSs in the DL active TCI list.

Issue 1-1-3 MAC-CE based UL TCI state switching delay when SSB is indicated as PL-RS in UL TCI state for FR2

* Proposals:
  + Proposal 1: (vivo, ZTE, Nokia, Ericsson)
    - Reuse the existing delay requirement of MAC CE based UL TCI state switch. Remove the note in 8.16.3.
  + Proposal 2: (Huawei, Apple, Samsung)
    - longer UL TCI state switch delay is expected when an SSB is indicated as PL-RS in UL TCI state in FR2.
    - If no consensus can be achieved, we suggest that there are no requirements when SSB is indicated as PL-RS in UL TCI state in FR2.
  + Proposal 3: (ZTE)
    - To move forward, a compromised solution is needed, e.g. allowing a clear but not too long additional latency.
* Agreements
  + No requirements are defined for the case when SSB is indicated as PL-RS in UL TCI state in FR2 and PL-RS is not maintained

Issue 1-2-1 Whether need clarification or update in RAN4 spec when PDCCH/PDSCH and SSB associated different PCI are overlapped on the same RE

* Proposals:
  + Proposal 1: (vivo)
    - Introduce scheduling restrictions for the cases when UE simultaneously receive SSB and PDSCH/PDCCH, while SSB is associated to a PCI different from the PCI to which the active TCI of PDSCH/PDCCH is associated. RRM requirements do not apply for these cases.
  + Proposal 3: (Ericsson)
    - Do not agree to introduce scheduling restriction “if the TCI state of the PDSCH /PDCCH is associated to the SSB of the cell with different PCI, UE is not expected to receive PDSCH/PDCCH on the symbols corresponding to the SSB indexes configured for L1-RSRP measurement on the serving cell”

**WF/LS for approval**

**R4-2310140 WF on R17 NR MIMO RRM requirements maintenance**

*Type: other For: Approval  
 Source: Samsung*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][205] NR\_redcap**

**Summary documents**

**R4-2309950 Topic summary for [107][205] NR\_redcap**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**R4-2310091 Ad-hoc minutes for [107][205] NR\_redcap**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**Online session (Thursday, 5/25/2023)**

Issue 2-1-3: Offset for missing thresholds: rsrp-ThresholdSSB-SUL

* Proposals
  + Option 1(Ericsson): Add +1 dB of offset to *rsrp-ThresholdSSB-SUL*.
  + Option 2 (Nokia): not to consider an offset for *rsrp-ThresholdSSB-SUL* as this threshold is not applicable to RedCap UE’s.
    - Option 2a (Nokia): RAN4 to inform RAN2 that RAN4 will not to consider an offset for *rsrp-ThresholdSSB-SUL* as this threshold is not applicable to RedCap UE’s
* Discussion
  + Huawei/CMCC/vivo/MTK: Option 1
* Tentative agreements
  + ~~Add +1 dB of offset to~~ *~~rsrp-ThresholdSSB-SUL~~*~~.~~
  + ~~Note: There is no consensus in RAN4 RRM session whether RedCap 1Rx can be supported for UEs with SUL support and it needs to be clarified in the RAN4 Main session.~~

**WF/LS for approval**

**R4-2310149 WF on R17 NR RedCap RRM requirements maintenance**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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## 8 Rel-18 on-going non-spectrum related work items and study items for NR

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

#### 8.5.2 RRM performance requirements

##### 8.5.2.1 RLM test cases to support 8Rx

**R4-2308712 DraftCR on introducing antenna connections for 8Rx capable UEs**

*Type: draftCR For: Endorsement  
 38.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310153 (from R4-2308712).**

**R4-2310153 DraftCR on introducing antenna connections for 8Rx capable UEs**

*Type: draftCR For: Endorsement  
 38.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

#### 8.5.4 Moderator summary and conclusions

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**Topic: [107][206] NR\_ENDC\_ RF\_FR1\_enh2**

**Summary documents**

**R4-2309951 Topic summary for [107][206] NR\_ENDC\_ RF\_FR1\_enh2**

*Type: other For: Information  
 Source: Moderator (NTT DOCOMO)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

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### 8.8 Requirement for NR FR2 multi-Rx chain DL reception

#### 8.8.3 RRM core requirements for simultaneous DL reception from different directions

##### 8.8.3.1 General aspects

**R4-2307129 Discussion on MultiRx RRM General Aspects**

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

**Decision: Noted.**

**R4-2307279 Conditions of UE multiple Rx-beam based DL reception**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307346 On general aspects for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307717 On general aspects for FR2 multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307810 Discussion on general aspects of RRM for FR2 multi-Rx chains**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2307943 General aspects discussions for FR2 multi Rx chain DL reception**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: NTT DOCOMO, INC.*

**Decision: Noted.**

**R4-2308023 On general aspects**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On general aspects

**Decision: Noted.**

**R4-2308321 Discussion on general aspects for NR FR2 multi-Rx**

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

**Decision: Noted.**

**R4-2308476 On general aspects for FR2\_multiRX\_DL**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308503 Discussion on general aspects for multi-Rx UEs**

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

**Decision: Noted.**

**R4-2308725 Discussion on general aspects on RRM requirements for simultaneous DL reception from different directions**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309655 Discussion on general aspects for FR2 multi-RX DL reception**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

##### 8.8.3.2 L1-RSRP measurement delay

**R4-2307188 Discussion on Multi-Rx L1 measurements**

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

**Decision: Noted.**

**R4-2307280 L1 measurement requirements for support of simultaneous receptions from two TRPs**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307347 On L1 measurements for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307574 Discussion on L1-RSRP measurement delay for FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307718 On L1-RSRP measurement delay for multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307811 Discussion on L1-RSRP measurement for FR2 multi-Rx chains**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2307953 Discussion on the L1-RSRP measurement delay**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308024 On L1-RSRP measurements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On L1-RSRP measurements

**Decision: Noted.**

**R4-2308477 On L1 measurement for FR2\_multiRX\_DL**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308504 Discussion on L1 measurements for multi-Rx UEs**

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

**Decision: Noted.**

**R4-2308700 Discussion on L1-RSRP measurements for R18 FR2 multi-Rx chain DL reception**

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

**Decision: Noted.**

**R4-2308726 Discussion on L1-RSRP measurement requirements for simultaneous DL reception from different directions**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309657 Discussion on L1-RSRP measurement delay for FR2 multi-RX DL reception**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

##### 8.8.3.3 RLM and BFD/CBD requirements

**R4-2307130 On MultiRx RLM and BFD/CBD requirements**

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

**Decision: Noted.**

**R4-2307281 RLM and BM requirements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307348 On RLM and BFD/CBD for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307576 Discussion on RLM/BFD/CBD requirements for FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307719 On RLM and BFD/CBD requiremets for FR2 multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307954 Discussion on the RLM and BFD CBD requirement**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308025 On RLM and beam management**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On RLM and beam management

**Decision: Noted.**

**R4-2308505 Discussion on RLM/BFD/CBD for multi-Rx UEs**

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

**Decision: Noted.**

**R4-2308701 Discussion on RLM/BFD/CBD measurements for R18 FR2 multi-Rx chain DL reception**

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

**Decision: Noted.**

**R4-2308727 Discussion on RLM, BFD and CBD for simultaneous DL reception from different directions**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

##### 8.8.3.4 Scheduling/measurement restrictions

**R4-2307189 Discussion on Multi-Rx scheduling restrictions**

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

**Decision: Noted.**

**R4-2307282 SSB based scheduling and measurement restrictions**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307325 On scheduling/measurement restrictions for multiple Rx chains**

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

**Decision: Noted.**

**R4-2307575 Discussion on scheduling/measurement restrictions for FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307720 On scheduling and measurement restrictions for multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307821 Discussion on scheduling restriction for FR2 multi-Rx chains**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2307955 Discussion on the scheduling measurement restriction**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308478 On measurement restriction for FR2\_multiRX\_DL**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308506 Discussion on scheduling and measurement restriction for multi-Rx UEs**

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

**Decision: Noted.**

**R4-2308702 Discussion on scheduling/measurement restrictions for R18 FR2 multi-Rx chain DL reception**

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

**Decision: Noted.**

**R4-2308728 Discussion on scheduling restriction and measurement restriction for simultaneous DL reception from different directions**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309590 Discussion on Scheduling and measurement restrictions**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on Scheduling restriction and sharing factor for layer-3 measurements

**Decision: Noted.**

**R4-2309656 Discussion on scheduling/measurement restrictions for FR2 multi-RX DL**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

##### 8.8.3.5 TCI state switching delay with dual TCI

**R4-2307131 On MultiRx TCI state switching requirements**

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

**Decision: Noted.**

**R4-2307283 TCI and UE beam switching delay requirements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307349 On TCI state switching for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307721 On TCI state switching delay for multi-Rx**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307956 Discussion on the TCI state switching delay with dual TCI**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308322 Discussion on TCI state switching delay with dual TCI for NR FR2 multi-Rx**

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

**Decision: Noted.**

**R4-2308479 On TCI state switching for FR2 multi-Rx DL**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308507 Discussion on dual TCI state switch for multi-Rx UEs**

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

**Decision: Noted.**

**R4-2309591 Discussion on TCI state switching delay with dual TCI**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on dual TCI state switch requirements for multi-rx

**Decision: Noted.**

##### 8.8.3.6 Receive timing difference between different directions

**R4-2307190 Discussion on receive timing difference between different directions**

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

**Decision: Noted.**

**R4-2307350 On Receive timing difference between different directions for NR FR2 multi-Rx chain DL reception**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2308323 Discussion on receiving timing difference between different directions for NR FR2 multi-Rx**

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

**Decision: Noted.**

**R4-2308508 Discussion on receive timing difference for multi-Rx UEs**

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

**Decision: Noted.**

**R4-2308729 Discussion on Receive timing difference between different directions**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308922 On timing requirements in FR2 multi-RX**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Open issues from WF regarding time requirements.

**Decision: Noted.**

#### 8.8.5 Moderator summary and conclusions

**R4-2310155 Ad-hoc minutes for FR2 Multi-Rx chain RRM requirements**

*Type: other For: Approval  
 Source: vivo*

**Abstract:**

**Discussion:**

**Decision: Noted.**

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**Topic: [107][207] FR2\_multiRx\_part1**

**Summary documents**

**R4-2309952 Topic summary for [107][207] FR2\_multiRx\_part1**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Monday, 5/22/2023)**

**Topic #3: Scheduling/Measurement restrictions**

Issue 3-1-1: Conditions/cases that scheduling restriction can be relaxed for CSI-RS based L1 measurements for multi-Rx

* Recommended WF
  + For single TRP PDCCH/PDSCH transmission scenario, scheduling restriction relaxation can be made for CSI-RS based L1 measurements with multi-Rx when following conditions are met
    - CSI-RS is not configured with repetition ON
    - CSI-RS and QCL source of PDCCH/PDSCH have been reported via GBBR in a pair
    - CSI-RS and PDCCH/PDSCH are transmitted through different TRPs at the same time
    - UE is activated with multi-Rx receptions
    - Other conditions are not precluded
  + For multi TRP PDCCH/PDSCH transmissions, scheduling restriction relaxation can be made for CSI-RS based L1 measurements when following conditions are met
    - CSI-RS is not configured with repetition ON
    - CSI-RS has the same QCL source as any one of the PDCCH/PDSCHs
    - CSI-RS and one of the PDCCH/PDSCHs are transmitted through different TRPs at the same time
    - UE is activated with multi-Rx receptions
    - Other conditions are not precluded
* Discussion
  + Nokia: prefer to discuss other issues. Prefer to add more cases without QCL assumptions. For “UE is activated with multi-RX receptions” – prefer to keep it open. For single TPR – 2nd bullet is not needed.
  + Huawei: Fine with WF. FFS for “UE is activated with multi-Rx receptions”
  + Apple: need to differentiate GBBR and non-GBBR related measurements. Also, not clear if we should differentiate single / multiple TRP.
  + vivo: do not need to differentiate GBBR and non-GBBR measurements
* Tentative agreement
  + Do not introduce scheduling restriction relaxations for CSI-RS based L1 measurements for multi-Rx chain UEs
* Session chair: Discuss offline. If no consensus reached in this meeting, strive not to have any requirements. Come back in the 2nd round.

**Topic #1: General aspect**

Issue 1-2-5: Indication of multi-Rx operation

* Proposals
  + Option 1: (Nokia)
    - RAN4 to discuss new signaling for UE indication of use of 2 Rx chains.
    - RAN4 to consider the following modes for multi-Rx indication:
      * Mode 1: single chain RRM
      * Mode 2: multi-Rx RRM enabled for reduction of scheduling restrictions
      * Mode 3: multi-Rx RRM enabled for reduction of L1 measurement time
    - Modes 1, 2 and 3 are configured by the network based on indicated UE capabilities and preferences.
    - RAN4 to send LS to RAN2 requesting signaling support for the multi-Rx mode configuration.
  + Option 2: (vivo)
    - Power saving mechanism by indication of multi-Rx operation may be considered for multi-Rx UE operation in the WI.
  + Option 3: (Qualcomm)
    - RAN4 to not introduce signaling/indication based UE multi-Rx beam status report/control.
    - Any enhanced RRM requirements by using multi-Rx chain based faster beam sweeping, if feasible and introduced, should be considered in a case by case manner, and the conditions for the enhancement should be precisely defined without a separate new signaling..
  + Option 4: (Apple)
    - RAN4 agrees to allow a UE capable of multi-RX reception to inform the network that it does not support two-AoA reception, so the network knows the UE does not turn on or off this capability arbitrarily. FFS how this is achieved by PHY/MAC/RRC signaling.
  + Option 5: (LGE)
    - Introduce configuration for the UE to report off indication to inform the network of the multi-Rx operation is off.
  + Option 6: (NTT DOCOMO, OPPO)
    - No new mechanism is needed for UE to fallback from multi-Rx to single Rx.
    - The NW know the multi-Rx operation state via group-based beam reporting, link recovery procedure, CSI report, and existing UE assistance information
  + Option 7: (Huawei)
    - Introduce explicit indication from UE to NW about the applicability of multi-Rx peration, or
    - The applicability of multi-Rx operation is implicit determined by mTRP related configuration (e.g. GBBR configuration), and the conditions can be different for different RRM requirements.
  + Option 8: (MediaTek)
    - RAN4 to discuss whether the following legacy mechanism is enough for the indication of multi-RX operation.
      * RI report (from rank 4 to 2).
      * UE reports imbalanced group-based L1-RSRP report.
      * UE indicates reducedMIMO-LayersFR2-DL (from 4 to 2 layer) in *UEAssistanceInformation*.
    - Base on above information from UE to NW, whether NW can request UE to fallback from multi-Rx operation to single Rx.
  + Option 9: (ZTE)
    - We agree to introduce some mechanism/condition for indication of multl-Rx operation, including on/off indication of multi-Rx operation. Introduce some interaction signalling or reuse the existing signalling are both acceptable.
  + Option 10: (Ericsson)
    - Extend *OverheatingAssistance* mechanism to also cover multi-RX chain operation and further discuss the details for multi-RX chain ON/OFF mechanism based on *OverheatingAssistance*.
    - If needed, RAN4 can send LS to RAN2 to inform about the RAN4 conclusion
* Discussion
  + QC: do not see need for dynamic indication
  + E///: suggest to address the critical case of overheating only
  + Intel: agree with E/// that network needs to control
  + Nokia: prefer some indication
  + MTK: do not need indication. UE can use GBBR or RI report to let network know that UE does not have opportunity to use 2 panels.
  + Samsung: no need for indication
* Tentative agreements
  + Option 1: Do not introduce new dynamic or semi-static signaling for indication of applicability of multi-Rx operation
  + Option 2: RAN4 to ask RAN2 to extend *OverheatingAssistance* mechanism to also cover multi-RX chain operation. The details are up to RAN2.
* Session chair: Discuss offline. Come back in the 2nd round.

**Topic #2: RLM and BFD/CBD requirements**

Issue 2-1-1: Beam sweeping factor for cell specific RLM and BFD/CBD for multi-Rx

* Agreements
  + Faster beam sweeping is not applicable for CSI-RS based RLM and BFD measurements.

**WF/LS for approval**

**R4-2310046 WF on NR FR2 Multi-Rx chain DL reception RRM requirements (part 1)**

*Type: other For: Approval  
 Source: vivo*

**Abstract:**

**Discussion:**

Session chair: For issue 1-2-5 other options are not precluded and the decision shall be made in RAN4 #108.

**Decision: Approved.**

**R4-2310164 LS on overheating indication for NR FR2 multi-Rx chain DL reception**

*Type: LS Out For: Approval  
 To: RAN2  
 Source: Ericsson*

**Abstract:**

**Discussion:**

QC: Do not support sending the LS. The existing framework already allows UE to downgrade capabilities.

Huawei: Same view as QC.

**Decision: Noted.**

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**Topic: [107][208] FR2\_multiRx\_part2**

**Summary documents**

**R4-2309953 Topic summary for [107][208] FR2\_multiRx\_part2**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Monday, 5/22/2023)**

**Topic #1: L1-RSRP measurements**

Issue 1-1-3: Scenarios to be considered for Group-based beam reporting for L1-RSRP requirement

* Proposals
  + Case 1: Before UE send Rel-17 GBBR.
  + Case 2: After UE send Rel-17 GBBR
* Discussion
  + Nokia: not clear why different requirements need to be applied before and after GBBR
  + vivo: for Case 1 we can reuse the legacy measurement requirements. FFS whether to define requirements for case 2. Do not see the need
  + Apple: do not understand the issue
* Agreement
  + GBBR measurement delay requirements will be defined under assumption that UE uses a single Rx panel for measurements at one time instance

Issue 1-1-2: Conditions for selecting beam pair to be reported in GBBR

* Agreement
  + Do not introduce additional conditions for beam pair reporting in GBBR on top of the conditions defined in RAN1 specifications in Rel-18

**WF/LS for approval**

**R4-2310047 WF on NR FR2 Multi-Rx chain DL reception RRM requirements (part 2)**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.9 Even Further RRM enhancement for NR and MR-DC

#### 8.9.1 General and work plan

**R4-2308316 Discussion on general aspects for SCell activation delay reduction**

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

**Decision: Noted.**

#### 8.9.2 RRM core requirements for FR2 SCell activation delay reduction

##### 8.9.2.1 L3 part enhancement for FR2 SCell activation

**R4-2307320 On L3 part enhancement for FR2 SCell activation**

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

**Decision: Noted.**

**R4-2307356 L3 part enhancement 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.**

**R4-2307464 Discussion on L3 part enhancement for FR2 SCell activation**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: NTT DOCOMO, INC.*

**Decision: Noted.**

**R4-2307560 Discussion on L3 part enhancement for FR2 SCell activation**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307809 Discussion on L3 enhancement for FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2307944 Discussion on L3 part enhancement for FR2 SCell activation**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308016 Discussion on L3 part enhancement for FR2 SCell activation**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2308212 Discussion on L3 aspects of FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308317 Discussion on L3 enhancement for FR2 SCell activation delay reduction**

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

**Decision: Noted.**

**R4-2308480 On L3 enhancement for FR2 Scell activation delay reduction**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308719 Discussion on the L3 part enhancement of RRM requirements for FR2 SCell activation delay reduction**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309430 Discussion on remaining issues on L3 part enhancements for FR2 Unknown SCell activation**

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

**Decision: Noted.**

**R4-2309555 Discussion on L3 part enhancement for FR2 SCell activation**

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

**Decision: Noted.**

**R4-2309587 On FR2 SCell activation delay reduction: L3 aspects**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on FR2 SCell activation delay reduction: L3 aspects

**Decision: Noted.**

##### 8.9.2.2 L1 part enhancement for FR2 SCell activation

**R4-2307321 On L1 part enhancement for FR2 SCell activation**

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

**Decision: Noted.**

**R4-2307357 L1 part enhancement 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.**

**R4-2307465 Discussion on L1 part enhancement for FR2 SCell activation**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: NTT DOCOMO, INC.*

**Decision: Noted.**

**R4-2307561 Discussion on L1 part enhancement for FR2 SCell activation**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307945 Discussion on L1 part enhancement for FR2 SCell activation**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308017 Discussion on L1 part enhancement for FR2 SCell activation**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2308213 Discussion on L1 aspects of FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308318 Discussion on L1 enhancement for FR2 SCell activation delay reduction**

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

**Decision: Noted.**

**R4-2308481 On L1 enhancement for FR2 Scell activation delay reduction**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308718 Discussion on the L1 part enhancement of RRM requirements for FR2 SCell activation delay reduction**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309431 Discussion on remaining issues on L1 part enhancements for FR2 Unknown SCell activation**

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

**Decision: Noted.**

**R4-2309556 Discussion on L1 part enhancement for FR2 SCell activation**

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

**Decision: Noted.**

**R4-2309588 On FR2 SCell activation delay reduction: L1 RSRP**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on FR2 SCell activation delay reduction: L1 RSRP

**Decision: Noted.**

##### 8.9.2.3 Other enhancements for FR2 SCell activation

**R4-2307322 On other potential enhancement for FR2 SCell activation**

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

**Decision: Noted.**

**R4-2307358 Other enhancements 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.**

**R4-2308214 Discussion on aspects related to multiple SCell activation for FR2 SCell activation delay reduction**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308319 Discussion on other FR2 SCell activation enhancement**

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

**Decision: Noted.**

**R4-2308482 On other enhancements for FR2 Scell activation delay reduction**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308717 Discussion on other aspects of RRM requirements enhancement for FR2 SCell activation delay reduction**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309432 Discussion on remaining issues on other enhancements for FR2 Unknown SCell activation**

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

**Decision: Noted.**

**R4-2309557 Discussion on other potential enhancement for FR2 SCell activation**

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

**Decision: Noted.**

**R4-2309589 On FR2 SCell activation delay reduction: Others**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on FR2 SCell activation delay reduction: Others

**Decision: Noted.**

#### 8.9.3 RRM core requirements for FR1-FR1 NR-DC

**R4-2307323 On RRM requirements for FR1-FR1 NR-DC**

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

**Decision: Noted.**

**R4-2307710 Discussion on RRM core requirements for FR1-FR1 NR-DC**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307957 Discussion on RRM core requirements for FR1-FR1 NR-DC**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308320 Discussion on NR-DC requirements in Rel-18**

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

**Decision: Noted.**

**R4-2308483 On remaining issues of RRM requirements for FR1+FR1 NR-DC**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308819 Discussion on FR1-FR1 NR-DC RRM requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discuss the remaining FR1-FR1 NR-DC requirements

**Decision: Noted.**

**R4-2309122 Discussion on FR1-FR1 NR-DC**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2308820 draft CR to 38.133 for rel-18 NRDC remaining issues**

*Type: draftCR For: Endorsement  
 38.133 v18.1.0 CR- rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This draft CR updating the remaining issues for Rel-18 NRDC

**Decision: Postponed.**

**R4-2310079 draft CR to 38.133 for rel-18 NRDC remaining issues**

*Type: draftCR For: Endorsement  
 38.133 v18.1.0 CR- rev Cat: A (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

This draft CR updating the remaining issues for Rel-18 NRDC

**Decision: Withdrawn.**

**R4-2308484 Big CR for R18 RRM enhancement- FR1+FR1 NR-DC**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3240 rev Cat: B (Rel-18)  
  
 Source: OPPO*

**Decision: Revised to R4-2310080 (from R4-2308484).**

**R4-2310080 Big CR for R18 RRM enhancement- FR1+FR1 NR-DC**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3240 rev Cat: B (Rel-18)  
  
 Source: OPPO*

**Decision: Endorsed.**

#### 8.9.4 Moderator summary and conclusions

**R4-2310062 Ad-hoc minutes for NR RRM enhancements**

*Type: other For: Approval  
 Source: Apple*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][209] NR\_RRM\_enh3\_part1**

**Summary documents**

**R4-2309954 Topic summary for [107][209] NR\_RRM\_enh3\_part1**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Wednesday 5/24/2023)**

Issue 1-1-1: Additional solutions of report L3 measurement results for unknown FR2 SCell activation enhancement (previous issue 1-1-1 in R4-2306315)

* Proposals
  + Option 1 (Apple):
    - RAN4 to not consider additional solution for report L3 measurement results for unknown FR2 SCell activation enhancement in R18.
    - Whether and how to extend the solution from R18 further mobility enhancement WI to SCell activation can be discussed in future release.
  + Option 2 (vivo):
    - RAN4 may further discuss and clarify whether to re-use any newly introduced measurement and reporting mechanism, if agreed in other WIs based on RAN1/2 discussion, for unknown FR2 SCell activation delay reduction.
  + Option 3 for compromise:
    - RAN4 to not consider additional solution for report L3 measurement results for unknown FR2 SCell activation enhancement in R18.
    - In future release, RAN4 can further discuss and clarify whether to re-use any newly introduced measurement and reporting mechanism, if agreed in other WIs based on RAN1/2 discussion, for unknown FR2 SCell activation delay reduction.
* Agreements
  + Do not consider additional solution for report L3 measurement results for unknown FR2 SCell activation enhancement in R18.

Issue 1-1-3: If measurement results are available, the UE will report them to the NW. How to determine the measurement result is available?

* Proposals:
  + Option 1 (Apple, CMCC, Xiaomi, CTC, Huawei, OPPO, ZTE, Qualcomm, Ericsson):
    - No need to define criteria to determine the L3 measurement result is available or not for FR2 unknown SCell activation enhancement.
  + Option 1a (Apple, CMCC, Xiaomi)
    - The reported results must meet the existing measurement accuracy requirement.
  + Option 1b (CTC, Qualcomm, ZTE):
    - The valid reporting must meet the existing measurement delay/accuracy requirement.
  + Option 2 (LGE, vivo, MediaTek):
    - A time window could be considered as a condition to determine if the result to be reported is fresh.
  + Option 2a (LGE):
    - The valid measurement reporting after the SCell activation command needs to meet the existing measurement accuracy requirements, and additionally time window [W] could be considered as an additional condition.
  + Option 2b (vivo):
    - To check the freshness of the to-be-reported measurement results of the SCell, the same time windows as those in current known SCell condition can be reused, i.e. 4s for PC1/PC5, and 3s for PC2/PC3/PC4.
    - The measurement results are considered as available only if it fulfils the measurement requirement for a deactivated Scell as specified in TS38.133 Table 9.2.5.2-3 (for FR1) and Table 9.2.5.2-4 (for FR2), which implies that the reported SS-RSRP, SS-RSRQ, and SS-SINR measurements need to meet the accuracy requirements specified in Clause 10.
  + Option 2c (MediaTek):
    - For L3 measurements validity: measurement should satisfy the requirement for a deactivated Scell as specified in TS38.133.
    - For L3 measurements availability: a time duration [W]s is required to determine whether a valid L3 measurement is fresh or old.
  + Option 3 (Nokia, NTT DCM, Ericsson):
    - The report of L3 measurement result after SCell activation command needs to be valid.
    - The report of L3 measurement result is considered as valid only if it fulfils the measurement requirement for a deactivated SCell as specified in TS38.133 Table 9.2.5.2-3 (for FR1) and Table 9.2.5.2-4 (for FR2).
* Recommended WF
  + [Moderator]: The discrepancy among different sub-options are highlighted in RED. Please companies discuss:
    - In requirement design, whether or not need a time window to determine freshness of L3 measurement result? If yes, what’s the window?
    - In requirement design, which requirement shall the L3 measurement results reporting meet?
    - Accuracy requirement? Measurement delay requirement? Or both?
* Agreements
  + The report of L3 measurement result after SCell activation command needs to be valid.
  + The report of L3 measurement result is considered as valid only if it fulfils the measurement requirement for a deactivated SCell as specified in TS38.133 Table 9.2.5.2-3 (for FR1) and Table 9.2.5.2-4 (for FR2) and accuracy requirements in TS 38.133 Clause 10.

Issue 1-1-4: FFS on necessity of L3 measurement reporting if UE has no valid measurement results?

* Agreements
  + UE does not need to report L3 measurement reporting after receiving SCell activation command if UE has no valid measurement results

Issue 1-1-6: FFS: When the valid L3 measurement result with SSB index is reported after SCell activation command, L3 and L1 parts can be skipped, i.e., network can perform TCI activation after valid L3 measurement results are reported.

* Agreement
  + It is up to NW implementation to choose whether to configure TCI based on L3 report after SCell activation command or based on L1-RSRP as legacy cases.
  + When the valid L3 measurement result with SSB index is reported after SCell activation command and NW configures TCI based on L3 report (i.e., before UE reported L1 measurements), the activation delay requirements is adjusted as follows
    - L3 measurement delay component is removed
    - L1 measurement delay component is removed

**WF/LS for approval**

**R4-2310081 WF on NR RRM enhancements – FR2 SCell activation**

*Type: other For: Approval  
 Source: Apple*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310083 LS on FR2 SCell activation enhancements**

*Type: LS Out For: Approval  
 To: RAN2, Cc: RAN1  
 Source: Apple*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][210] NR\_RRM\_enh3\_part2**

**Summary documents**

**R4-2309955 Topic summary for [107][210] NR\_RRM\_enh3\_part2**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Wednesday 5/24/2023)**

Issue 1-1-2: UE report on the beam failure if Beam failure has been declared or TCI become unknown during SCG activation procedure

* Ad-hoc agreement
  + FFS
    - Option 1: RAN4 assumes whether to report beam failure to the network can be up to UE implementations if beam failure has been detected during SCG activation procedure. (OPPO, Huawei, Apple, vivo, QC)
    - Option 2: RAN4 assumes UE should not indicate beam failure to the network if beam failure has been detected during SCG activation procedure. (E///)
  + FFS whether LS is needed to check with RAN2 on the indication for above case.
* Agreement
  + Update ad-hoc agreement as follows:
    - Do not specify UE behavior in RAN4 specifications

**WF/LS for approval**

**R4-2310082 WF on NR RRM enhancements – FR1-FR1 NR DC**

*Type: other For: Approval  
 Source: OPPO*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310167 (from R4-2310082).**

**R4-2310167 WF on NR RRM enhancements – FR1-FR1 NR DC**

*Type: other For: Approval  
 Source: OPPO*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.10 Further enhancements on NR and MR-DC measurement gaps and measurements without gaps

#### 8.10.1 General and work plan

**R4-2309562 General discussion for CR work split**

*Type: discussion For: Discussion  
 Source: MediaTek inc., Intel Corporation*

**Decision: Noted.**

#### 8.10.2 RRM core requirements for pre-configured MGs, multiple concurrent MGs and NCSG

##### 8.10.2.1 Scope and general issues

**R4-2307442 Consideration on issues on scope and general issues for Pre-MG, concurrent MGs and NCSG**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307635 Discussion on scope and general issues of R18 gap enhancement**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2308720 Discussion on general and scope of enhancements on measurement gaps**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309123 On joint requirements for Rel-17 measurement gap enhancements - scope and general issues**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309673 Discussion on general issues for Case 1 and Case 2 requirements**

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

**Decision: Noted.**

##### 8.10.2.2 Case 1 requirements (Pre-configured MG and concurrent MG)

**R4-2307406 Discussion on case 1 requirements for combination of pre-MG and concurrent MGs**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307443 Consideration on issues on case 1 requirements for Pre-MG and concurrent MGs**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307552 Discussion on Pre-MG MG and concurrent MG (case 1)**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307636 Discussion on case 1 requirements of R18 gap enhancement**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307946 RRM requirements for the combination of Pre-MG and concurrent MG**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308018 Discussion on Case 1 requirements for Pre-MG and concurrent MG**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2308441 Discussion on PreMG and ConMGs**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the requirement for Pre-MG and ConMGs

**Decision: Noted.**

**R4-2308461 Discussion on case 1 requirements for Pre-MG and concurrent MG**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308658 Discussion on joint working of pre-MG and con-MG**

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

**Decision: Noted.**

**R4-2308721 Discussion on Case 1 RRM requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309124 On joint requirements for Rel-17 measurement gap enhancements - Case 1**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309563 Discussion on case 1 requirements (Pre-configured MG and concurrent MG)**

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

**Decision: Noted.**

**R4-2309674 Discussion on Case 1 requirements**

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

**Decision: Noted.**

##### 8.10.2.3 Case 2 requirements (NCSG and concurrent MG)

**R4-2307407 Discussion on case 2 requirements for combination of NCSG and concurrent MGs**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307433 Discussion on RRM core requirement for case 2 (NCSG and concurrent MG)**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2307444 Consideration on issues on case 2 requirements for concurrent MGs and NCSG**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307553 Discussion on NCSG and concurrent MG (case 2)**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307637 Discussion on case 2 requirements of R18 gap enhancement**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307947 RRM requirements for the combination of NCSG and concurrent MG**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308019 Discussion on Case 2 requirements for NCSG and concurrent MG**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2308442 Discussion on NCSG and ConMGs**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the requirement for NCSG and ConMGs

**Decision: Noted.**

**R4-2308462 Discussion on case 2 requirements NCSG and conMG**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308659 Discussion on joint working of NCSG and con-MG**

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

**Decision: Noted.**

**R4-2308722 Discussion on Case 2 RRM requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309125 On joint requirements for Rel-17 measurement gap enhancements - Case 2**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309564 Discussion on case 2 requirements (NCSG and concurrent MG)**

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

**Decision: Noted.**

**R4-2309675 Discussion on Case 2 requirements**

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

**Decision: Noted.**

#### 8.10.3 RRM core requirements for measurements without gaps

##### 8.10.3.1 Measurement without gaps for UEs reporting NeedForGapsInfoNR

**R4-2307191 Discussion on measurements without gaps**

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

**Decision: Noted.**

**R4-2307408 Discussion on RRM requirements for measurement without gaps for UEs reporting NeedForGapsInfoNR**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307445 Considerations on issues on measurement without gaps for UEs reporting NeedForGapsInfoNR**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307554 Discussion on measurements without gaps for UEs reporting NeedForGapsInfoNR**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307638 Discussion on measurement without gaps for UEs reporting NeedForGapsInfoNR**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307805 Discussion on measurements without gaps for UE reporting NFG**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2307958 Discussion on measurement without gaps for UEs reporting NeedForGapsInfoNR**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308443 Discussion on NeedForGaps measurement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the NeedForGaps measurement requirement

**Decision: Noted.**

**R4-2308463 On measurement without gaps for UEs reporting NeedForGapsInfoNR**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308660 Discussion on requirements for NeedForGaps**

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

**Decision: Noted.**

**R4-2308723 Discussion on measurement without gaps for UEs reporting NeedForGapsInfoNR**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309423 Discussion on requirements for measurement without gap**

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

**Decision: Noted.**

**R4-2309565 Discussion on measurement without gaps for UEs reporting NeedForGapsInfoNR**

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

**Decision: Noted.**

##### 8.10.3.2 Inter-RAT measurement without gap

**R4-2307192 Discussion on interRAT measurements without gaps**

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

**Decision: Noted.**

**R4-2307409 Discussion on RRM requirements for Inter-RAT measurement without gap**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307446 Consideration on issues on inter-RAT measurement without gap**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307555 Discussion on inter-RAT measurements without gaps**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307639 Discussion on R18 inter-RAT measurement without gap**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307806 Discussion on inter-RAT measurement without gaps**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2307959 Discussion on inter-RAT measurement without gap**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308444 Discussion on Inter-RAT measurement without gap**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the inter-RAT measurement requirement

**Decision: Noted.**

**R4-2308464 On RRM requirements for Inter-RAT measurement without gap**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308661 Discussion on inter-RAT MG-less measurement**

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

**Decision: Noted.**

**R4-2308724 Discussion on inter-RAT measurement without gaps**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309424 Disccusion on requirements of inter-RAT measurement without gaps.**

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

**Decision: Noted.**

**R4-2309566 Discussion on inter-RAT measurements**

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

**Decision: Noted.**

#### 8.10.4 Moderator summary and conclusions

**R4-2310044 Ad-hoc minutes for NR and MR-DC measurement gaps and measurements without gaps**

*Type: other For: Approval  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Noted.**

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**Topic: [107][211] NR\_MG\_enh2\_part1**

**Summary documents**

**R4-2309956 Topic summary for [107][211] NR\_MG\_enh2\_part1**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Tuesday, 5/23/2023)**

Issue 3-2-2: [Case 1] For how long to extend the delay for fully overlapped simultaneous activation/deactivation for Pre-MG + Pre-MG (T1)

Agreement

For Case 1 (Pre-configured MG and multiple concurrent MGs), under the assumption that the baseline requirement considers collisions on Pre-MG is only considered when Pre-MG is activated, extend the delay by X ms for fully overlapped simultaneous activation/deactivation for Pre-MG + Pre-MG

* X = 2ms.
* FFS if this activation delay collide with existing gaps

Issue 3-3-2: [Case 1] When the pre-configured MG activation procedure is overlapped with one of concurrent gap occasion during the dynamic collision (i.e. Pre-MG has higher priority than the MG)

Agreements

A collision between a change in the status of a pre-configured MG (MG#1) and a gap instance happens when the change occurs ≤ 4 ms before the start or ≤ 4 ms after the end of a gap instance of an activated concurrent MG (MG#2) the Pre-MG status and dropping rule shall be applied 5ms after the overlapping MG [and UE should continue the measurement within the MG#2]

* TBD whether same Pre-MG activation delay requirements as Rel-17 can still be re-used

Issue 4-2-1: [Case 2] Whether to consider parallel measurements upon NCSGs collision

* Proposals
  + Option 1: CMCC, Ericsson, CATT, ZTE, Nokia
    - Support of parallel measurements upon NCSGs collision is up to UE capability
  + Option 2: Qualcomm, Apple, Xiaomi, China Telecom, vivo, OPPO, HW, MTK, LGE
    - Do not support parallel measurements upon NCSGs collision.
* Agreement
  + Do not support parallel measurements upon NCSGs collision in Rel-18 MG Enhancements WI.

Issue 4-4-1: [Case 2] Potential changes for NCSG upon SCell activation

* Proposals
  + Option 1: MTK, CATT, [OPPO], ZTE, vivo, Apple
    - ~~Legacy Rel-15 UE behavior (i.e.,~~ UE measures the deactivated SCell outside of MG~~)~~
  + Option 2: Huawei, E///, Xiaomi, CATT, China Telecom, QC, Apple
    - When the SCell is deactivated, the deactivated SCell’s MO will be measured within NCSG if the SMTC is partially or fully overlapped with NCSG.
  + Option 3: Apple,
    - A new indication shall be introduced enable support of NCSG for deactivated SCell only.
  + Option 3a: Apple,
    - UE behavior for deactivated SCell measurements with NCSG in Case 2:
      * If UE supports the new indication in P3, then the deactivated SCell’s MO will be measured within NCSG if the SMTC is partially or fully overlapped.
    - Otherwise, follow legacy, i.e. UE measures the deactivated SCell outside of MG.
  + Option 4: OPPO,
    - Introduce UE capability to distinguish deactivated SCell measurement outside MG/NCSG and within NCSG.
  + Option 5: Nokia,
    - Upon SCell deactivation, in case of configured NCSG, the deactivated SCell’s MO will be measured within NCSG if the SMTC of the deactivated SCell’s MO is partially or fully overlapped, else it will be measured gapless (legacy UE behaviour). This issue is also relevant for Rel-17 MGE, when NSCG is configured for measuring deactivated SCells. Hence a solution for Rel-17 needs to be defined first.
* Agreements
  + Option 1:
    - UE measures the deactivated SCell outside of MG
  + Option 2:
    - When the SCell is deactivated, the deactivated SCell’s MO will be measured within NCSG if the SMTC is partially or fully overlapped with NCSG.
    - FFS whether a new indication shall be introduced enable support of NCSG for deactivated SCell only.

Issue 3-3-1: [Case 1] Required changes for Pre-MG on collision

* Proposals
  + Option 1: CATT, Apple, OPPO, ZTE, CMCC, E///, ZTE
    - RAN4 shall stick to agreed baseline that collision and priority rule on Pre-MG are considered only when Pre-MG is activated (deactivated Pre-MG is not considered in collisions).
  + Option 2: Huawei, QC, MTK, Nokia, vivo, Xiaomi,
    - De-activated pre-MG is considered in collisions handling.
  + Option 2a: QC
    - Adopt the modified definition of collision as in option 2 and close the following two issues:
      * [Case 1] Whether to extend the delay for fully overlapped simultaneous activation/deactivation for Pre-MG+Pre-MG
      * [Case 1] Whether to extend the delay for partially overlapped simultaneous activation/deactivation for Pre-MG+Pre-MG
  + Option 3: Nokia
    - Collision handling in case of deactivated Pre-MG is done based on a second priority level associated with Pre-MG.
* Agreements
  + Collision and priority rule on Pre-MG are considered only when Pre-MG is activated (i.e., deactivated Pre-MG is not considered in collisions)

**WF/LS for approval**

**R4-2310051 WF on NR MG enhancements**

*Type: other For: Approval  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310175 (from R4-2310051).**

**R4-2310175 WF on NR MG enhancements**

*Type: other For: Approval  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310053 WF on the CR work split for MG Enhancements WI**

*Type: other For: Approval  
 Source: MediaTek, Intel*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][212] NR\_MG\_enh2\_part2**

**Summary documents**

**R4-2309957 Topic summary for [107][212] NR\_MG\_enh2\_part2**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Tuesday, 5/23/2023)**

Issue 1-1-1: Framework of the interruption requirements

Agreements:

Do not define any restriction on interruption location

Issue 1-1-5b: Requirements on the interruption ratio, if allowed - how Tcycle is specified

Agreements:

FFS if there are MOs that need interruption and MOs that do not need interruption. FFS whether these MOs compete the same opportunities for measurements?

Issue 2-1-1: Differentiate scenarios for Case b-2

* Proposals
  + Option 1: Do not differentiate the cases. Both CRS rate matching and CRS-IM have the same requirements
  + Option 2: Gapless measurements for Case b-2 are only allowed with CRS rate matching
* Agreements
  + Do not differentiate the cases. The same requirements apply for both CRS rate matching and CRS-IM use cases

Issue 2-2-2: UE capability to support the inter-RAT LTE measurement requirements when LTE CRS to be measured is contained in UE’s active BWP (Case b-2)

* + Proposals
    - Option 1: Do not consider interruption for case b-2 and no need to introduce additional indication of “no gap with interruption” for case b-2
    - Option 2: A new per-UE capability to support Case b-2 should be defined. Indication such as “no gap with interruption” is not necessary unless well justified. Potential issues such as AGC can be reflected in applicability conditions for case b-2
    - Option 3: Introduce a new capability for case b-2 similar as Rel-16 inter-frequency measurement without gap
    - Option 4: RAN4 shall agree on the following:
      * A new per-UE capability to support Case b-2 should be defined,
      * signalling levels can be: (i) ‘gap’, and (ii) ‘nogap-nointerruption’,
      * power imbalance between LTE neighbouring cell and NR serving cell is less than 6 dB, FFS additional AGC samples for measurements delay,
      * scheduling restriction shall be defined for inter-RAT LTE measurement case b-2 with mixed numerology.
* Discussion
  + MTK: would like to add condition on power difference. If power imbalance > 6dB then interruption is needed.
    - Nokia: not sure this happens
  + E///: not convinced on power imbalance issue. AGC retuning has impact on delay rather than interruption
* Agreement
  + Introduce a new per-UE capability to support case b-2 similar as Rel-16 inter-frequency measurement without gap
  + “No gap with interruption” is not considered for case b-2
  + No interruption is considered for case b-2
  + FFS on power imbalance side conditions for Case b-2 measurements
  + FFS whether scheduling restriction shall be defined for inter-RAT LTE measurement case b-2 with mixed numerology.

Issue 2-3-1: searcher limitation

* Proposals
  + Option 1: Inter-RAT LTE measurement without gap (case b-2) can be performed in parallel with NR measurement without searcher limitation (Nokia, E///, CATT, CMCC)
  + Option 2: Performing inter-RAT measurement and NR measurements in parallel without searcher limitation is NOT supported (MTK, QC, vivo, OPPO, Xiaomi, Apple)
  + Option 3: RAN4 shall delay the discussion on searcher limitation reqirement until RAN4 reaches conclusion on parallel measurements (Intel)
* Discussion
  + Session chair: continue discussion

Issue 2-4-9: Effective measurement window

* Proposals
  + Option 1: Introduce the effective measurement window for inter-RAT LTE measurement, including offset, duration and periodicity.
  + Option 1a:
    - The ML for NCSG can be reused as the duration for effective measurement window
    - The VIRP for NCSG can be reused as the periodicity for effective measurement window
  + Option 1b:

Table. Effective measurement window configuration and minimum available time

|  |  |  |  |
| --- | --- | --- | --- |
| Effective measurement window (EMW) Id | Measurement Duration (MD, ms) | Measurement Period  (MP, ms) | Minimum available time for inter-RAT LTE measurements during 480 ms period  (Tinter1, ms) |
| 0 | 5 | 40 | 60 |
| 1 | 5 | 80 | 30 |
| 2 | 2 | 40 | 24Note 1 |
| 3 | 2 | 80 | 12Note 1 |
| Note 1: When determining UE requirements using Tinter1 for EMW IDs 2, 3, Tinter1 = 60 for pattern ID 2, and Tinter1 = 30 for pattern ID 3. | | | |

* + Option 2: Define effective measurement window to restrict the location of scheduling restriction due to inter-RAT LTE measurement
* Agreement
  + Introduce the effective measurement window for inter-RAT LTE measurement, including offset, duration and periodicity.
    - The effective measurement window is used to determine the location of scheduling and measurement restriction.
    - FFS whether the effective measurement window is used to handle the collision between the SSB and LTE measurement

**WF/LS for approval**

**R4-2310052 WF on measurements without gaps**

*Type: other For: Approval  
 Source: Intel*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310054 LS on inter-RAT measurements without gaps**

*Type: LS Out For: Approval  
 To: RAN2  
 Source: Intel*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310158 (from R4-2310054).**

**R4-2310158 LS on inter-RAT measurements without gaps**

*Type: LS Out For: Approval  
 To: RAN2  
 Source: Intel*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.11 Completion of specification support for bandwidth part operation without restriction in NR

#### 8.11.1 General and work plan

**R4-2307640 Discussion on general apsect of BWP without restriction**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307722 On general aspects for BWP operation without restriction**

*Type: discussion For: Decision  
 Source: vivo, Vodafone Italia SpA, Huawei*

**Decision: Noted.**

**R4-2309567 Discussion on L3 measurements and multiple options for BWP wor**

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

**Decision: Noted.**

#### 8.11.2 RRM core requirements

**R4-2307410 Discussion on the RRM impact of option A, B-1-1, B-1-2 and C for the support for bandwidth part operation without restriction**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

##### 8.11.2.1 Impact of Option A

**R4-2307582 Discussion on impact of Option A**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2307641 Discussion on RRM core requirements for option A**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307724 On RRM impact of option A for BWP operation without restriction**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308674 Discussion on option A for BWP without restriction**

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

**Decision: Noted.**

**R4-2308768 Bandwidth part operation without restriction in NR – Option A**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309568 Discussion on BWP operation without BW restrictions – Option A**

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

**Decision: Noted.**

**R4-2309646 Further analysis of BWP operation without restriction option A**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper further analyzes the BWP operation without restriction related to Option A

**Decision: Noted.**

##### 8.11.2.2 Impact of Option B-1-1

**R4-2307583 Discussion on impact of Option B-1-1**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2307642 Discussion on RRM core requirements for option B-1-1**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307725 On RRM impact of option C for BWP operation without restriction**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308675 Discussion on option B-1-1 for BWP without restriction**

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

**Decision: Noted.**

**R4-2308769 Bandwidth part operation without restriction in NR – Option B-1-1**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309569 Discussion on BWP operation without BW restrictions – Option B-1-1**

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

**Decision: Noted.**

**R4-2309647 Further analysis of BWP operation without restriction option B-1-1**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper further analyzes the BWP operation without restriction related to Option B-1-1

**Decision: Noted.**

##### 8.11.2.3 Impact of Option C

**R4-2307584 Discussion on impact of Option C**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2307643 Discussion on RRM core requirements for option C**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307726 On RRM impact of option B-1-1 for BWP operation without restriction**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308676 Discussion on option C for BWP without restriction**

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

**Decision: Noted.**

**R4-2308770 Bandwidth part operation without restriction in NR – Option C**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309570 Discussion on BWP operation without BW restrictions – Option C**

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

**Decision: Noted.**

**R4-2309648 Further analysis of BWP operation without restriction option C**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper further analyzes the BWP operation without restriction related to Option C

**Decision: Noted.**

##### 8.11.2.4 Impact of Option B-1-2

**R4-2307273 Impact of Option B-1-2**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307585 Discussion on impact of Option B-1-2**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2307644 Discussion on RRM core requirements for option B-1-2**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307727 On RRM impact of option B-1-2 for BWP operation without restriction**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308677 Discussion on option B-1-2 for BWP without restriction**

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

**Decision: Noted.**

**R4-2308771 Bandwidth part operation without restriction in NR – Option B-1-2**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309316 Discussion on option B-1-2 for BWP operation without restriction**

*Type: discussion For: Discussion  
 Source: Spreadtrum Communications*

**Decision: Noted.**

**R4-2309571 Discussion on BWP operation without BW restrictions – Option B-1-2**

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

**Decision: Noted.**

**R4-2309649 Further analysis of BWP operation without restriction option B-1-2**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper further analyzes the BWP operation without restriction related to Option B-1-2

**Decision: Noted.**

#### 8.11.3 Moderator summary and conclusions

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**Topic: [107][213] NR\_BWP\_wor**

**Summary documents**

**R4-2309958 Topic summary for [107][213] NR\_BWP\_wor**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Monday, 5/22/2023)**

**Topic #1: General**

Issue 1-1: How to handle L3 related requirements impact

* Proposals
  + Option 1: (vivo, Vodafone, Huawei, CATT)
    - Continue the discussions in RAN4 directly from Q3 with current allocated TU budget.
  + Option 2: (vivo, Vodafone, Huawei)
    - Send LS to RAN plenary on RAN4 agreements on L3 related requirements impact for all the options, and ask RAN plenary to include L3 related requirements in the WI objectives.
  + Option 3: (MTK)
    - RAN4 shall request from RAN plenary to add the following to the current WID: (i) UE L3 measurement behaviour, if related, can be discussed and (ii) The corresponding requirements can be specified, if necessary.
  + Option 4: (Apple)
    - RAN4 shall focus on existing scope according to WID RP-230805. Potential enhancement such as L3 related gap-less measurement can be further studied in future release.
* Discussion
  + MTK: we already agreed that it is up to RANP to decide. Option 3
  + E///: we agreed to focus on other aspects in Q2. L3 measurements may be discussed in RANP.
  + Session chair: de-prioritize discussion in Q2. The issue can be brought in RANP. Companies can discuss the LS to RANP.

Issue 1-2: Requirements for handover for Option A, C, B-1-1 and B-1-2

* Session chair: de-prioritize discussion since the topic is not in the WI scope

**Topic #2: Impact of Option A**

Issue 2-1: Any clarification on FR2 CSI-RS based RLM/BFD/BM requirements for Option A

* Proposals
  + Option 1: (Huawei, Nokia)
    - No specification impact on FR2 CSI-RS based RLM/BFD/BM requirements for option A
  + Option 2: (vivo)
    - Existing requirements for FR2 CSI-RS based RLM/BFD/CBD/BM measurements in clauses 8.1, 8.5, 9.5 and 9.8 should be updated by taking intra-frequency measurement with GAP into consideration for UE supporting option A.
    - When CD-SSB is outside active BWP, the sharing factor P for FR2 CSI-RS based RLM/BFD/CBD/BM measurements is defined as below.
      * For FR2 when UE CD-SSB is outside active BWP and UE is not supporting option B-1-1 and option B-1-2,
        + P=1/(1-T\_(CSI-RS)/xRP), when in the monitored cell there are GAPs configured for intra-frequency, inter-frequency or inter-RAT measurements, and these GAPs are overlapping with some but not all occasions of the CSI-RS; and
        + P=1 when in the monitored cell there are no GAPs overlapping with any occasion of the CSI-RS
* Discussion
  + CATT: Option 1. CSI-RS is within BWP. No need to consider intra-freq measurements with gaps.
  + E///: The only issue for Option A was timing. This proposal is an optimization.
* Agreement: Do not introduce further enhancements for CSI-RS based RLM/BFD/BM requirements for Option A

Issue 2-2: Any clarification on existing timing requirements when CD-SSB is outside active BWP

* Proposals
  + Option 1: (Ericsson, Apple, Nokia, Huawei, CMCC, CATT, MediaTek)
    - No clarifications on existing timing requirements are needed.
  + Option 2: (vivo)
    - It is clarified in the spec that existing timing requirements for non-RedCap UE are applicable regardless of whether SSB is within active BWP or not.
    - A note is added for timing requirements that when SSB is outside active BWP, availability of SSB is at least relevant to configuration of measurement gap, number of measurement objects and gap sharing factor.
  + Option 3: (Ericsson)
    - The condition to configure gaps to meet the existing UE transmission timing error requirements in clause 7.1 of TS 38.133, when the UE is performing BM/RLM/BFD based on option A, is NOT needed.
    - A possible compromise is to clarify in clause 7.1.2 of TS 38.133, that the availability of the SSB at the UE is for the purpose of acquiring the timing of the reference cell
* Discussion
  + Session chair: no consensus to add clarifications to the specification

**Topic #3: Impact of Option B-1-1**

Issue 3-1: Applicable conditions of existing RLM/BFD/BM requirements for Option B-1-1

* Proposals
  + Option 1:
    - Support of option B-1-1 shall be a prerequisite for RAN4 existing RLM/BFD/BM requirement to apply when CD-SSB is outside the active BWP.
    - CD-SSB shall be contained within UE CBW.
  + Option 2:
    - UE is required to perform RLM/BM/BFD measurements based on CD-SSB outside active BWP if the UE supporting FG 53-1 and FG 53-2. Otherwise, RLM/BM/BFD measurements is performed based on SSB within active BWP.
  + Option 3:
    - RAN4 waits for RAN1 conclusion before discussing the applicable condition for the L1 requirements for option B-1-1.
  + Option 4:
    - RAN4 to have a definition of ‘Option B-1-1’.
    - RAN4 to firstly agree on how to refer to ‘Option B-1-1 capable UE’ and the text before going to CR phase.
    - RAN4 to clarify that a UE supporting Option B-1-1 can perform SSB-based RLM, BFD and BM, on the CD-SSB not within the active BWP without causing interruptions.
  + Option 5:
    - The applicable condition is that the UE meets the requirements for supporting Option B-1-1 provided that the CD-SSB is within the bandwidth of the UE.
* Discussion
  + E///: RAN1 is defining the feature. For B-1-1 and B-1-2 RAN1 agreed that BWP is within the BW. Prefer to wait for RAN1
  + HW: Option 3.
* Conclusion: Wait for RAN1 conclusion before discussing the applicable condition for the L1 requirements for option B-1-1, B-1-2 and option C

**Topic #5: Impact of Option B-1-2**

Issue 5-2: Interruption requirements for supporting option B-1-2

* Proposals
  + Option 1: (CATT, CMCC)
    - For option B-1-2, the interruption requirements can be defined based on HARQ ACK/NACK loss framework with a maximum missed ACK/NACK rate up to [0.5%].
    - And the length for each interruption shall not exceed the RF retuning time (0.5ms for FR1 and 0.25ms for FR2).
  + Option 2: (Qualcomm)
    - For Option B-1-2, interruption length upon L1 measurement/evaluation based on SSB outside UE active BWP is defined as 2 times RF retuning time before and after the L1 measurement/evaluation, i.e., wideband RF based L1 measurement/evaluation.
    - For Option B-1-2, interruption ratio upon L1 measurement/evaluation based on SSB outside UE active BWP is subject to UE capability. The capability can be from 0.5% to [5]%, and the granularity of the capability can be decided based on NW vendors’ inputs, e.g. 0.5, 1, 2, and 5.
    - FFS on whether and how to differentiate L1 measurement/evaluation period, e.g. DRX on/off, DRX cycle, periodicity of SSB, etc.
  + Option 3: (Apple)
    - X%=interruption length \* 2 / L1-RS periodicity, where X% is the interruption ratio, and L1-RS periodicity is the periodicity of SSB configured for BM/RLM/BFD after taking scaling factor P into account.
    - Interruption length is [0.5ms] in FR1 and [0.25ms] in FR2
  + Option 4: (vivo)
    - For UE supporting option B-1-2, the probability of missed ACK/NACK is 1% for ALL RLM/BFM/BM(L1-RSRP/L1-SINR) measurements based on SSB outside active BWP.
  + Option 5: (Huawei)
    - Define requirements on length of each interruption. Use the following values as baseline. FR1: 0.5ms, FR2: 0.25ms.
    - Support NW to control the interruption location. Interruption ratio are not defined.
  + Option 6: (Nokia)
    - Any interruption length shall not exceed [TBD]ms.
    - Probability of missed ACK/NACK for a UE supporting Option B-1-2, due to interruptions caused by BM/RLM/BFD measurements based on SSB outside the active BWP, shall not exceed [TBD]%.
  + Option 7: (Spreadtrum)
    - it’s proposed to fit RLM based on SSB outside the active BWP into the NCSG, thus by applying the NCSG patterns of different VIPLs, the actual interruption could be adapted accordingly.
  + Option 8: (MediaTek)
    - RAN4 shall leverage the interruption requirements (NCSG and NFG) from L3 measurements to define the interruption requirements for RLM/BFD/BM measurements.
  + Option 9: (Ericsson)
    - The rate of ACK/NACK feedback loss on any other active serving cell resulting from RLM/BFD, CBD and L1-RSRP/L1-SINR measurements on the serving cell shall not exceed 0.5 %.
    - Maximum length of each interruption is defined differently for CA/DC scenarios
* Discussion
  + E///: propose to define interruption length and ratio
  + Apple: ok with length and ratio
  + MTK: need to consider NCSG as well. Option 8.
    - E///: NCSG was precluded based on prior discussion
  + CMCC: interruption length and ratio
  + Huawei: prefer to specify interruption location
  + Nokia: ok with interruption length and ratio
  + QC: prefer interruption length and ratio
* Agreements
  + Define the following interruption requirements for Option B-1-2
    - Interruption length
    - FFS: Interruption ratio
    - FFS: Interruption location
  + Interruption length is equal
    - Option 1: [0.5ms] for FR1 and [0.25ms] for FR2

**WF/LS for approval**

**R4-2310050 WF on NR BWP operation without restriction**

*Type: other For: Approval  
 Source: vivo*

**Abstract:**

**Discussion:**

MTK: need to remove issues 3-5 and 5-7 since they are relevant to details of L3 measurements

Apple/E///: support MTK view

vivo: there was an agreement in the last meeting to allow discussion on intra-frequency measurements

Apple: recommend to leave discussion on L3 to the plenary

**Decision: Revised to R4-2310156 (from R4-2310050).**

**R4-2310156 WF on NR BWP operation without restriction**

*Type: other For: Approval  
 Source: vivo*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310176 (from R4-2310156).**

**R4-2310176 WF on NR BWP operation without restriction**

*Type: other For: Approval  
 Source: vivo*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2307723 LS on L3 related requirements for the options for BWP operation without restriction**

*Type: LS out For: Approval  
 to RANP  
 Source: vivo, Vodafone Italia SpA*

**Decision: Revised to R4-2310157 (from R4-2307723).**

**R4-2310157 LS on L3 related requirements for the options for BWP operation without restriction**

*Type: LS out For: Approval  
 to RANP  
 Source: vivo, Vodafone Italia SpA*

**Decision: Revised to R4-2310177 (from R4-2310157).**

**R4-2310177 LS on L3 related requirements for the options for BWP operation without restriction**

*Type: LS out For: Approval  
 to RANP  
 Source: vivo, Vodafone Italia SpA*

**Decision: Approved.**

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

#### 8.12.3 RRM Core requirements

**R4-2307891 Discussion on RRM requirements for FR1 non-co-located EN-DC and NR-CA**

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

**Decision: Noted.**

**R4-2308703 Discussion on RRM requirements for supporting intra-band non-collocated EN-DC/NR-CA deployment**

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

**Decision: Noted.**

**R4-2308704 DraftCR on Scell activation and BFD/CBD requirements for Type 2 UE**

*Type: draftCR For: Endorsement  
 38.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Revised to R4-2310048 (from R4-2308704).**

**R4-2310048 DraftCR on Scell activation and BFD/CBD requirements for Type 2 UE**

*Type: draftCR For: Endorsement  
 38.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2309114 RRM requirements for non-collocated FR1 inter-band EN-DC with overlapping bands**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309115 MRTD/MTTD requirement for non-collocated inter-band EN-DC with overlapping bands**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3332 rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

**Decision: Postponed.**

**R4-2309116 38133CR on interruption requirement for FR1 non-collocated EN-DC**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3333 rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Postponed.**

**R4-2309318 On Remaining issues for FR1 intra-band NR-CA Type-2 UE RRM Requirement**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2309319 Draft CR to TS38.133 on BFD/CBD Requirement for Rel-18 intra-band CA Type-2 UE**

*Type: draftCR For: Endorsement  
 38.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Samsung*

**Decision: Revised to R4-2310049 (from R4-2309319).**

**R4-2310049 Draft CR to TS38.133 on BFD/CBD Requirement for Rel-18 intra-band CA Type-2 UE**

*Type: draftCR For: Endorsement  
 38.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Samsung, KDDI*

**Decision: Endorsed.**

#### 8.12.5 Moderator summary and conclusions

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**Topic: [107][214] NonCol\_intraB\_ENDC\_NR\_CA**

**Summary documents**

**R4-2309959 Topic summary for [107][214] NonCol\_intraB\_ENDC\_NR\_CA**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Monday, 5/22/2023)**

Issue 1-2-1: Impacts on SCell activation requirements

* Proposals
  + Proposal 1: (MTK)
    - For an unknown FR1 intra-band non-collocated SCell, provided that the side condition Ês/Iot ≥ -2dB is fulfilled, Tactivation\_time is:
      * Tactivation\_time is TFirstSSB\_MAX + TSMTC\_MAX + 2\*Trs + 5ms, if one of the following conditions is met
        + ‘ssb-PositionInBurst’ indicates only one SSB is being actually transmitted, or
        + ‘ssb-PositionInBurst’ indicates multiple SSBs and TCI indication is provided in same MAC PDU with SCell activation,
      * Otherwise Tactivation\_time is:
        + 6ms + TFirstSSB\_MAX + TSMTC\_MAX + Trs + TL1-RSRP,measure + TL1-RSRP,report + THARQ + max(Tuncertainty\_MAC + TFineTiming + 2ms, Tuncertainty\_SP), if semi-persistent CSI-RS is used for CSI reporting,
        + 3ms + TFirstSSB\_MAX + TSMTC\_MAX + Trs + TL1-RSRP,measure + TL1-RSRP,report + max(THARQ + Tuncertainty\_MAC + 5ms + TFineTiming, Tuncertainty\_RRC + TRRC\_delay), if periodic CSI-RS is used for CSI reporting.
  + Proposal 2: (Huawei)
    - For Type 2 UE, the values of TSMTC\_MAX and TFirstSSB\_MAX used for defining SCell activation delay requirements for FR1 inter-band CA case can be reused for FR1 intra-band non-contiguous CA.
  + Proposal 3: (Samsung)
    - For FR1 intra-band NR-CA Type-2 UE, there is no requirement impact required for SCell activation delay requirement.
* Discussion
  + MTK: can agree on Proposal 2
  + Samsung: ok with proposal 2
* Agreement
  + For Type 2 UE, reuse the values of TSMTC\_MAX and TFirstSSB\_MAX used for defining FR1 inter-band CA SCell activation delay requirements for FR1 intra-band non-contiguous CA.

Issue 1-3-1: Impacts on BFD/CBD requirement requirements

* Discussion
  + Session chair: proponents will further align the proposals based on CRs

Issue 2-1-1: RRM discussion for New Type UE for 4 layer MIMO

* Agreements
  + Do not define RRM requirements to support Type 3a/3b and Type 4a/4b UEs in Rel-18

Issue 1-1-1: RRM requirements for FR1 inter-band EN-DC with overlapping DL band

* Session chair: There is no common understanding whether interBandMRDC-WIthOverlapDL-Bands-r16 should be discussed within this WI and RF session is discussing whether to keep EN-DC scenario in the scope. The plan is to continue discussion on interBandMRDC-WIthOverlapDL-Bands-r16 in the scope of RRM maintenance.

**Big CRs**

**R4-2310179 Draft Big CR on RRM requirements for support of intra-band non-collocated EN-DC/NR-CA deployment**

*Type: draftCR For: Endorsement  
 38.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei*

**Abstract:**

**Discussion:**

**Decision: Endorsed.**

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

#### 8.13.4 RRM core requirements

##### 8.13.4.1 Simultaneous multi-panel operation for train roof-mounted FR2 high power devices

**R4-2307803 Simultaneous multi-panel operations for HST FR2**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2307907 Multi-panel reception requirements for enhanced HST FR2**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Multi-panel reception requirements for enhanced HST FR2

**Decision: Noted.**

**R4-2308032 On Simultaneous Multi-Panel Reception in HST FR2 Enhanced**

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

**Decision: Noted.**

**R4-2308335 Discussion on multi-panel simultaneous reception in FR2 eHST**

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

**Decision: Noted.**

**R4-2308434 Discussion on simultaneous multi-panel operation for FR2 PC6 UE**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

##### 8.13.4.2 Intra-band carrier aggregation (CA) scenario

**R4-2307906 CA requirements for enhanced HST FR2**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

CA requirements for enhanced HST FR2

**Decision: Noted.**

**R4-2308033 On RRM Impacts by CA in HST FR2 Enhanced**

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

**Decision: Noted.**

**R4-2308336 Discussion on RRM requirements for intra-band CA in FR2 eHST**

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

**Decision: Noted.**

**R4-2308435 Discussion on RRM requirements for intra-band CA scenario for FR2 HST**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2309705 Intra-band CA requirements for FR2 HST**

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

**Decision: Noted.**

##### 8.13.4.3 UL timing adjustment solutions

**R4-2307908 UL timing adjustment solutions**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

UL timing adjustment solutions

**Decision: Noted.**

**R4-2308034 On UL Timing Adjustment in HST FR2 Enhanced**

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

**Decision: Noted.**

**R4-2308705 Discussion on UL timing adjustment for R18 FR2 HST**

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

**Decision: Noted.**

**R4-2309324 Discussion on UL timing adjustment solutions for FR2 HST**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2309706 UL timing adjustment solutions for FR2 HST**

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

**Decision: Noted.**

##### 8.13.4.4 RRM aspects for tunnel deployment scenario

**R4-2307905 RRM aspects for tunnel deployment scenario**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

RRM aspects for tunnel deployment scenario

**Decision: Noted.**

**R4-2308035 On RRM Aspects of Tunnel Deployment Scenarios in HST FR2 Enhanced**

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

**Decision: Noted.**

**R4-2309325 Discussion on tunnel deployment scenario for FR2 HST**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2309704 RRM aspects for tunnel deployment scenario for FR2 HST**

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

**Decision: Noted.**

##### 8.13.4.5 Others

#### 8.13.6 Moderator summary and conclusions

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**Topic: [107][215] NR\_HST\_FR2\_enh\_part1**

**Summary documents**

**R4-2309960 Topic summary for [107][215] NR\_HST\_FR2\_enh\_part1**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Monday, 5/22/2023)**

**Topic #1: Simultaneous multi-panel operation for train roof-mounted FR2 high power devices**

Sub-topic 1-1 General discussion on RRM requirement impact

Issue 1-1-5: The applicability and necessity of GBBR in FR2 HST

* Proposals
  + Option 1(Ericsson):
    - Open to applicability of Rel-17 GBBR in the FR2 HST
    - RAN4 shall check the necessity in HST FR2 scenario
  + Option 2 (Nokia): Rel-18 enhanced FR2 CPE can be capable of supporting GroupBasedBeamReporting-r17, but it should not be mandatory
  + Option 3 (Huawei): Rel-17 group-based reporting is used as a prerequisite to define requirement for R18 FR2 multi-Rx simultaneous reception
  + Option 4 (Samsung): In Rel-18 FR2 HST, Rel-17 GBBR should not be used as a prerequisite to define requirement for simultaneous reception in FR2 HST
    - There is no need to consider RRM impact of GBBR for simultaneous reception in Rel-18 HST
* Recommended WF
  + In Rel-18 FR2 HST, Rel-17 GBBR should not be used as a prerequisite to define requirement for simultaneous reception in FR2 HST
    - There is no need to consider RRM impact of GBBR for simultaneous reception in Rel-18 HST
* Discussion
  + Samsung: GBBR is introduced for simultaneous data reception. For FR2 HST we support RTD > CP and GBBR is not needed.
  + Nokia: GBBR can be used but it is not mandatory. For multi-RX it is important, but not for FR2 HST.
  + E///: agree with WF
  + Huawei: GBBR is needed for UE to find the beam pair. How can UE find the beam pair for HST if GBBR is not supported?
  + QC: same concern as Huawei. UE needs to know which beams to receive and needs to report the beams.
    - Nokia: UE reports the beams and NW makes the decision. There will be new UE capability. For GBBR the impact on spec is unclear.
    - Samsung: same understanding. UE follows Rel-17 beam reporting (up to 4 beams) and NW selects the beams corresponding to different TRPs.
* Agreements
  + Define the following requirements for Rel-18 enhanced FR2 CPE
    - 1) Requirements for UEs without mandatory support of GroupBasedBeamReporting-r17
      * FFS if a new UE capability is needed to indicate support of simultaneous data reception
    - 2) Requirements for UEs with support of GroupBasedBeamReporting-r17
      * FFS if GBBR (GroupBasedBeamReporting-r17) can be applicable for the case of RTD > CP. If it is not applicable, then the requirements will not be defined.

**Topic #2: Definition of HST FR2 CA requirements and NW signaling for Rel-18 FR2 HST CA Scenario**

Issue 2-1-1: Clarification on requirement for intra-frequency measurement for Rel-18 FR2 HST UE supporting intra-band CA

* Proposals
  + Option 1 (Samsung): The following common understanding needs further confirmation from RAN4:
    - No RRM requirement impact or enhancement is needed to enable NR intra-frequency measurement for Rel-18 FR2 HST UE supporting intra-band CA.
* Recommended WF
  + No RRM requirement impact or enhancement is needed to enable NR intra-frequency measurement for Rel-18 FR2 HST UE supporting intra-band CA.
* Agreement
  + Reuse legacy Rel-17 requirements for NR intra-frequency measurement for Rel-18 FR2 HST UE supporting intra-band CA.

Issue 2-1-2: PSS/SSS detection, Time index detection for intra-frequency and inter-frequency measurements

* Agreements
  + Specify the requirements for inter-frequency PSS/SSS detection

**WF/LS for approval**

**R4-2310041 WF on FR2 HST RRM requirements (part 1)**

*Type: other For: Approval  
 Source: Samsung*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][216] NR\_HST\_FR2\_enh\_part2**

**Summary documents**

**R4-2309961 Topic summary for [107][215] NR\_HST\_FR2\_enh\_part2**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Monday, 5/22/2023) – not discussed**

**WF/LS for approval**

**R4-2310042 WF on FR2 HST RRM requirements (part 2)**

*Type: other For: Approval  
 Source: Nokia*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.14 Air-to-ground network for NR

#### 8.14.4 RRM core requirements

##### 8.14.4.1 General aspects

**R4-2307397 Reply LS on applicability of SIB19 for NR ATG**

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

**Decision: Noted.**

**R4-2307588 Discussion and the draft reply LS on the applicability of SIB19 for NR ATG**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307589 TP to TR 38.876 RRM requirements for ATG network**

*Type: pCR For: Agreement  
 38.876 v0.3.0 CR- rev Cat: (Rel-18)  
  
 Source: CMCC*

**Decision: Revised to R4-2310056 (from R4-2307589).**

**R4-2310056 TP to TR 38.876 RRM requirements for ATG network**

*Type: pCR For: Agreement  
 38.876 v0.3.0 CR- rev Cat: (Rel-18)  
  
 Source: CMCC*

**Decision: Approved.**

**R4-2307672 Reply LS on applicability of SIB19 for NR ATG**

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

**Decision: Noted.**

**R4-2307875 Discussion on general requirements for ATG RRM**

*Type: discussion For: Discussion  
 Source: LG Electronics UK*

**Decision: Noted.**

**R4-2308324 Discussion on general aspects of RRM requirements for ATG**

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

**Decision: Noted.**

**R4-2308713 Discussion on general aspects for air-to-ground network for NR**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309170 Discussion on reply LS to applicability of SIB19 for NR ATG**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309215 Discussions on general ATG RRM requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

General aspects of ATG requirements are discussed in this paper.

**Decision: Noted.**

**R4-2309241 On ATG ground station reference location accuracy**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309718 Discussion on the impact of LS R2-2304565**

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

**Decision: Noted.**

##### 8.14.4.2 Mobility requirements

**R4-2307394 Discussion on mobility requirements for Rel-18 ATG**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307590 Discussion on RRM mobility requirements for ATG**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307876 Discussion on mobility requirements for ATG RRM**

*Type: discussion For: Discussion  
 Source: LG Electronics UK*

**Decision: Noted.**

**R4-2308338 Discussion on mobility requirements for ATG**

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

**Decision: Noted.**

**R4-2308715 Discussion on mobility requirements for air-to-ground network for NR**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309214 Discussions on ATG mobility requirements**

*Type: LS out For: Agreement  
 to RAN2  
 Source: Ericsson*

**Abstract:**

Mobility requirements are discussed in this paper.

**Decision: Noted.**

**R4-2309707 Mobility requirements for R18 ATG UEs**

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

**Decision: Noted.**

**R4-2309719 Discussion on ATG Mobility Requirements**

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

**Decision: Noted.**

##### 8.14.4.3 Timing adjustments

**R4-2307395 Discussion on timing adjustments for Rel-18 ATG**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307591 Discussion on RRM timing requirements for ATG**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307878 Discussion on guard period in TDD cell for ATG operation**

*Type: discussion For: Discussion  
 Source: LG Electronics UK*

**Decision: Noted.**

**R4-2308707 Discussion on timing requirements for ATG RRM**

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

**Decision: Noted.**

**R4-2308716 Discussion on timing adjustment for air-to-ground network for NR**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308923 On timing requirements for ATG**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Large GP handling, timing issues and reply LS draft.

**Decision: Noted.**

##### 8.14.4.4 Signaling characteristics

##### 8.14.4.5 Measurement requirements

**R4-2307396 Discussion on measurement requirements for Rel-18 ATG**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307592 Discussion on RRM measurement requirements for ATG**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307877 Discussion on measurement for ATG operation**

*Type: discussion For: Discussion  
 Source: LG Electronics UK*

**Decision: Noted.**

**R4-2308445 Discussion on measurement requirement in ATG**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the measurement requirement for ATG

**Decision: Noted.**

**R4-2308679 Discussion on measurement requirements for ATG**

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

**Decision: Noted.**

**R4-2308714 Discussion on measurement requirements for air-to-ground network for NR**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309720 Discussion on ATG Measurement Requirements**

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

**Decision: Noted.**

##### 8.14.4.6 Others

#### 8.14.6 Moderator summary and conclusions

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**Topic: [107][217] NR\_ATG**

**Summary documents**

**R4-2309962 Topic summary for [107][217] NR\_ATG**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**R4-2310055 Ad-hoc minutes for ATG RRM**

*Type: other For: Approval  
 Source: CMCC*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**Online session (Tuesday, 5/23/2023)**

Issue 4-3: Scheduling restriction-for intra-frequency

* Proposals
  + Option 1: (CATT, CMCC, HW, ZTE)
    - The legacy scheduling restriction requirement can be reused for ATG.
      * When it is enabled, the restriction is on SSB symbols and 1 data symbol before and after.
      * When it is disabled, the restriction is on all symbols in SMTC.
  + Option 2: The scheduling restriction symbols should be set based on the information of the difference of propagation delay from serving cell and neighbor cells measured by ATG UE. (LGE)
  + Option 3: (Ericsson)
    - When NW enables the deriveSSB-IndexFromCell, the UE is allowed to not transmit or receive data more than 1 symbols before and after SSB symbols to be measured. The dedicated symbol value can be indicated by NW.
    - When NW disables the deriveSSB-IndexFromCell, the UE is allowed to not transmit or receive data more than 1 symbols before and after SMTC to be measured. The dedicated symbol value can be indicated by NW.
* Discussion
  + LGE: gNB does not know the propagation delay and it should be provided by UE
    - CMCC: 1 symbol is sufficient to accommodate the propagation delay
* Tentative agreements
  + The legacy scheduling restriction requirement can be reused for ATG.
    - When it is enabled, the restriction is on SSB symbols and 1 data symbol before and after.
    - When it is disabled, the restriction is on all symbols in SMTC.

Issue 4-4: Scheduling restriction-for inter-frequency

* Discussion
  + E///: what is the meaning of inter-frequency in this case?
    - CMCC: we agreed to reuse the legacy definitions
  + E///: need to account for large ISD in the definition
* Tentative agreement
  + For ATG inter-frequency measurement without gap, the legacy scheduling restrictions are reused.

**Issue 1-4: How to involve ATG RRM core requirements in TS38.133**

* Proposals
  + Option 1: ATG specific RRM requirements are defined in separate sections like NTN. (HW, Ericsson, CMCC, LGE)
  + Option 2: For the requirements enhancement, not need to create new section, just add the enhanced requirement for ATG scenario similar as that for HST. For the new mechanism, new section can be created similar as that for NTN. (ZTE, QC)
* Discussion
  + QC: Impact is not that huge. We can follow the same approach as for HST.
    - E///: we can put references and not need to replicate all text for Option 1.
* Agreement
  + ATG specific RRM requirements are defined in separate sections like NTN

**WF/LS for approval**

**R4-2310057 WF on NR ATG RRM requirements**

*Type: other For: Approval  
 Source: CMCC*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310159 (from R4-2310057).**

**R4-2310159 WF on NR ATG RRM requirements**

*Type: other For: Approval  
 Source: CMCC*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310058 Reply LS on applicability of SIB19 for NR ATG**

*Type: LS Out For: Approval  
 To: RAN2  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310152 LS on signaling for NR ATG**

*Type: LS Out For: Approval  
 To: RAN2  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.15 NR support for dedicated spectrum less than 5MHz for FR1

#### 8.15.5 RRM requirements

**R4-2307324 RRM for spectrum less than 5MHz**

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

**Decision: Noted.**

**R4-2308678 Discussion on RRM impacts for less than 5MHz BW**

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

**Decision: Noted.**

**R4-2309496 Discussion on Less than 5MHz RRM requirements**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309573 Discussion on issues for less than 5MHz**

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

**Decision: Noted.**

**R4-2309592 On RRM requirements for less than 5MHz**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on RRM requirements for less than 5MHz

**Decision: Noted.**

**R4-2309659 RRM simulation results for less than 5MHz BW**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309702 RRM requirements for NR less than 5MHz**

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

**Decision: Noted.**

#### 8.15.6 Moderator summary and conclusions

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**Topic: [107][218] NR\_FR1\_lessthan\_5MHz\_BW**

**Summary documents**

**R4-2309963 Topic summary for [107][218] NR\_FR1\_lessthan\_5MHz\_BW**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Monday, 5/22/2023)**

Issue 1-1: Priority for L3 measurments

* Proposals
  + Option 1: Define intra-frequency requirements only
  + Option 2: Define both intra-frequency and inter-frequency measurement requirements (E///, Nokia)
* Agreements
  + Define both intra-frequency and inter-frequency measurement requirements

Issue 1-1: L3 Measurements

* Proposals
  + Proposal 1: Define SSB-based measurement requirements (E///, Nokia, QC, Apple)
  + Proposal 2: Define CSI-RS-based measurement requirements
* Agreements
  + Define SSB-based measurement requirements

Issue 1-2: L1 Measurements

* Proposals
  + Proposal 1: Define SSB-based measurement requirements (E///, QC, Nokia)
  + Proposal 2: Define CSI-RS-based measurement requirements (E///)
* Agreements
  + Define SSB-based measurement requirements

Issue 1-3: L1-SINR Measurements

* Proposals
  + Option 1: Define requirements for 5MHz
  + Option 2: Define requirements for 3MHz
  + Option 3: Do not define requirements (Apple, E///, )
* Discussion
* Agreements
  + Do not define L1-SINR measurement requirements

Issue 1-4: RLM, Hypothetical BW assumed for PDCCH transmission

3MHz

* Proposals
  + Option 1: the hypothetical BW in PDCCH transmission parameters can be reduced to 12PRBs for SSB based RLM and 15PRBs for CSI-RS based RLM
  + Option 2: the hypothetical BW in PDCCH transmission parameters is 15PRBs for both SSB based and CSI-RS based RLM
* Discussion
  + QC: we agreed to deprioritize CSI-RS based and it needs to be reduced. 12 PRBs is preferred

5MHz

* Proposals
  + Option 1: SSB: the legacy hypothetical BW in PDCCH transmission parameters for SSB based RLM doesn’t need to change (24PRBs)
  + Option 2: CSI-RS: the hypothetical BW in PDCCH transmission parameters for CSI-RS based RLM can be reduced to 24PRBs
* Agreement
  + The BW in hypothetical PDCCH transmission parameters
    - For 3MHz case and band n100 the BW is 12PRBs for SSB based RLM. FFS for other bands with 3MHz CBW.
    - For 5MHz case the BW is 24PRBs for SSB based RLM

Issue 1-14: CGI Reading

* Proposals
  + Option 1: Do define requirements in this WI in this WI
    - Option 1.1: Yes, define requirements for 5MHz
    - Option 1.2: Yes, define requirements for 3MHz
  + Option 2: Do not define requirements in this WI (Apple, QC, E///)
* Agreements
  + Do not define new CGI reading requirements
  + The legacy CGI reading requirements do not apply

Issue 1-15: Soft Combining

* Proposals
  + Option 1: It is assumed that soft combining is used when developing the MIB reading requirements (E///)
  + Option 2: It is not assumed that soft combining is used when developing the MIB reading requirements (QC)
* Session chair: encourage to collect simulation results with and without soft combining to assess the performance impacts and make the decision then.

Issue 1-16: BW for PBCH (e.g., 12 PRBs) of target cell shall be provided to UE in HO command

* Proposals
  + Option 1: BW for PBCH (e.g., 12 PRBs) of target cell shall be provided to UE in HO command
  + Option 2: BW for PBCH (e.g., 12 PRBs) of target cell need not be provided to UE in HO command
  + Option 3: FFS
* Discussion
  + Apple: the signalling can reduce the processing delays
  + QC: the BW can be differentiated using dedicated raster

**WF/LS for approval**

**R4-2310039 WF on RRM requirements for NR support for dedicated spectrum less than 5MHz for FR1**

*Type: other For: Approval  
 Source: Nokia*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310040 Summary of RRM simulation results for less than 5MHz BW**

*Type: other For: Information  
 Source: Nokia*

**Abstract:**

**Discussion:**

**Decision: Noted.**

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### 8.23 Expanded and improved NR positioning

#### 8.23.3 RRM core requirements

**R4-2309219 Discussions on enhanced RedCap RRM impact**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the Rel-18 RedCap RRM requirements.

**Decision: Noted.**

##### 8.23.3.1 General

**R4-2307411 Reply LS on measurement definitions for positioning with bandwidth aggregation**

*Type: LS out For: Approval  
 to RAN1  
 Source: CATT*

**Decision: Noted.**

**R4-2307556 Discussion on positioning for general parts**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307704 Reply LS on measurement definitions for positioning with bandwidth aggregation**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308666 Repls LS on measurement definitions for positioning with bandwidth aggregation**

*Type: LS out For: Approval  
 to RAN1  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2308789 Response to RAN1 LS on measurement definitions for positioning with bandwidth aggregation**

*Type: LS out For: Approval  
 to RAN1  
 Source: Ericsson*

**Abstract:**

This contribution proposes response to RAN1 LS on measurement definitions for positioing with bandwidth aggregation.

**Decision: Noted.**

##### 8.23.3.2 SL Positioning

**R4-2307412 Discussion on RRM requirements of sidelink positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307432 Discussion on RRM core requirement for SL positioning enhancement**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2307557 Discussion on sidelink positioning**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307705 Discussion on RRM requirements for sidelink positioning**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308022 On SL positioning**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On SL positioning

**Decision: Noted.**

**R4-2308465 Discussion on SL positioning**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308667 Discussion on RRM requirements for SL positioning**

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

**Decision: Noted.**

**R4-2309130 On requirements for SL positioning**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309676 RRM requirements for SL positioning**

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

**Decision: Noted.**

##### 8.23.3.3 LPHAP use case

**R4-2307413 Discussion on RRM requirements of LPHAP**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307558 Discussion on LPHA positioning**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2308045 RRM aspects in the study on LPHAP use case**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308466 Discussion on LPHAP use case**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308668 Discussion on RRM requirements for LPHAP**

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

**Decision: Noted.**

**R4-2308790 On issues related to LPHAP requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution addresses issues related to LPHAP requirement.

**Decision: Noted.**

**R4-2309131 On requirements for LPHAP**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309602 Discussion on RRM Core Requirements for LPHAP Use Case 6 in NR Positioning**

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

**Decision: Noted.**

**R4-2309736 On requirements for LPHAP**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

##### 8.23.3.4 RedCap Positioning

**R4-2307414 Discussion on RRM requirements of Redcap positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307415 Simulation results for 1Rx RedCap UE PRS measurements**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307559 Discussion on Redcap positioning**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2308467 Discussion on RedCap positioning**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308669 Discussion on RedCap positioning**

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

**Decision: Noted.**

**R4-2308670 Updated simulation results for PRS measurement with 1RX**

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

**Decision: Noted.**

**R4-2308791 On issues related to RedCap positioning**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution addresses FFS issues on RedCap positioning identified in RAN4#106bis-e.

**Decision: Noted.**

**R4-2308792 Simulation results for 1Rx RedCap**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This contribution reports 1Rx RedCap UE simulation results based on simulation assumptions agreed in RAN4#106bis-e.

**Decision: Noted.**

**R4-2308793 Summary of 1Rx RedCap simulations**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This contribution summarized 1Rx RedCap UE simulation results submitted by companies to RAN4#107.

**Decision: Noted.**

**R4-2309132 Simulation results for 1Rx RedCap UEs without frequency hopping - reduced number of samples**

*Type: other For: Information  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309133 On requirements for RedCap positioning**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309558 Discussion on Positioning for RedCap UEs**

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

**Decision: Noted.**

**R4-2309603 Discussion on RRM Core Requirements for RedCap Positioning**

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

**Decision: Noted.**

##### 8.23.3.5 PRS/SRS bandwidth aggregation

**R4-2307416 Discussion on RRM requirements of PRS/SRS bandwidth aggregation**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307430 Discussion on RRM core requirement for PRS/SRS bandwidth aggregation positioning**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2308043 Discussion on RRM impacts on PRS/SRS bandwidth aggregation**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308468 Discussion on PRS/SRS bandwidth aggregation**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308671 Discussion on PRS/SRS Bandwidth Aggregation**

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

**Decision: Noted.**

**R4-2308794 On PRS/SRS aggregation requirement for positioning**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution presents our view on issues related to bandwidth agreegation for positioning measurements.

**Decision: Noted.**

**R4-2309134 On requirements for PRS/SRS BW aggregation**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309677 RRM requirements for PRS/SRS Bandwidth Aggregation in NR Positioning**

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

**Decision: Noted.**

##### 8.23.3.6 Carrier Phase Positioning

**R4-2307417 Discussion on RRM requirements of carrier phase positioning**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307431 Discussion on RRM core requirement for carrier phase positioning**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2308044 Discussion on RRM aspects in the study on carrier phase positioning**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308469 Discussion on carrier phase positioning**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308672 Discussion on RRM requirements for CPP**

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

**Decision: Noted.**

**R4-2308795 On carrier phase positioning requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution presents our view on CPP. Issues based on RAN1 progress are discussed.

**Decision: Noted.**

**R4-2309135 On requirements for carrier phase positioning**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309678 RRM requirements for NR Carrier Phase Positioning**

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

**Decision: Noted.**

#### 8.23.4 Moderator summary and conclusions

**R4-2310088 Ad-hoc minutes for NR Positioning RRM requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][219] NR\_pos\_enh2\_part1**

**Summary documents**

**R4-2309964 Topic summary for [107][219] NR\_pos\_enh2\_part1**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Wednesday 5/24/2023)**

**Topic 1: General**

Issue 1-1-1: RAN4 reply on definitions for positioning with bandwidth aggregation.

* Proposals
  + Option 1: CATT, CMCC, vivo, HW, OPPO
    - The legacy definition of DL RSTD, UL RTOA, UE Rx-Tx time difference, gNB Rx-Tx time difference can be reused with the assumption that the subframe timings of the intra-band contiguous carriers are the same.
  + Option 2: E///
    - RSTD measurement definition is updated by incorporating the following text.
      * “A UE capable of PRS bandwidth aggregation shall perform DL RSTD by aggregating PRS resources across multiple intra-band contiguous PFLs.”
    - UE Rx-Tx measurement definition is updated by incorporating the following text.
      * “A UE capable of PRS/SRS bandwidth aggregation shall perform UE Rx-Tx time difference measurement by aggregating PRS resources across multiple DL intra-band contiguous PFLs and SRS in multiple UL intra-band contiguous PFLs. The PRS resource aggregation and SRS resource aggregation shall be performed on the same number of PFLs.”
    - UL-RTOA measurement definition is updated by incorporating the following text.
      * “A base station capable of SRS resource aggregation shall perform TUL-RTOA measurement by aggregating SRS resources across multiple intra-band contiguous carriers.”
    - gNB Rx-Tx measurement definition is updated by incorporating the following text.
      * “A base station capable of PRS/SRS bandwidth aggregation shall perform gNB Rx-Tx time difference measurement by aggregating SRS resources across multiple UL intra-band contiguous PFLs and PRS in multiple DL intra-band contiguous PFLs. The PRS resource aggregation and SRS resource aggregation shall be performed on the same number of PFLs.”
  + Option 3: Nokia

For DL RSTD measurement definition in subclause 5.1.29:

|  |
| --- |
| If PRS bandwidth aggregation is configured, the measurement is performed over configured number of intra-band contiguous PFLs , with the assumption that the subframe timings of the intra-band contiguous PFLs are the same.   * Note: multiple PRS resources from the same TRP which can be used to determine the start of subframe can be from multiple intra-band contiguous carriers. |

For UE Rx-Tx time difference measurement definition in subclause 5.1.30:

|  |
| --- |
| If PRS bandwidth aggregation and/or SRS bandwidth aggregation is configured, the measurement is performed over configured number of intra-band contiguous PFLs , with the assumption that the subframe timings of the intra-band contiguous PFLs are the same.   * Note: multiple PRS resources from the same TRP and/or multiple SRS resources from the target UE which can be used to determine the start of subframe can be from multiple intra-band contiguous carriers. |

For RTOA measurement definition in subclause 5.2.2:

|  |
| --- |
| If SRS bandwidth aggregation is configured, the measurement is performed over configured number of intra-band contiguous PFLs , with the assumption that the subframe timings of the intra-band contiguous PFLs are the same.   * Note: multiple SRS resources from the target UE which can be used to determine the start of subframe can be from multiple intra-band contiguous carriers. |

For gNB Rx-Tx time difference measurement definition in subclause 5.2.3:

|  |
| --- |
| If PRS bandwidth aggregation and/or SRS bandwidth aggregation is configured, the measurement is performed over configured number of intra-band contiguous PFLs, where the subframe timings of the intra-band contiguous PFLs are the same.   * Note: multiple PRS resources from the measuring TRP and/or SRS resources from the target UE which can be used to determine the start of subframe can be from multiple intra-band contiguous carriers. |

* Discussion
  + CATT: leave definition up to RAN1. Need to clarify that for Rx-Tx the number of DL and UL carriers is same.
  + Nokia: update of measurement definitions is required including subframe alignment for BW aggregation and single RF chain
  + HW: not sure if additional information is needed. These are conditions for our requirements.
  + Session chair: Continue discussion based on LS (by E///). There is no consensus to change the definitions. Further discuss whether to ask RAN1 to include RAN4 assumptions (e.g. subframe alignment, single RF chain)

**Topic 2: RedCap positioning**

Issue 2-1-3: Relation with Rel-16/Rel-17 positioning for PRS measurements without FH

* Proposals
  + Option 1: CATT, CMCC, HW, E///, QC, Nokia, MTK
    - PRS requirements for both 1Rx and 2Rx RedCap UE without FH shall be defined for all the Rel-16/Rel-17 positioning features/techniques.
    - Option 1A: E///
      * For 1Rx RedCap UE reduced Rx beam sweeping factor for positioning measurement is out of scope.
  + Option 2: OPPO
    - MG-less based measurement:
      * For RedCap UE without FH, support MG-less based PRS measurement
    - For RedCap UE without FH and with FH, support reduced samples.
    - For lower Rx beam sweeping factor in FR2:
      * For 2 Rx RedCap UE without FH, support lower Rx beam sweeping factor.
      * For 1 Rx RedCap UE without FH, lower Rx beam sweeping factor is not applicable.
    - For RedCap UE without FH and with FH, support per-FR gap and MAC-CE based Pos gap.
* Discussion
  + OPPO: fine with Option 1. For 1Rx RedCap – it is for FR1 and reduced beam sweeping does not apply
* Agreements
  + PRS requirements for both 1Rx and 2Rx RedCap UE without FH shall be defined for all the Rel-16/Rel-17 positioning features/techniques.

Issue 2-2-1: Side conditions for 1Rx without FH

* Agreements
  + For AWGN channel
    - Re-use the Rel-17 side conditions for both 1 and 4 measurement samples
  + For fading channel use two side conditions for the neighbor cell to define requirements
    - Condition #1: -3 dB (for Rx-Tx and RSRP only)
    - Condition #2:
      * Option 1: -10 dB
      * Option 2: -6 dB

**Topic 3: PRS/SRS bandwidth aggregation**

Issue 3-3-1: Whether report mappings with PRS/SRS bandwidth aggregation need to be updated?

* Proposals
  + Option 1: LG
    - Existing report mapping can be reused for RSTD and UE Rx-Tx. If necessary RAN4 can make a decision after performance evaluation.
  + Option 2: HW
    - RAN4 to update the report mapping for RSTD and UE Rx-Tx
      * FR1: support range of reporting granularity from 32Tc to [1]Tc
      * FR2: support range of reporting granularity from 32Tc to [0.25]Tc
      * Define new mapping table for reporting granularity of 0.5Tc and 0.25Tc
  + Option 3: E///
    - Update report mapping for RSTD and UE Rx-Tx with PRS/SRS bandwidth aggregation based on maximum supported aggregated SRS/PRS bandwidth and performance evaluation.
* Discussion
  + LGE: ok with Option 2 for FR1 and FFS for FR2. For FR1 BW aggregation the total BW is up to 300MHz. For FR2 it can be up to 1.2GHz and 1Tc is not sufficient.
* Agreements
  + Report mapping for RSTD and UE Rx-Tx
    - Define additional mapping tables for reporting granularity of
      * 0.5Tc
      * FFS for 0.25Tc
    - FR1: support range of reporting granularity from 32Tc to X1 Tc
    - FR2: support range of reporting granularity from 32Tc to X2 Tc.
    - X1 and X2 are FFS.
      * X1 is FFS between 0.25, 0.5 or 1 Tc
      * X2 is FFS between 0.25 and 0.5 Tc

**WF/LS for approval**

**R4-2310072 WF on NR Positioning – RedCap and BW aggregation**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310075 Updated simulation assumptions for 1Rx RedCap positioning**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310076 LS reply on measurement definitions for positioning with bandwidth aggregation**

*Type: LS out For: Approval  
 to RAN1  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310166 LS on reporting granularity for timing related positioning measurements**

*Type: LS out For: Approval  
 to RAN2, RAN3 cc RAN1  
 Source: Huawei*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][220] NR\_pos\_enh2\_part2**

**Summary documents**

**R4-2309965 Topic summary for [107][219] NR\_pos\_enh2\_part2**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Wednesday 5/24/2023)**

**Topic #1: SL positioning**

Issue 1-3-3: Simulation assumption

* Agreements:
  + SL PRS pattern:
    - Case 1: Fully staggered SL PRS patterns
    - Case 2: Partially staggered SL PRS patterns
  + Channel model for RSTD, Rx-Tx and RSRP:
    - AWGN
    - TDL-A (30 ns delay spread, 5Hz Doppler spread)
    - TDL-B (100ns delay spread, 200Hz Doppler spread)
  + Antenna:
    - 1T/2R
  + SL PRS BW:
    - 10 MHz, 20 MHz, 40 MHz
  + SCS:
    - 15kHz, 30kHz, 60kHz
  + CBW:
    - equal to the SL PRS BW
  + Sampling rate:
    - Reuse the assumption for NR PRS based measurements

Issue 1-1-3: Parameters in the measurement period requirements:

* Proposals:
  + Number of samples:
    - Option 1: Nsample = 1
    - Option 2: Nsample = 4
    - Option 3: 1 < Nsample < 4
    - Option 4: 1< Nsample
  + Scaling factor due to TEG:
    - Option 1: Reuse the existing requirements in Rel-17.
  + The number of Rx beam:
    - Option 1: NRxBeam = 1 in FR1.
* Discussion
* Agreements
  + The measurements period requirements equation is FFS
  + Number of samples for positioning measurements is FFS
    - Option 1: 1
    - Option 2: 2
    - Option 3: 3
    - Option 4: 4
  + The number of Rx beams is equal to 1 in FR1

Issue 1-2-1: Timing error limit requirements of SL UE for positioning (both anchor UE and target UE

Issue 1-2-2: Impact due to the Tx/Rx timing difference of multiple anchor Ues

**Topic #2: CPP**

Issue 2-3-3: Simulation assumption for RSCPD:

* Agreements
  + PRS configuration
    - Reuse Rel-17 configuration of RSTD for RSCPD
  + Side condition
    - Reuse Rel-17 RSTD side condition for RSCPD
  + Channel model:
    - AWGN
    - TDL-A (30 ns delay spread, 5Hz Doppler spread)
    - 2-tap model (same as for PRS-RSRPP)
  + Number of samples:
    - Nsample = 1, 4

Issue 2-3-1: Report mapping for DL RSCP/RSCPD:

* Proposals
  + Reporting range:
    - Option 1: [0, 360) degree for DL RSCP and RSCPD
    - Option 2: [-180, +180) degree for DL RSCP and RSCPD
    - Option 3: [-𝜋, + 𝜋) radian for DL RSCP and RSCPD
    - Option 3: [0, 2𝜋] radian for DL RSCP, and [-𝜋, 𝜋] radian for DL RSCPD
  + Granularity:
    - Option 1: 1 degree
    - Option 2: 0.002 radians
    - Option 3: Configurable according to UE capability
    - Option 4: one of 15, 30, 45, 60 degrees
* Discussion
* Agreements
  + Reporting range is FFS:
    - Option 1: [0, 360) degrees for DL RSCP and RSCPD
    - Option 2: [-180, +180) degrees for DL RSCP and RSCPD
  + Granularity is FFS
    - ~~Option 1: Fixed value~~
      * ~~FFS: 1, 15, 30, 45, or 60 degrees~~
    - ~~Option 2: Up to UE capability~~

**WF/LS for approval**

**R4-2310073 WF on NR Positioning – SL positioning and CPP**

*Type: other For: Approval  
 Source: CATT*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310163 (from R4-2310073).**

**R4-2310163 WF on NR Positioning – SL positioning and CPP**

*Type: other For: Approval  
 Source: CATT*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310077 Simulation assumptions for SL positioning**

*Type: other For: Approval  
 Source: CATT*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310078 Simulation assumptions for CPP**

*Type: other For: Approval  
 Source: CATT*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][221] NR\_pos\_enh2\_part3**

**Summary documents**

**R4-2309966 Topic summary for [107][219] NR\_pos\_enh2\_part3**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Wednesday 5/24/2023)**

**Topic #1: LPHAP**

Issue 1-1-1: Whether to define PRS requirements with eDRX <= 10.24s

* Proposals
  + Option 1 (CATT, ZTE):
    - NOT to define PRS measurement requirements with eDRX <= 10.24s.
  + Option 2 (CMCC, HW, E///, QC, Nokia):
    - Define PRS measurement requirements with eDRX <= 10.24s.
  + Option 3 (OPPO):
    - Define requirements for eDRX cycle <= 10.24s for RedCap UE, and FFS for non-RedCap UE
* Agreements
  + Define PRS measurement requirements with eDRX <= 10.24s for RedCap and non-RedCap UEs

Issue 1-1-5: Tavailable for PRS requirements with eDRX > 10.24s

* Proposals
  + Option 1 (CATT):
    - Tavailable in the requirements needs to be updated to exclude the DRX cycle when eDRX cycle is much larger than positioning interval
  + Option 2 (HW):
    - RAN4 to discuss how to define Tavailable in PRS measurement requirements with eDRX >10.24s assuming PRS measurement is not limited to PTW
  + Option 3 (QC):
    - TDRX in the measurement period formula is set to the maximum of the DRX cycles within the CN PTW and the RAN PTW, according to RAN2 definitions of UE DRX cycle in Rel-18 eRedCap.
    - The measurement period starts on the first eDRX cycle inside the next PTW that contains PRS resources in the assistance data. The measurement period can extend beyond the end of the PTW or the union of PTWs (if two PTWs overlap in a PH).
  + Option 4 (E///):
    - RAN4 to update Tavailable in the requirements after PRS measurement occasion during eDRX cycle longer than 10.24s is settled.
* Discussion
  + QC: Measurement starts withing the PTW but can continue beyond PTW.
  + Huawei: for LPHAP there is a clear requirement on reporting time, which implies periodic measurements. Starting the measurements in the PTW may result in 3 hours delay.
* Agreements
  + PRS measurements are not limited to PTW
  + PRS measurements start instance is FFS
    - Option 1: PRS measurements start within the PTW
    - Option 2: PRS measurements start is not limited to PTW

**WF/LS for approval**

**R4-2310074 WF on NR Positioning – LPHAP**

*Type: other For: Approval  
 Source: Huawei*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.24 Multi-carrier enhancements for NR

#### 8.24.3 RRM core requirements

##### 8.24.3.1 DL interruption for Tx switching across 3/4 bands

**R4-2308334 DL interruption for Tx switching across 3/4 bands**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3219 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

vivo: need to consider the starting point in addition to the length

MTK: prefer to say union instead of maximum

**Decision: Revised to R4-2310142 (from R4-2308334).**

**R4-2310142 DL interruption for Tx switching across 3/4 bands**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3219 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

vivo: need to consider the starting point in addition to the length

MTK: prefer to say union instead of maximum

**Decision: Agreed.**

**R4-2308601 DL interruption for Tx switching across 3/4 bands**

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

**Decision: Noted.**

**R4-2309478 DL interruption for 4-band UL TX switching**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

#### 8.24.4 Moderator summary and conclusions

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**Topic: [107][222] NR\_MC\_enh**

**Summary documents**

**R4-2309967 Topic summary for [107][222] NR\_MC\_enh**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Monday, 5/22/2023)**

Issue 1-1: DL interruption length when one downlink carrier is indicated to be interrupted by two band pairs for dynamic switching simultaneously

* Proposals
  + Option 1(Huawei): If one downlink carrier is indicated to be interrupted by two band pairs for dynamic switching simultaneously, the DL interruption length and location on the victim carrier is determined by the maximum of uplink switching periods of the two band pairs.
  + Option 2(Nokia): Wait for RF agreement on the length of switching time for simultaneous switching of two band pairs
* Conclusion: wait for RF session conclusion and come back in the 2nd round

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### 8.25 Further NR mobility enhancements

#### 8.25.1 General and work plan

**R4-2307401 Reply LS on time gap between a PDCCH order and the corresponding PRACH transmission for LTM**

*Type: LS out For: Approval  
 to RAN1  
 Source: CATT*

**Decision: Noted.**

**R4-2307607 Draft Reply LS on time gap between a PDCCH order and the corresponding PRACH transmission for LTM**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: MediaTek Inc.*

**Decision: Noted.**

**R4-2307645 Discussion on RAN1 LS on LTM**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

#### 8.25.2 L1/L2 based inter-cell mobility

##### 8.25.2.1 General aspects and scenarios

**R4-2307274 Scenario and scope of RRM requirements for LTM**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307398 Discussion on general aspects and scenarios for L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307508 Discussion on general aspects and scenarios of L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2307563 Discussion on general aspects for L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307608 Discussion on general aspects and scenarios of LTM**

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

**Decision: Noted.**

**R4-2307646 Discussion on general aspects and scenarios of L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307929 Discussion on general aspects and scenarios of L1/L2 triggered inter-cell mobility**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2307948 Discussion on general aspects and scenarios for LTM**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308215 Discussion on general aspects in R18 LTM**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308327 Discussion on general aspects on L1/L2 based inter-cell mobility**

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

**Decision: Noted.**

**R4-2308485 On general and scenarios of L1L2 based inter-cell mobility**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2309489 Discussion on LTM General aspects and scenarios**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309593 On LTM general aspects and scenarios**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on LTM general aspects and scenarios

**Decision: Noted.**

##### 8.25.2.2 L1-RSRP measurement requirements

**R4-2307275 L1-RSRP measurement requirements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307399 Discussion on L1-RSRP measurement requirements for L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307509 Discussion on L1-RSRP measurement requirements of L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2307565 Discussion on L1-RSRP measurement requirements for L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307609 Discussion on L1-RSRP measurement requirements for LTM**

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

**Decision: Noted.**

**R4-2307647 Discussion on L1-RSRP measurement requirements of L1/L2 based inter-cell mobility**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307802 L1-RSRP measurement requirements for LTM operations**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2307949 Discussion on L1-RSRP measurement requirements for LTM**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308216 Discussion on L1 measurements in R18 LTM**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308328 Discussion on L1-RSRP measurement requirements**

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

**Decision: Noted.**

**R4-2308410 Discussion on L1-RSRP measurement requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308486 On L1-RSRP measurement of L1L2 based inter-cell mobility**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2309490 Discussion on LTM measurement requirements**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309594 On L1-RSRP measurement requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on L1-RSRP measurement requirements

**Decision: Noted.**

##### 8.25.2.3 L1/L2 inter-cell mobility delay requirements

**R4-2307276 LTM handover delay requirements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307400 Discussion on L1/L2 inter-cell mobility delay requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307510 Discussion on L1/L2 inter-cell mobility delay requirements**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2307562 Discussion on L1/L2 inter-cell mobility delay requirements**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307610 Discussion on LTM delay requirements**

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

**Decision: Noted.**

**R4-2307648 Discussion on L1/L2 based inter-cell mobility delay requirements**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307950 Discussion on L1/L2 based inter-cell mobility delay requirement**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308217 Discussion on cell switch delay requirements in R18 LTM**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308329 Discussion on L1/L2 inter-cell mobility delay requirements**

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

**Decision: Noted.**

**R4-2308411 Discussion on L1/L2 inter-cell mobility delay requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308487 On L1L2 inter-cell mobility delay requirements**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2309491 Discussion on LTM delay requirements**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309595 On LTM delay requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on LTM delay requirements

**Decision: Noted.**

##### 8.25.2.4 Others

**R4-2307277 Response to LS on beam indication of target cell(s) and time gap between a PDCCH order and the corresponding PRACH transmission for LTM**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2308218 LS on the measurement and cell switch procedures in R18 LTM**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: vivo*

**Decision: Noted.**

**R4-2308330 Discussion on SFN alignment for L1/L2-based inter-cell mobility**

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

**Decision: Noted.**

**R4-2309596 Discussion on PDCCH order-based RACH delay requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on other aspects of LTM

**Decision: Noted.**

#### 8.25.3 NR-DC with selective activation of cell groups via L3 enhancements

**R4-2307566 Discussion on NR-DC with selective activation of cell groups via L3 enhancements**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307611 Discussion on NR-DC with selective activation of cell groups via L3 enhancements**

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

**Decision: Noted.**

**R4-2307649 Discussion on NR-DC with selective activation of cell groups via L3 enhancements**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307706 Discussion on NR-DC with selective activation of cell groups via L3 enhancements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307926 Discussion on NR-DC with selective activation of cell groups via L3 enhancment**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308331 NR-DC with selective activation of cell groups via L3 enhancements**

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

**Decision: Noted.**

**R4-2308488 On NR-DC with selective activation of cell groups via L3 enhancements**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308821 Discussion on NR-DC with selective activation of cell groups via L3 enhancements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discuss the remaining NRDC with selective activation issues

**Decision: Noted.**

**R4-2309425 Discussion on the requirement of subsequent CPC**

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

**Decision: Noted.**

**R4-2309492 Discussion on NR-DC with selective activation of cell groups via L3 enhancements**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

#### 8.25.4 Improvement on SCell/SCG setup delay

**R4-2307402 Discussion on Improvement on SCell/SCG setup delay**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307564 Discussion on improvement on SCell/SCG setup delay**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307612 Discussion on improvement on SCell/SCG setup/resume**

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

**Decision: Noted.**

**R4-2307650 Discussion on improvement on FR2 SCell/SCG setup delay**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307651 LS on improvement on FR2 SCell/SCG setup delay**

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

**Decision: Noted.**

**R4-2307708 Discussion on RRM requirements of FR2 measurements for DC/CA setup/resume**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307879 Discussion on improvement on SCell/SCG setup delay**

*Type: discussion For: Discussion  
 Source: LG Electronics UK*

**Decision: Noted.**

**R4-2307927 Discussion on the improvement on SCell/SCG setup/resume delay**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2307951 Discussion on improvement on SCell/SCG setup delay**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308332 Discussion on improvement on FR2 SCell/SCG setup/resume**

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

**Decision: Noted.**

**R4-2308489 On improvement on FR2 SCellSCG setupresume**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308822 Discussion on improvement on Scell/SCG setup delay**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contibution discuss the open issues of idle/inactive measurements for Scell/SCG setup delay

**Decision: Noted.**

**R4-2309426 Discussion on improvement on Scell/SCG setup delay**

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

**Decision: Noted.**

**R4-2309493 Discussion on Improvement on SCell/SCG setup delay**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309494 Draft LS on enhanced FR2 measurements at connection setup/resume**

*Type: LS out For: Approval  
 to RAN2, cc RAN  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

#### 8.25.5 Enhanced CHO configurations

**R4-2307403 Discussion on enhanced CHO configurations**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307567 Discussion on enhanced CHO**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307613 Discussion on Enhanced CHO configurations**

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

**Decision: Noted.**

**R4-2307652 Discussion on Enhanced CHO configurations**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307707 Discussion on Enhanced CHO configurations**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307928 Discussion on Enhanced CHO configurations**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308333 Discussion on Enhanced CHO configurations**

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

**Decision: Noted.**

**R4-2308823 Discussion on enhanced CHO configurations**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contibution discuss the open issues of RRM requirements for enhanced CHO configurations

**Decision: Noted.**

**R4-2309427 Discussion on Enhanced CHO configuraitons.**

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

**Decision: Noted.**

**R4-2309495 Discussion on Enhanced CHO configurations**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

#### 8.25.6 Moderator summary and conclusions

**R4-2310045 Ad-hoc minutes for NR Mobility enhancements**

*Type: other For: Approval  
 Source: Apple*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][223] NR\_Mob\_enh2\_part1**

**Summary documents**

**R4-2309968 Topic summary for [107][223] NR\_Mob\_enh2\_part1**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Tuesday, 5/23/2023)**

Delay requirements for PDCCH ordered RACH before cell switch command

* Discussion:
  + - On top of specified delay requirement in RAN1 as below,
      * *For PDCCH ordered CFRA, the minimum timing gap between PDCCH order reception and Msg1 transmission is*
  + ∆BWPSwitching

No clarity which BWP switching is referred (DCI or RRC). Need to clarify or remove.

Change: Xiaomi, MTK, Apple

Do not change: vivo, OPPO, Huawei, E///, CATT

∆Delay

No change

Additional delay

Yes: Xiaomi, MTK, QC, vivo, Apple, OPPO

Xiaomi: 160ms (1 SSB)

MTK: same as Xiaomi

QC: UE capability (depending on CA)

Huawei, CATT: 160ms (1 SSB)

Vivo: 160ms (1 SSB), RF chain activation

Apple: 1 SSB (up to 160ms), BB + RF evaluation time

OPPO: 160 ms (1 SSB)

Agreement

* On top of specified delay requirement in RAN1 as below the RAN4 agreed
  + *For PDCCH ordered CFRA, the minimum timing gap between PDCCH order reception and Msg1 transmission is*
  + Do not change ∆Delay component
  + FFS for ∆BWPSwitching 
    - FFS whether DCI-based or RRC-based BWP switching should be applied
    - FFS whether to keep or remove the component
  + FFS for additional delays components
    - Option 1: 1 SSB occasion for T/F tracking
    - Option 2: additional time for RF and/or BB preparation and retuning

Issue 1-2-2-4: Time for RF re-tuning and the value

* Proposals
  + Option 1 (QC, CATT, MTK, Apple, [Huawei], vivo): RF re-tuning time is needed.
    - Option 1a (QC): FFS on the detailed values and granularity of the capability.
    - Option 1b (MTK): If RO of the target cell is not in the active UL BWP, RF retuning time is needed. Reuse the legacy value, i.e., 0.5ms for FR1 and 0.25ms for FR2.
* Discussion
  + QC: much larger values up to 5-10ms may need to be considered
  + vivo: prefer to reuse legacy values with some extension

Issue 2-2-1: Whether to use final L3 measurement results for L1 measurement report

* Proposals
  + Option 1 (MTK, Apple, Huawei): Not use final L3 measurement results for L1 report.
  + Option 2 (OPPO): It is allowed for UE to use L3 measurement results for FR1 intra-frequency L1 measurement report or for FR1 inter-frequency L1 measurement report.
  + Option 3 (QC): RAN4 to adopt a framework of step-wise LTM L1 measurement and report
    - UE capability on the maximum number of cells/resources for LTM L1 measurements
    - UE capability on the maximum number of cells/resources for LTM L3 measurements
      * The capability is used to allow NW to overbook cells/resources for LTM L3 measurements than UE capability of LTM L1 measurement
      * The number of overbooked LTM L3 measurement cells/resources cannot be larger than the UE capability of LTM L3 measurement
    - RRC configures the following parameters:
      * Filter coefficients to be applied to LTM L3 measurement
        + The filter coefficients cannot be set to smaller values than those for layer 3 filtering in QuantityConfig
      * Event conditions to further down select L1 measurement cells/resources among the LTM L3 cells
        + The event can be similar to one of the events defined for L3 measurement report, e.g. events in ReportConfigNR, e.g.

The LTM L3 measurement result (e.g. RSRP) becomes better than absolute threshold (which can be configurable)

The LTM L3 measurement result (e.g. RSRP) becomes amount of offset better than PCell/PSCell’s cell level and/or beam level measurement result (which can be configurable)

* + - * + The above event is used for the UE autonomous down selection of cells and/or resources for LTM-specific L1 measurements and/or reports, i.e. if the configured condition is met, UE autonomously further measures the corresponding cells and resources in L1 level and may report the results.
      * L1 report configurations
        + Detailed report configuration for the down selected LTM L1 measurement cells and/or resources.
  + Option 4 (vivo): In R18, RAN4 captures a new type of L1 measurement in the spec on top of existing measurements, if RAN1/RAN2 agrees to support:
    - Existing L3 measurement, while the reporting container is L3 MR.
    - Existing Type-1 L1 measurement for beam managements, while the reporting container is UCI.
    - New Type-2 L1 measurement for mobility, while the UE measurement behaviour is the same as L3 measurement, and new measurement and reporting mechanism are to be introduced by RAN2/RAN1.
  + Option 5 (Nokia):
    - RAN4 to clarify the relation between L3-measurements and L1-RSRP measurements in RRM requirements
    - LTM is a mobility procedure, and therefore L1-RSRP DL measurements for LTM shall be designed to be mobility measurements
    - There are two acceptable, non-exclusive, directions for mobility measurements. One is using L3-measurements in LTM reporting format, and another is defining a new type for L1-measurements for mobility.
    - L3-measurements for LTM shall be reported in L1-measurement report format (e.g., MAC CE).
    - LTM L1-measurements can be based on wide/rough beam.
    - Baseline for LTM L1-measuremements is the following:
      * Supported RSes: SSB
      * UE Rx beam assumption: Rough Rx beam
      * Side condition: -6dB
      * Measurement periodicity: SMTC, others FFS
      * Reporting container: baseline MAC CE, FFS
      * Whether L3-filtering is needed
      * DL synchronization before measurement: FFS
      * Which sections of intra- and inter-frequency requirements can be used as a baseline: 9.2, 9.3
* Recommended WF
  + RAN4 to proceed with the assumption that final L3 measurement results are not used in L1 report. Proponents for using final L3 measurement results in L1 report are encouraged to consolidate to a single solution before recommending to RAN1/2.
* Discussion
  + Whether to use of final L3 measurement results in L1 report
    - Yes: OPPO, QC, E///, QC, Nokia, vivo
    - No: MTK, Apple, Huawei, CATT, Xiaomi
* Agreement
  + Baseline: UE is NOT expected to use L3 measurement results for intra-frequency or inter-frequency L1 measurement report
    - UE shall support L1 measurements for at least [2 or 3] neighboring cells
  + Introduce optional UE support to use L3 measurement results for intra-frequency or inter-frequency L1 measurement report
    - Note 1: No impact on RAN1/2 design is expected
    - Note 2: the principles of the solution need to be agreed in RAN4 #108 meetings and the mechanism can be removed if no consensus reached on solution.

**WF/LS for approval**

**R4-2310063 WF on NR mobility enhancements (part 1)**

*Type: other For: Approval  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310160 (from R4-2310063).**

**R4-2310160 WF on NR mobility enhancements (part 1)**

*Type: other For: Approval  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310066 Reply LS on time gap between a PDCCH order and the corresponding PRACH transmission for LTM**

*Type: LS For: Approval  
 To:RAN1  
 Source: CATT*

**Abstract:**

**Discussion:**

**Decision: Noted.**

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**Topic: [107][224] NR\_Mob\_enh2\_part2**

**Summary documents**

**R4-2309969 Topic summary for [107][224] NR\_Mob\_enh2\_part2**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**WF/LS for approval**

**R4-2310064 WF on NR mobility enhancements (part 2)**

*Type: other For: Approval  
 Source: Apple*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310065 LS on SCell setup delay reduction**

*Type: LS For: Approval  
 To:RAN2  
 Source: Nokia*

**Abstract:**

**Discussion:**

**Decision: Noted.**

**R4-2310161 LS on improvement on FR2 SCell/SCG setup delay**

*Type: LS For: Approval  
 To:RAN2 Cc: RAN  
 Source: Nokia*

**Abstract:**

**Discussion:**

Session chair: aim to send LS in RAN4#108

**Decision: Noted.**

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### 8.26 Dual Tx/Rx Multi-SIM for NR

#### 8.26.1 General and work plan

#### 8.26.2 RRM requirements for Rel-17 MUSIM gaps

##### 8.26.2.1 General aspects

**R4-2307447 Considerations on issues for general aspects for MUSIM gaps**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307571 Discussion on open issues for MUSIM gaps**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307653 Discussion on general aspects of R18 MUSIM**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307960 Discussion on general issues for Rel-17 MUSIM gaps**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308437 Discussions on general issues in MUSIM gaps**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the general rules for MUSIM gaps

**Decision: Noted.**

**R4-2308470 Discussion on general RRM requirements for Rel-17 MUSIM gaps**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308662 Discussion on general issues related to MUSIM gaps**

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

**Decision: Noted.**

**R4-2308772 Discussion on General aspects**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309551 Discussion on the general aspects of MUSIM gaps**

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

**Decision: Noted.**

##### 8.26.2.2 Collisions between gaps and priority rules

**R4-2307448 Considerations on issues for collisions between gaps and priority rules for MUSIM gaps**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307568 Discussion on collisions between gaps and priority rules for MUSIM gaps**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307654 Discussion on collisions between gaps and priority rules of R18 MUSIM**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307961 Discussion on collisions between gaps and priority rules for Rel-17 MUSIM gaps**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308047 Discussion on collisions between gaps and priority rules**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308438 Discussions on collision between MUSIM gaps**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the priority rules for MUSIM gaps

**Decision: Noted.**

**R4-2308471 Discussion on collision between gap and priority rules**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308663 Discussion on collision handling for MUSIM gaps**

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

**Decision: Noted.**

**R4-2308773 Collisions between gaps and priority rules**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309126 On requirements for Rel-17 MUSIM gaps - Gap collisions**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309552 Discussion on RRM requirements for MUSIM gaps collision handling**

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

**Decision: Noted.**

##### 8.26.2.3 On network A requirements

**R4-2307449 Considerations on issues for network A RRM requirements of MUSIM gaps**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307569 Discussion on network A requirements for MUSIM gaps**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307655 Discussion on network A requirements of R18 MUSIM**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307962 Discussion on network A requirements for Rel-17 MUSIM gaps**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308048 Discussion on Network A requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308439 Discussions on NW-A’s requirement in MUSIM gaps**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the NW-A's requirement for MUSIM gaps

**Decision: Noted.**

**R4-2308472 Discussion on network A requirements**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308664 Discussion on NW A requirements with MUSIM gaps**

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

**Decision: Noted.**

**R4-2308774 Network A requirements**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309127 On requirements for Rel-17 MUSIM gaps - Network A requirements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309553 Discussion on NW A RRM requirements for MUSIM**

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

**Decision: Noted.**

##### 8.26.2.4 On network B requirements

**R4-2307450 Considerations on issues for network B RRM requirements of MUSIM gaps**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307570 Discussion on network B requirements for MUSIM gaps**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307656 Discussion on network B requirements of R18 MUSIM**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307963 Discussion on network B requirements for Rel-17 MUSIM gaps**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308049 Discussion on Network B requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308440 Discussions on NW-B’s requirement in MUSIM gaps**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the NW-B's requirement for MUSIM gaps

**Decision: Noted.**

**R4-2308665 Discussion on NW B requirements with MUSIM gaps**

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

**Decision: Noted.**

**R4-2308775 Network B requirements**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309128 On requirements for Rel-17 MUSIM gaps - Network B requirements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2309554 Discussion on NW B RRM requirements for MUSIM**

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

**Decision: Noted.**

#### 8.26.3 Moderator summary and conclusions

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**Topic: [107][225] NR\_DualTxRx\_MUSIM**

**Summary documents**

**R4-2309970 Topic summary for [107][225] NR\_DualTxRx\_MUSIM**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Wednesday 5/24/2023)**

Issue 2-2-2: Solutions for collision between different MUSIM gaps

* Proposals
  + Option 1: Priority based solution is used for collision handling between different MUSIM gaps (xiaomi MTK, Nokia, vivo, E///)
  + Option 2: Keep solution (keep all collided MUSIM gap) is used for collision handling between different MUSIM gaps (Huawei, Charter, QC, Apple)
  + Option 3: Use both Priority based solution and Keep solution for collision handling between different MUSIM gaps (vivo Apple xiaomi ZTE oppo Huawei Qualcomm Charter)
* Recommendations: Suggest to consider option 3 as a compromise.
* Discussion
  + MTK: have concern on Option 3. This is unnecessary optimization. Our compromise is to apply priority rule when gaps have different priorities and apply different approach for same priority.
  + Huawei: can compromise for Option 3. Have concerns on Option 1.
  + Nokia: Original proposal is Option 1 which is similar to concurrent gaps. The question is whether all MUSIM gaps have same priorities. We see Option 2 as an optimization.
  + E///: Option 1 is baseline. Option 3 is an optimization. For Option 3 we need to have no equal priority for MUSIM gaps.
  + Apple: prefer Option 3.
  + QC: Option 3
  + Charter: Option 2. Ok with Option 3.
* Agreements
  + Define two solutions for collision handling between different MUSIM gaps
    - 1) Priority based solution (i.e., network controls the MUSIM gaps priority)
    - 2) “Keep” solution (i.e., keep all collided MUSIM gaps)
  + FFS on the mechanism to select and/or switch between the solutions
* Tentative agreement
  + Note: It is a common understanding that UE may request MUSIM gaps with different priorities (i.e., equal priorities are not supported)

Issue 2-4-3: Collision between SMTC and MUSIM gaps for handover and Scell activation

* Proposals
  + P1: Collisions between other RRM procedures and MUSIM gaps are handled in the same way as collisions between RRM procedures and legacy MG, i.e., no special handling solution is defined. (Apple oppo Huawei Nokia Qualcomm MTK vivo)
  + P2: RAN4 to add a high level clarification for the collision between MUSIM gaps with Handover, SCell activation and SI update (Ericsson):
    - When NW-A’s RS resources for one-shot RRM procedure(Handover, SCell activation, SI update) collide with MUSIM gaps, MUSIM gaps should have lower priority.
    - When NW-A’s uplink signals for one-shot RRM procedure (Handover, SCell activation) collide with MUSIM gaps, MUSIM gaps should have lower priority, such as NW-A’s PRACH and CSI-RS reporting for SCell activation should be prioritized.
  + P3: Add a high-level clarification in RAN4 spec that during one-shot procedure such as Scell activation, SI update and so on, UE is not expected to enable MUSIM gaps unless existing RRM requirement for the corresponding one-shot procedure can be met. (Apple)
* Tentative agreements
  + When MUSIM gaps are configured, UE is still required to meet all applicable RRM requirements for NW-A

**WF/LS for approval**

**R4-2310069 WF on MUSIM RRM requirements**

*Type: other For: Approval  
 Source: vivo*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310165 (from R4-2310069).**

**R4-2310165 WF on MUSIM RRM requirements**

*Type: other For: Approval  
 Source: vivo*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.27 NR NTN enhancement

#### 8.27.5 RRM core requirements

**R4-2307278 NTN support for frequency band above 10GHz**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Decision: Noted.**

**R4-2307327 RRM for eNTN**

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

**Decision: Noted.**

**R4-2307418 Discussion on RRM requirements for NR NTN enhancement**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307599 Discussion on RRM core requirements for NR NTN enhancement**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307709 Discussion on RRM requirements for NTN enhancement**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2307892 Discussion on RRM requirements for NTN enhancement**

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

**Decision: Noted.**

**R4-2307902 General views on NR NTN enhancement**

*Type: discussion For: Discussion  
 Source: LG Electronics UK*

**Decision: Noted.**

**R4-2307904 RRM requirements for NR NTN enhancement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

RRM requirements for NR NTN enhancement

**Decision: Noted.**

**R4-2307952 Discussion on RRM requirements for Rel-18 NTN**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308046 Discussion on RRM requirements for NTN enhancement**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2308361 Discussion on NTN operation on frequencies above 10 GHz**

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

**Decision: Noted.**

**R4-2308517 Discussion on RRM impacts on NTN enhancement**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2308673 Discussion on RRM requirements for Rel-18 NTN**

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

**Decision: Noted.**

#### 8.27.6 Moderator summary and conclusions

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**Topic: [107][226] NR\_NTN\_enh**

**Summary documents**

**R4-2309971 Topic summary for [107][226] NR\_NTN\_enh**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Thursday, 5/25/2023)**

Issue 4-1-B: For location-based cell reselection in earth moving cell NTN deployments

* Proposal:
  + RAN4 to define UE requirements on location-based cell reselection in earth moving cell NTN deployments if the existing requirements are not applicable for earth moving system. The new requirement can be based on the existing requirement, and the updates may include “the margin for distance threshold” and “the definition of the reference Location.”
    - Whether the coverage information of serving cell is (absolutely) necessary:
      * No consensus in the group on whether serving cell coverage information is absolutely necessary.
    - Whether and to what extent restrict the use of the values of DRX cycle:
      * Do not further restrict DRX cycle beyond Rel-17 NR NTN.
* Discussion
  + vivo: Need to use coverage information for mobility
  + LGE: same view as vivo. DRX is ok.
  + MTK: current WF is fine for us. RAN2 provide information. If we see some information is missing, then we can let RAN2 know.
  + Apple: there are no coverage-based triggering conditions
  + Inmarsat: this is location-based reselection. How does UE make reselection if UE is not aware on serving cell coverage?
    - Nokia: it includes distance criteria relative to reference location
* Agreement:
  + RAN4 to define UE requirements on location-based cell reselection in earth moving cell NTN deployments if the existing requirements are not applicable for earth moving system. The new requirement can be based on the existing requirement, and the updates may include “the margin for distance threshold” and “the definition of the reference Location.”
    - Do not further restrict DRX cycle beyond Rel-17 NR NTN.

Issue 2-1: UE UL Timing Accuracy Requirements for UL SCSs of 60kHz and 120kHz

* Proposal
  + The assumption of the maximum total positioning error due to UE location and Satellite position estimation error shall be tightened as below:
    - For UL SCS of 60kHz, [X] meters.
    - For UL SCS of 120kHz, [Y] meters
    - The above is applicable only when SSB SCS is equal to or higher than 120kHz
    - FFS on whether applicable to UE in mobile platform.
    - FFS on whether and how to connect the tightened UE positioning error to the advanced GNSS capability or UE type.
* Discussion
  + Apple: X=Y. GNSS is independent from NR module and accuracy is same.
  + E///: X and Y will be different.
  + Samsung: same X and Y and mostly driven by GNSS.
  + MTK: X and Y could be different
  + QC: X and Y is the max error network can tolerate
  + E///: X = 25 + 15 = 40m, Y = 0m (cm-level)
  + Nokia: we can have different requirements for fixed and mobile devices
    - Apple: we are fine with that
  + QC: network can control the TA and compenstate some errors
  + Inmarsat: different types of devices were discussed in RF
* Agreement
  + The assumption of the maximum total positioning error due to UE location and Satellite position estimation error shall be tightened as below:
    - For UL SCS of 60kHz, [X] meters.
    - For UL SCS of 120kHz, [Y] meters
    - The above is applicable only when SSB SCS is equal to or higher than 120kHz
    - FFS on whether applicable to UE in mobile platform.
    - FFS on whether and how to connect the tightened UE positioning error to the advanced GNSS capability or UE type.
    - FFS whether to use different requirements for different types of devices defined in the RF session and/or different satellite types

Issue 2-2: Measurement and Mobility Requirements in NR-NTN above 10 GHz bands

* Discussion
  + QC: these are specific type of devices and requirements can be very different. Not sure we need to have mobility requirements
  + Nokia: Mechanical steering and phased array type of devices considered in the RF room. Steering speed is discussed and should be considered.
  + Inmarsat: there is mechanical steering and electronic steering of beams
  + LGE: need to wait for RF session conclusions
  + QC: Type of devices1) fully mechanical steering; 2) phased array with electronic steering; 3) mixed with phased array + parabolic antenna. For mechanical steering it may take UE several seconds to steer the antenna and it may be challenging to define RRM requirements. Support of measurements for such devices may require changes in RAN2.

**WF/LS for approval**

**R4-2310092 WF on NR NTN enhancements RRM requirements**

*Type: other For: Approval  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310168 (from R4-2310092).**

**R4-2310168 WF on NR NTN enhancements RRM requirements**

*Type: other For: Approval  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.29 NR Network-controlled Repeaters

#### 8.29.5 RRM core requirements

**R4-2307404 Discussion on RRM core requirements for NR Network-controlled Repeaters**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307462 Discussion on NCR RRM requirements**

*Type: other For: Discussion  
 Source: Dell Technologies*

**Decision: Noted.**

**R4-2308038 On NCR RRM Requirements**

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

**Decision: Noted.**

**R4-2308706 Discussion on RRM requirements for NR network-controlled repeaters**

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

**Decision: Noted.**

**R4-2309192 Further discussion on RRM requirements for NCR-MT**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309643 Further analysis of RRM requirements for network controlled repeater**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper further analyzes the impact of RRM requirements on network controlled repeater

**Decision: Noted.**

#### 8.29.7 Moderator summary and conclusions

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**Topic: [107][227] NR\_netcon\_repeater**

**Summary documents**

**R4-2309972 Topic summary for [107][227] NR\_netcon\_repeater**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Wednesday 5/24/2023)**

Issue 1-1: adaptive beamforming for NCR-Fwd access link

* Proposals
  + Proposal 1: not to define the RRM requirement for NCR-Fwd access link. [ZTE, R4-2309192]
  + Proposal 2: RAN4 not to define RRM requirement for NCR-Fwd access link for beam configuration and switching latency.[CATT, R4-2307404]
  + Proposal 3: The RRM requirements for adaptive beamforming on NCR-Fwd access link shall not be defined. [Dell.R4-2307462]
  + Proposal 4: There is no need to define RRM requirement for NCR-Fwd access link for beam configuration and switching latency. [Huawei,R4-2308706]
  + Proposal 5: Do not define RRM requirement for NCR-Fwd access link for beam configuration and switching latency. [Ericsson,R4-2309643]
  + Observation 1: To avoid any impacts on the quality of data transmission to/from the access UEs, it is important that NCR node is strictly following the access link beam configuration/switching procedure. [Nokia, R4-2308038]
  + Proposal 6: RAN4 to define core requirements on the application latency of aperiodic and semi-persistent access link beam indication. [Nokia, R4-2308038]
  + Observation 7: The latency in the access beam application can be detected by the EIPR measurements of the NCR-Fwd access link. [Nokia, R4-2308038]
* Recommended WF
  + Option 1: not to define the requirement for NCR-Fwd access link (ZTE,CATT, Dell, Huawei, Ericsson )
  + Option 2: to define the requirement for NCR-Fwd access link (Nokia)
* Discussion
  + Nokia: Beam can be adjusted dynamically. RAN1 will define latency and we need to consider requirements.
    - QC: is this is delay for RF switching or delay between control signal and switching?
    - ZTE: The latter one. It is defined in RAN1 spec
    - QC: then we need to define it in either RAN1 or RAN4. Can wait for RAN1 decision.
    - E///: RAN1 defined the procedure
* Agreements
  + Do not to define the requirement for NCR-Fwd access link beam configuration/switching procedure
    - Note: The decision can be revisited if RAN1 specifications do not include the respective procedure

Issue 2-1: LA NCR-MT

* Proposals/Observations
  + Proposal 1: to reuse the existing IAB-MT RLM/BFD/BFR requirement in TS38.174 clause 12.3 as baseline and further consider the DRX configuration for NCR-MT. [ZTE R4-2309192]
  + Proposal 2: For LA NCR\_MT, RAN4 should analyze applicability of the requirements for BFD and BFR described in Clause 12.3.2 in TS 38.174 and the applicability of the requirements for RLM described in Clause 12.3.1 in TS 38.174. [Nokia, R4-2308038]
* Agreement
  + For LA NCR\_MT, reuse requirements for BFD and BFR described in Clause 12.3.2 in TS 38.174 and the requirements for RLM described in Clause 12.3.1 in TS 38.174

Issue 2-2: WA NCR-MT

* Agreement
  + Do not define RLM requirement for WA NCR-MT

**WF/LS for approval**

**R4-2310084 WF on Network-controlled repeater RRM requirements**

*Type: other For: Approval  
 Source: ZTE*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.30 NR MIMO evolution for downlink and uplink

#### 8.30.3 RRM core requirements

##### 8.30.3.1 RRM requirements impacts

**R4-2307184 Discussion on general RRM requirements for MIMO evolution**

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

**Decision: Noted.**

**R4-2307342 On RRM requirements impacts for NR MIMO evolution for downlink and uplink**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307604 Discussion on R18 MIMO for RRM requirements impacts**

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

**Decision: Noted.**

**R4-2308219 Discussion on other RRM impacts in R18 NR MIMO evolution**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308514 Further discussion on general RRM impacts on Rel-18 MIMO evolution for downlink and uplink**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2308709 Discussion on RRM impacts for R18 MIMO evolution**

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

**Decision: Noted.**

**R4-2309597 Discussion on RRM requirements impact**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on RRM requirements

**Decision: Noted.**

##### 8.30.3.2 Timing requirements for UL multi-DCI multi-TRP with two TAs

**R4-2307185 Discussion on timing requirements for UL multi-DCI multi-TRP with two TAs**

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

**Decision: Noted.**

**R4-2307186 Draft LS on scheduling restrictions for overlapping UL transmission**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2307605 Discussion on R18 MIMO for Timing requirements for UL multi-DCI multi-TRP with two Tas**

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

**Decision: Noted.**

**R4-2307657 Discussion on timing requirements for UL multi-DCI multi-TRP with two TAs of R18 eFeMIMO**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307658 LS on MTTD for multi-DCI multi-TRP with two TAs**

*Type: LS out For: Approval  
 to RAN1  
 Source: Apple*

**Decision: Noted.**

**R4-2308220 Discussion on maximum uplink timing difference for multi-DCI multi-TRP with two TAs**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308515 Further discussion on timing requirements for Multi-DCI multi-TRP with two TAs**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2308708 Discussion on timing requirements for UL multi-DCI multi-TRP with two Tas**

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

**Decision: Noted.**

**R4-2308921 On timing requirements for MIMO**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Open issues from WF regarding time requirements.

**Decision: Noted.**

##### 8.30.3.3 Unified TCI framework

**R4-2307187 Discussion on Rel-18 extension of Unified TCI framework for mTRP operation**

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

**Decision: Noted.**

**R4-2307343 On RRM requirements for unified TCI framework with mTRP**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision: Noted.**

**R4-2307606 Discussion on R18 MIMO for Unified TCI framework**

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

**Decision: Noted.**

**R4-2308221 Discussion on RRM impacts from R18 enhancement of TCI framework**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308326 Discussion on RRM requirements for uTCI extension to mTRP for Rel-18 MIMO**

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

**Decision: Noted.**

**R4-2308516 Discussion on enhanced unified TCI framework in Rel-18 MIMO evolution for downlink and uplink**

*Type: discussion For: Discussion  
 Source: Samsung*

**Decision: Noted.**

**R4-2309598 Discussion on unified TCI state switch requirements for mTRP**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on Unified TCI state requirements

**Decision: Noted.**

#### 8.30.4 Moderator summary and conclusions

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**Topic: [107][228] NR\_MIMO\_evo\_DL\_UL**

**Summary documents**

**R4-2309973 Topic summary for [107][228] NR\_MIMO\_evo\_DL\_UL**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Tuesday, 5/23/2023)**

Issue 2-1-1: What is the assumption on M1/M2 for MTTD for UE not capable of supporting RTD>CP?

* Proposals
  + If UE supports STxMP
    - The MTTD between multiple TRPs can be defined as (CP + M1) for FR1 and (CP + M2) for FR2, M1=1.6us and M2=0.5 us (Nokia, MTK, Apple, vivo, Samsung, Huawei, Ericsson)
  + If UE doesn’t support STxMP
    - Proposal 1: (Apple, MTK, Samsung, Huawei, vivo)
      * No MTTD requirements for this case.
    - Proposal 2: (vivo)
      * Recommend RAN1 to define gap/scheduling restriction based on the worst case MTTD values that derived based on simultaneous UL transmission.
    - Proposal 3:
      * Same requirements which in the condition “If UE supports STxMP”
* Agreements
  + If UE supports STxMP
    - The MTTD between multiple TRPs can be defined as (CP + M1) for FR1 and (CP + M2) for FR2, M1=1.6us and M2=0.5 us

Issue 1-1-1: Whether to specify RRM requirements for TDCP reporting?

* Proposals
  + Proposal 1: Yes (vivo, Ericsson)
    - Proposal 1a (vivo): Define TDCP measurement delay and accuracy requirements in R18 MIMO evolution WI.
    - Proposal 1b (Ericsson): RAN4 to define accuracy requirements for at least CSI normalized channel correlation amplitude of TDCP. Other RRM requirements for TDCP reporting is FFS based on further RAN1 progress.
  + Proposal 2: No RRM requirements are introduced. (Samsung, Huawei)
* Discussion
  + Apple: no RRM requirements (delay and accuracy)
  + E///: the TDCP has impact on CSI-RS configuration used by the network.
* Agreements
  + FFS to define TDCP measurement accuracy requirements
  + FFS to define TDCP measurement delay requirements

Issue 1-2-1: Whether to specify RRM requirements for Rel-17 Full slot SRS transmission?

* Proposals
  + Proposal 1: Yes (Nokia, MTK, Samsung, Ericsson)
    - Proposal 1a (Nokia): RAN4 to discuss requirements for Rel-17 Full slot SRS transmission considering 4 cases.
    - Proposal 1b (MTK): RAN4 to discuss the interruption requirements for Rel-17 full slot SRS transmission.
    - Proposal 1c (Samsung): Prefer to update the requirements for Interruptions at NR SRS antenna port switching for FR2 and SRS in any position and extend the length.
    - Proposal 1d (Ericsson): Since the RAN4 requirements are defined for xTyR, rel-18 full slot SRS transmission needs to be extended to xTyR.
  + Proposal 2: No RRM requirements are introduced in this WI. (Apple, vivo, Huawei)
    - Proposal 2a (Apple): Discuss introducing requirements for SRS ant port switching with full slot SRS transmission in next release.
    - Proposal 2b (vivo): Introduction of RRM requirement for R17/R18 full slot SRS transmission should be discussed in RAN plenary first.
* Conclusion: No consensus to specify RRM requirements for Rel-17 Full slot SRS transmission feature in the scope of Rel-18 MIMO evolution WI

Issue 1-2-2: Whether to specify RRM requirements for Rel-18 SRS enhancement for 8TX UL?

* Tentative agreements
  + Reuse legacy SRS switching RRM requirements for 8TX UL

Issue 3-1-2: For eUTCI, whether to support simultaneous reception in mTRP?

* Proposals
  + Proposal 1: Define RRM requirements to support simultaneous reception in mTRP. (Nokia, Huawei, Ericsson)
    - Proposal 1a: (Huawei): The scenarios related to the simultaneous reception under discussion in Rel-18 Multi-Rx (different QCL type-D in FR2) can be postponed with more conclusions.
    - Proposal 1b: (Ericsson): RAN4 to agree on considering simultaneous reception with different QCL type-D in this WI. RAN4 to define relevant requirements to support inter-cell mTRP simultaneous reception in MIMO evolution WI.
  + Proposal 2: (Apple, MTK)
    - Do not consider requirements with simultaneous reception in mTRP in FR2 in Rel-18.
  + Proposal 3: (Samsung)
    - Deprioritize the discussion when UE can support DL simultaneous reception. wait for further conclusion with multi-RX reception in FR2.
* Discussion
  + Nokia: do not need to wait for outcome of multi-RX WI
  + MTK: can compromise to Proposal 1a
* Agreements
  + Define eUTCI RRM requirements to support simultaneous reception in mTRP for FR1

**WF/LS for approval**

**R4-2310067 WF on NR MIMO evolution RRM requirements**

*Type: other For: Approval  
 Source: Samsung*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310178 (from R4-2310067).**

**R4-2310178 WF on NR MIMO evolution RRM requirements**

*Type: other For: Approval  
 Source: Samsung*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310068 LS on MTTD for multi-DCI multi-TRP with two TAs**

*Type: LS Out For: Approval  
 To: RAN1  
 Source: Apple*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310174 (from R4-2310068).**

**R4-2310174 LS on MTTD for multi-DCI multi-TRP with two TAs**

*Type: LS Out For: Approval  
 To: RAN1  
 Source: Apple*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.31 NR sidelink evolution

#### 8.31.3 RRM core requirements

**R4-2308710 Discussion on RRM impacts for R18 sidelink evolution**

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

**Decision: Noted.**

##### 8.31.3.1 Sidelink CA

**R4-2307614 Discussion on RRM core requirementsfor R18 NR SL CA**

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

**Decision: Noted.**

**R4-2307808 Discussion on NR sidelink CA operation**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2307964 Discussion on RRM core requirements for sidelink CA**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308473 On RRM requirements of NR sidelink CA operation**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308776 NR SL CA RRM**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309217 Discussions on RRM requirements for sidelink CA**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the RRM requirements for SL CA operation.

**Decision: Noted.**

##### 8.31.3.2 SL unlicensed operation

**R4-2307262 SL enhancement RRM discussion**

*Type: discussion For: Approval  
 Source: Qualcomm, Inc.*

**Decision: Noted.**

**R4-2307615 Discussion on RRM core requirements for SL unlicensed operation**

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

**Decision: Noted.**

**R4-2307800 Discussion on NR sidelink unlicensed operation**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2307965 Discussion on RRM core requirements for SL unlicensed operation**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308474 On RRM requirements for NR SL-U**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308777 Discussion on SL-U impact on RRM requirements**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309216 Discussions on RRM requirements for sidelink unlicensed**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the RRM requirements for SL unlicensed operation.

**Decision: Noted.**

##### 8.31.3.3 Co-channel coexistence for LTE SL and NR SL

**R4-2307616 Discussion on RRM impacts for LTE SL and NR SL coexistence**

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

**Decision: Noted.**

**R4-2307801 Discussion on co-channel coexistence for LTE SL and NR SL**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Decision: Noted.**

**R4-2307966 Discussion on RRM core requirements for Co-channel coexistence for LTE SL and NR SL**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308475 On RRM requirements for Co-channel coexistence for LTE SL and NR SL**

*Type: other For: Approval  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: OPPO*

**Decision: Noted.**

**R4-2308778 RRM requirements for co-channel coexistence for LTE sidelink and NR sidelink**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309218 Discussions on Co-channel coexistence for LTE SL and NR SL**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the RRM requirements for Co-channel coexistence for LTE SL and NR SL.

**Decision: Noted.**

#### 8.31.4 Moderator summary and conclusions

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**Topic: [107][229] NR\_SL\_enh2\_part1**

**Summary documents**

**R4-2309974 Topic summary for [107][229] NR\_SL\_enh2\_part1**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Tuesday, 5/23/2023)**

1-1-1: UE transmit timing requirement (check if moderator view is agreeable.)

* Proposals
  + Option 1(Qualcomm, MediaTek, LGE, Xiaomi, OPPO, Huawei, Ericsson): Reuse existing requirements of the SyncRef UE as a synchronization reference source for SL-U
    - Option 1-1(Huawei): For SCS=60kHz, there is no agreement for S-SSB transmission, and RAN4 continue to wait for RAN1’s conclusion.
* Recommended WF
  + Moderator’s view: Reuse existing requirements of UE transmit timing of SyncRef UE as a synchronization reference source for SL-U with 15kHz and 30kHz SCS, and FFS for 60kHz SCS
* Discussion
  + E///: we need to put condition that SyncRef UE is available
* Agreements
  + Reuse existing Te requirements of UE transmit timing of SyncRef UE as a synchronization reference source for SL-U with 15kHz and 30kHz SCS, and FFS for 60kHz SCS
    - The conditions to apply the requirements are FFS

1-1-2: Applicability rule

* Proposals: When using SyncRefUE as the synchronization reference source, the SL UE shall meet the (Te) timing requirements provided that:
  + Option 1(Qualcomm, MediaTek, Xiaomi, LGE, OPPO with one in []): at least one S-SSB is available at the UE during the last [160] ms.
    - Option 1-1(Qualcomm, LGE)
      * The term SyncRef UE in SL-U is not available at the UE refers to when all the candidate S-SSB positions in every S-SSB period are not available during the last y ms; otherwise the SyncRef UE in SL-U is considered as available at the UE.
  + Option 2(Ericsson): SyncRefUE is available, where the availability is defined as follows:
    - When not configured with DRX, the term the SyncRefUE is not available at the UE refers to when the number of occasions containing sidelink synchronization reference signal of the SyncRefUE is not available at the UE during at least one time period (e.g. discovery burst transmission window) due to CCA failures.
    - When configured with DRX, the term the SyncRefUE not available at the UE refers to when the number of DRX cycles in which at least one occasion containing the sidelink synchronization reference signal of the SyncRef UE is not available at the UE during one time period (e.g. discovery burst transmission window) due to the CCA failures. When configured with DRX, the UE is not required to determine the availability of the SyncRefUE more frequent than once per DRX cycle.
* Agreements
  + For non-DRX case when using SyncRefUE as the synchronization reference source, the SL UE shall meet the (Te) timing requirements provided that at least [one] S-SSB is available at the UE during the last [160] ms.

**WF/LS for approval**

**R4-2310060 WF on SL evolution RRM requirements – SL unlicensed operation**

*Type: other For: Approval  
 Source: LGE*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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**Topic: [107][230] NR\_SL\_enh2\_part2**

**Summary documents**

**R4-2309975 Topic summary for [107][230] NR\_SL\_enh2\_part2**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Tuesday, 5/23/2023)**

Issue 1-2: Delay requirements of carrier addition/release for NR SL CA

* Proposals
  + Option 1 (Huawei):
    - the delay requirements of SL carrier addition/release are only applied to mode 1 and can be defined as (THARQ + TRRC\_procedure + N) slots, where
      * THARQ is HARQ processing time and
      * TRRC\_procedure is RRC procedure delay.
      * N is the number of SL carrier(s) being added/released.
  + Option 2 (Ericsson): The LTE V2X requirements defined in section 13.9 in TS 36.133 for adding or release of V2X component carriers are reused for NR SL adding or release of NR SL component carriers.
  + Option 3 (OPPO, LGE, Xiaomi, Nokia, Huawei)
    - The delay requirements for SL component carrier addition/release are not needed for Mode 2 operation and up to UE implementation.
* Discussion
  + MTK: fine with option 3. RAN1 has not started discussion on this and we prefer to add a note that we can revisit this based on RAN1 progress
    - LGE: this is not related to RAN1 progress, since this is Mode 2
* Agreements
  + The delay requirements for SL component carrier addition/release are not needed for Mode 2 operation and up to UE implementation.

Issue 1-3: Requirements of Selection / Reselection of Synchronization Reference Source under NR SL CA operation

* Proposals
  + Option 1 (Huawei, LGE, MTK):
    - Wait for RAN1/RAN2 progress.
  + Option 2 (OPPO):
    - If N synchronization carriers can be configured based on RAN2 conclusion, the corresponding detection and measurement delay requirements should be scaled by N compared to that for the scenario when a single synchronization carrier is configured.
  + Option 3 (Ericsson):
    - The LTE V2X requirements defined in section 13.10 in TS 36.133 for selection/reselection of V2X SyncRefUE are reused for NR SL selection/reselection of SyncRefUE when supporting NR SL CA

Issue 1-1: Interruption requirements when NR SL UE performs SL carrier addition/release

* Proposals
  + Option 1 (Huawei):
    - the interruptions requirements of SL carrier addition/release shall consider both RF tuning/re-tuning time and 1 additional slot for timing misalignment.
  + Option 2 (LGE):
    - Do not introduce interruption to WAN due to sidelink component carrier addition/release in Rel-18..
  + Option 3 (Xiaomi): The interruption is comprised of interruption length and interruption location, following the same way as LTE CA.
  + Option 4 (OPPO): up to 2ms interruption to WAN is allowed, and FFS interruption location/ratio after delay requirements are specified.
  + Option 5 (Nokia): Interruption could be dependent on how component carriers are being added/released. Wait for RAN2 to agree on the procedure for component carrier addition/release in NR SL CA mode 2 operation for defining interruption timing in mode 2 operation.
  + Option 5 (Ericsson):
    - Interruptions to WAN are defined based on the NR slot length and length of interruptions can be reused.
    - Interruptions to WAN due to SL component carriers are limited, and RAN4 to discuss reusing interruption requirements defined in 12.7.4 in TS 38.133.
  + Option 6 (MTK): Discuss whether and how to define interruption requirements on WAN due to SL carrier addition/release after RAN1/2 concludes on supporting inter-band concurrent Uu and SL CA.
* Discussion
  + LGE: in RF session there are no BCs including WAN
  + OPPO: need to confirm with RF session on this
* Agreements
  + Define interruptions to WAN carriers when NR SL UE performs SL carrier addition/release
  + Do not define interruptions to SL carriers when NR SL UE performs SL carrier addition/release
  + Interruptions to WAN
    - Interruption are defined with granularity of the NR slot length
    - FFS on interruption ratio and length

**WF/LS for approval**

**R4-2310061 WF on SL evolution RRM requirements – SL CA and co-channel co-existence**

*Type: other For: Approval  
 Source: OPPO*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.32 Enhanced support of reduced capability NR devices

#### 8.32.3 RRM core requirements

**R4-2307326 RRM for eRedCap**

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

**Decision: Noted.**

**R4-2307405 Discussion on RRM requirements for eRedCap**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307451 On RRM requirements for Redcap enhancement**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308337 Discussion on RRM impact for Enhanced support of reduced capability NR devices**

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

**Decision: Noted.**

**R4-2309572 Discussion on further NR RedCap UE complexity reduction**

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

**Decision: Noted.**

**R4-2309606 Discussion on RRM Core Requirements for Enhanced RedCap**

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

**Decision: Noted.**

**R4-2309703 eDRX requirements for R18 eRedCap**

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

**Decision: Noted.**

**R4-2307925 Discussion on impacts to RRM core requirements for Enhanced RedCap**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2307967 Discussion on RRM core requirements for eRedCap**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

#### 8.32.4 Moderator summary and conclusions

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**Topic: [107][231] NR\_redcap\_enh**

**Summary documents**

**R4-2309976 Topic summary for [107][231] NR\_redcap\_enh**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Monday, 5/22/2023)**

Issue 1-4: When to measure when configured with both IDLE and INACTIVE eDRX configurations larger than 10.24s for neighbour cell measurements

* Proposals
  + Option 1 (Xiaomi): The number of samples needed for Tmeasure,NR /Tevaluate,NR of neighbor cell measurement (measured in RAN paging cycles) must be contained in a single RAN PTW.
  + Option 2 (Apple): UE shall perform measurements/evaluation of neighbor cell within single PTW irrespective of IDLE or INACTIVE PTW being used.
* Discussion
  + MTK: Option 2
  + Apple: for Option 2 the measurements are confined within a single PTW
  + Xiaomi: ok with Option 2
* Agreement
  + UE shall perform measurements/evaluation of neighbor cell within single PTW irrespective of IDLE or INACTIVE PTW being used.

Issue 1-2: Measurement period when configured with both IDLE and INACTIVE eDRX configurations for neighbour cell measurements

* Proposals
  + Option 1 (Ericsson, Apple, MTK): The detection/measurement/evaluation delay requirement are specified in the step of:
    - DRX cycle, if eDRX\_Inactive ≥ 20.48sec
  + Option 2 (HW): Measurement requirements are specified according to a fixed period, where the fixed period can be one of “T”s or other fixed value.
  + Option 3 (vivo): Wait for RAN2 conclusion.
  + Option 4 (Xiaomi): UE performs neighbor cell measurements based on RAN paging cycle.
* Discussion
  + MTK: Ok with Option 1. It should be Inactive DRX cycle
  + vivo, Xiaomi: same view as MTK
  + Apple: the correct terminology is “RAN configured DRX cycle”
  + QC: is this for both non-overlapping or overlapping PTW?
* Agreement
  + The detection/measurement/evaluation delay requirement are specified in the step of:
    - RAN configured DRX cycle, if eDRX\_Inactive ≥ 20.48sec

Issue 1-8: CG-SDT requirements with PTW

* Proposals
  + Option 1 (Apple, CATT): New CG-SDT requirement shall be specified for Rel-18 eRedCap UE with PTW. Details are FFS.
  + Option 2 (Nokia, Ericsson): No specific requirements needed since CG-SDT can be performed inside or outside PTW.
    - Option 2a (Nokia): Add a clarification on the potential collision between CG-SDT and PTW.
  + Option 3 (vivo, MTK): More discussions needed.
    - Option 3a (CATT): discuss whether initial SDT or subsequent SDT transmission outside PTW can take place. Topic #2: Baseband BW reduction impact
* Discussion
  + MTK: prefer Option 2. Existing requirements can be applicable.
  + vivo: ok with Option 2.
  + E///: Option 2 can be further clarified that the existing CG-SDT requirements would apply
* Agreement
  + Do not define specific CG-SDT requirements with PTW
  + Reuse the existing CG-SDT requirements
  + It is RAN4 understanding that UE is allowed to make CG-SDT transmission either inside or outside PTW based on CG-SDT network configuration

Issue 2-1: Whether to define CGI reading requirements for Rel-18 RedCap UE

* Proposals
  + Option 1 (Ericsson, CATT, vivo, MTK, ZTE): RAN4 to specify CGI reading requirements for Rel-18 RedCap UE.
  + Option 2 (HW, Xiaomi): No CGI reading related requirements are specified for R18 RedCap.
* Discussion
  + Huawei: do not see strong motivation to do it

**WF/LS for approval**

**R4-2310043 WF on RRM requirements for enhanced RedCap**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

Huawei: proposed to add another option 1c for “When to measure when configured with both IDLE and INACTIVE eDRX configurations larger than 10.24s and when the PTWs are partially overlapping for serving and neighbour cell measurements”

**Decision: Revised to R4-2310154 (from R4-2310043).**

**R4-2310154 WF on RRM requirements for enhanced RedCap**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.33 Enhanced NR Sidelink Relay

#### 8.33.1 General and work plan

#### 8.33.2 RRM core requirements

**R4-2307263 SL relay RRM discussion**

*Type: discussion For: Approval  
 Source: Qualcomm, Inc.*

**Decision: Noted.**

**R4-2307617 Discussion on RRM impacts for R18 NR sidelink relay enhancements**

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

**Decision: Noted.**

**R4-2307903 Discussion on Rel-18 NR sidelink relay enhancements**

*Type: discussion For: Discussion  
 Source: LG Electronics UK*

**Decision: Noted.**

**R4-2308711 Discussion on RRM impacts for R18 sidelink relay enhancement**

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

**Decision: Noted.**

**R4-2308779 SL-Relay enhancement RAN4 RRM**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2309645 Further analysis of RRM requirements for SL relay enhancement**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper further analyzes the requirements related to discovery and reselection for UE based relay

**Decision: Noted.**

#### 8.33.3 Moderator summary and conclusions

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**Topic: [107][232] NR\_SL\_relay\_enh**

**Summary documents**

**R4-2309977 Topic summary for [107][232] NR\_SL\_relay\_enh**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Tuesday, 5/23/2023)**

Issue 1-1: The requirements for the selection/reselection of the relay UE

* Proposals
  + Option 1 (Qualcomm, Huawei, Ericsson): The legacy requirement on selection/reselection of relay UE is applicable to R18 scenarios and no specification change is needed.
* Discussion
  + Nokia: prefer to remove “no specification change is needed” and wait for RAN2 progress
* Agreement
  + The legacy requirement on selection/reselection of relay UE is applicable to R18 scenarios

Issue 1-3: Measurement accuracy

* Proposals
  + Option 1 (Nokia): TS38.133 clause 10.4.5 can be taken as baseline for Discovery signal measurements accuracy and FFS the impacts on legacy requirements
* Discussion
  + QC: We have Discovery signal measurements in Rel-17.
  + E///: Not clear what is the impact on accuracy. We are not defining any new measurements.
  + Nokia: we are ok to keep it as FFS and discuss in the next meeting
  + MTK: legacy requirements can be applied here

Issue 1-2: Interruption time in multipath scenario

* Proposals
  + Option 1 (MediaTek, Huawei): Not define interruption requirements for multi-path.
  + Option 2 (LGE): RAN4 can wait for RAN2 to progress further to decide on U2U selection and reselection considering m-path scenarios
  + Option 3 (Ericsson):
    - Define the maximum interruption length of each interruption occurred on the direct path when the remote UE (UE1) triggered by the RRC reconfiguration, selects/reselects the relay UE (UE2) for the indirect path. The value of the maximum interruption length is FFS.
    - Define the interruption requirements related to the interruption on the direct path when the remote UE (UE1) is in non-DRX on the direct path and is configured with the SL DRX cycle for the SL operation on the indirect path. The values of the interruption probability and the maximum interruption length are FFS.
* Discussion
  + E///: Multi-path scenarios includes 1) RRC reconfiguration and 2) SL DRX. Both can have impact on interruptions. The procedures are same as in Rel-17, but the scenario is new.
  + Huawei: There are already interruptions for RRC reconfiguration for discovery in Rel-17. Same for SL DRX. Not clear what is new.
  + MTK: the scenario is not clear. U2U?
  + QC: the existing requirements are already applicable to new scenarios
  + E///: we prefer to make applicability for clear to new scenarios
* Agreement
  + The existing interruptions due to RRC reconfiguration and SL DRX are applicable to multipath scenario (Uu and U2N path). FFS whether and how to capture this in the specification.

**WF/LS for approval**

**R4-2310059 WF on SL Relay RRM requirements**

*Type: other For: Approval  
 Source: LGE*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.34 Mobile IAB (Integrated Access and Backhaul) for NR

#### 8.34.4 RRM core requirements

**R4-2308039 On Mobile IAB RRM Core Requirements**

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

**Decision: Noted.**

**R4-2308325 Discussion on RRM impact on Rel-18 mobile IAB**

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

**Decision: Noted.**

**R4-2309644 Further analysis of RRM requirements for mobile IAB**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper further analyzes the impact of RRM requirements on mobile IAB

**Decision: Noted.**

**R4-2308788 RRM Requirements for Mobile IAB-MT**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

Session chair: moved from AI 8.34.3

**Decision: Noted.**

#### 8.34.5 Moderator summary and conclusions

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**Topic: [107][233] NR\_mobile\_IAB**

**Summary documents**

**R4-2309978 Topic summary for [107][233] NR\_mobile\_IAB**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Wednesday 5/24/2023)**

Issue 1-3: Inter-frequency RRC re-establishment

* Proposals
  + Option 1: Introduce inter-frequency RRC re-establishment requirements, do not introduce RRC release with re-direction requirements
  + Option 2: Introduce RRC release with re-direction requirements
  + Option 3: Do not introduce either requirement
* Agreements
  + Do not introduce requirements for inter-frequency RRC re-establishment and for RRC release with re-direction

Issue 1-9: Handling of measurement gaps

* Agreements
  + Do not mention measurement gaps impacts in the specification

Issue 1-10: Handling of HST

* Agreements
  + Do not introduce HST requirements unless the WID is updated to include this scenario

Issue 1-11: CA Related Requirements

* Proposals
  + Option 1: Introduce requirements for the direct SCell activation at SCell addition and direct SCell activation at handover based on the UE requirements defined in TS 38.133 Clause 8.3.4 and 8.3.5.
  + Option 2: Do not introduce any CA requirements
* Discussion
  + Nokia: CA was not considered in the previous release
  + Huawei: additional CA requirements need to be considered if we include CA in the scope. Prefer to focus on single carrier
  + E///: Need to start from RF requirements, which do not support CA for now.
* Agreements
  + Do not introduce CA requirements

**WF/LS for approval**

**R4-2310085 WF on NR Mobile IAB RRM requirements**

*Type: other For: Approval  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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### 8.35 Network energy saving for NR

#### 8.35.4 RRM core requirements

**R4-2307328 On RRM requirements for NES**

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

**Decision: Noted.**

**R4-2307362 SSB-less operation for FR1 inter-band co-located CA**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

**R4-2307419 Discussion on RRM requirements of network energy saving**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Noted.**

**R4-2307600 Discussion on RRM impaction for network energy saving**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2307804 NR network energy saving RRM aspects**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision: Noted.**

**R4-2307893 Discussion on RRM requirements for Network energy saving for NR**

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

**Decision: Noted.**

**R4-2307901 Discussion on Rel-18 RRM requirement for NES**

*Type: discussion For: Discussion  
 Source: LG Electronics UK*

**Decision: Noted.**

**R4-2308021 RRM requirements on SSB-less SCell operation for FR1 inter-band CA**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Decision: Noted.**

**R4-2308222 Discussion on SSB-less SCell operation for network energy saving**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308339 Discussion on RRM impact for network energy savings for NR R17**

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

**Decision: Noted.**

**R4-2308730 Discussion on RRM aspects of Network energy saving for NR**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2309428 Discussion on RRM requirements of SSBless Scell for inter-band CA**

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

**Decision: Noted.**

**R4-2309599 Discussion on SSB less SCell activation**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides discussion on SCell activation procedures for SSB-less inter-band SCell in FR1

**Decision: Noted.**

#### 8.35.5 Moderator summary and conclusions

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**Topic: [107][234] Netw\_Energy\_NR**

**Summary documents**

**R4-2309979 Topic summary for [107][234] Netw\_Energy\_NR**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Wednesday 5/24/2023)**

**Sub-topic 1-1 Scenarios**

Issue 1-1-1/2/3: Scenario 1 / 2 / 2a

* Discussion
  + E///: No TRS transmission is not supported by RAN1
    - Huawei: this is not relevant to this discussion
  + Nokia: Not sure Scenario 2 is feasible before we start discussion in RAN4
  + ZTE: This WID is to achieve NW power saving. Both Scenario 1 and 2 can achieve power saving. Disagree to prioritize Scenario 1.
  + Apple: Prefer to prioritize Scenario 1.
  + QC: Scenario 1 is typical. Prefer not to discuss 2. We can discuss 2A.
  + Huawei: More clarifications is needed in 2A. It is up to NW implementation and no RAN1/RAN2 impacts are expected.
    - ZTE: for 2A the NW should shutdown DL transmission.
  + MTK: what requirements should we consider for 2A?
    - ZTE: there will be impact on SCell activation delay
  + vivo: Ok with 1 and 2A
  + CMCC: Ok prioritize 1 and 2A.
  + Huawei: the ending point of SCell activation is CSI report. How does it work in 2A?
    - ZTE: the ending point can be discussed
* Agreements
  + Continue RAN4 work on the following SSB-less SCell scenarios
    - Scenario 1: SCell without SSB transmission and with TRS transmission
    - Scenario 2a: SCell without SSB transmission and without any other DL transmissions, but with UL reception at the NW side
      * Note: No RAN1 impacts are expected, and no RAN4 requirements will be defined if the scenario is not supported from RAN1 specification perspective.
  + Deprioritize RAN4 work on the following SSB-less SCell scenario
    - Scenario 2: SCell without SSB transmission and without TRS transmission
  + Send LS to RAN1/2 to check on support of Scenario 2a from RAN1/2 specifications perspective

Issue 1-2-1: RTD conditions for scenario 1

* Proposal 1
  + Option 1: RTD between SCell without SSB and the inter-band active serving cell is within 260ns (Apple, MTK, CTC, Vivo, Huawei, ZTE)
  + Option 2: RTD between SCell without SSB and the inter-band active serving cell is within CP (Apple)
  + Option 3: RTD between SCell without SSB and the inter-band active serving cell is within 3us (CATT, CMCC, QC)
  + Option 4: (Nokia)
    - 3us TAE shall be assumed when deriving RTD for FR1 inter-band collocated CA.
    - RTD between SCell without SSB and the inter-band active serving cell is within 3+X us ns
  + Option 5: (Ericsson)
    - SSB less SCell activation would work when RTD is less than 4.7µs for Scenario 1 when SCS of reference cell is 15kHz.
    - SSB less SCell activation would work when RTD is less than 2.35µs for Scenario 1 when SCS of reference cell is 30kHz.
    - RAN4 to study potential solutions for UE to acquire timing when the TAE is 3µs and reference cells SSB is 30kHz.
* Discussion
  + Huawei: can consider multiple sets of requirements (based on NW control)
  + Nokia: 3us TAE should be the baseline assumptions
  + CMCC: it depends on BS TAE capabilities. Typically BS have much better TAE than 3us. Do not need to differentiate UE capabilities.
  + QC: we can start from 3us.
  + E///: same understanding as QC
  + Apple: prefer to decouple TAE and RTD
  + China Telecom: For intra-band we have 260ns. It should be feasible for some inter-band CA combinations.
* Agreements
  + Further consider the following cases for requirements definition
    - Set 1: RTD ≤ 3us + X (X is FFS)
    - Set 2: 260ns < RTD < min(CP, 3us)
      * note: the SCS is the largest SCS across CCs
      * note: the CP corresponds to the largest SCS across CCs
    - Set 3: RTD ≤ 260ns
    - FFS whether all subsets are feasible from UE implementation perspective

**WF/LS for approval**

**R4-2310086 WF on Network Energy Saving RRM requirements**

*Type: other For: Approval  
 Source: Huawei*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310087 LS on RAN1/2 impacts for SSB-less Scell operation**

*Type: LS Out For: Approval  
 To: RAN1, RAN2  
 Source: Huawei*

**Abstract:**

**Discussion:**

Session chair: No consensus to send the LS. Recommend clarifying the scenarios in the scope of the WI in RANP.

**Decision: Noted.**

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### 8.37 In-Device Co-existence (IDC) enhancements for NR and MR-DC

#### 8.37.1 General and work plan

**R4-2307968 Work plan for RAN4 discussion on In-Device Co-existence (IDC) enhancements**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Approved.**

#### 8.37.2 RRM core requirements

**R4-2307351 Reply LS on on autonomous denial for IDC**

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

**Decision: Noted.**

**R4-2307909 RRM requirements for IDC**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

RRM requirements for IDC

**Decision: Noted.**

**R4-2307969 Discussion on RRM impact of TDM solution for In-Device Co-existence (IDC) enhancements**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision: Noted.**

**R4-2308780 Discussion on LS to RAN4 on autonomous denial for IDC**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Noted.**

#### 8.37.3 Moderator summary and conclusions

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**Topic: [107][235] NR\_IDC\_enh**

**Summary documents**

**R4-2309980 Topic summary for [107][235] NR\_IDC\_enh**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Wednesday 5/24/2023)**

Issue 2-1-2: RRM impact of autonomous denial solution

* Proposals
  + Option 1(Apple, Nokia, Xiaomi): RAN4 adopts a similar approach to defining IDC-related RRM requirements for NR as for LTE.
    - Option 1a (Xiaomi): UE should meet the existing RRM requirements of L3 measurements, RLM/BFD and L1 measurements for IDC autonomous denial solution.
    - Option 1b (Xiaomi): UE should meet the existing UE Rx-Tx time difference measurements requirements for IDC autonomous denial solution.
    - Option 1c (Xiaomi): When UE autonomous denial is activated, and when denial slots overlap with a measurement reporting event, additional delay of event triggered measurement reporting can be expected on the CC(s) on which UL slots is denied.
  + Option 2 (Apple): RAN4 sends an LS to RAN2 seeking clarification on the slot for autonomous denial configuration.
* Agreements
  + Adopt a similar approach to defining IDC-related RRM requirements for NR as for LTE

Issue 2-2-1: RRM impact of FDM IDC solution

* Proposals
  + Option 1(Ericsson): RAN4 to check whether the impact of FDM and TDM IDC solutions on RRM requirements differs, necessitating the definition of two distinct sets of definitions for FDM and TDM IDC solutions.
* Discussion
  + E///: if TDM and FDM solutions are combined together, then there may be impact on RRM procedures. Need to wait for RAN2 progress.
  + Apple: the impact is unclear

**WF/LS for approval**

**R4-2310070 WF on IDC enhancements**

*Type: other For: Approval  
 Source: Xiaomi*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2310162 (from R4-2310070).**

**R4-2310162 WF on IDC enhancements**

*Type: other For: Approval  
 Source: Xiaomi*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2310071 Reply LS on on autonomous denial for IDC**

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

**Decision: Withdrawn.**

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## 9 Rel-18 on-going work Items for LTE

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

#### 9.7.5 RRM core requirement maintenance

**R4-2307619 Correction on reference of NB-IoT for satellite access**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7204 rev Cat: F (Rel-18)  
  
 Source: China Telecom Corporation Ltd.*

**Decision: Agreed.**

**R4-2307894 Discussion on RRM core requirements maintenance for LTE NB-IoT/eMTC over NTN**

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

**Decision: Noted.**

**R4-2307895 CR on RRM core requirements maintenance for LTE NB-IoT/eMTC over NTNRe-establishment**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7209 rev Cat: F (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Agreed.**

**R4-2308311 Discussion on RRM requirements maintenance for IoT NTN**

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

**Decision: Noted.**

**R4-2308312 CR on maintenance of NB-IoT for IoT NTN**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7215 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Discussion**

Nokia: propose to remove changes 2 and 3

**Decision: Revised to R4-2310093 (from R4-2308312).**

**R4-2310093 CR on maintenance of NB-IoT for IoT NTN**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7215 rev Cat: F (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Discussion**

**Decision: Agreed.**

**R4-2308356 Discussion on remaining open issues for the core part of IoT NTN**

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

**Decision: Noted.**

**R4-2308358 CR on timing advance requirements for NBIOT over NTN**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7216 rev Cat: F (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Agreed.**

**R4-2309221 Discussions on NTN IoT RRM requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the open issues of IoT NTN WI.

**Decision: Noted.**

**R4-2309225 Correction to IDLE mode cat-M IoT NTN requirements**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7220 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR related to the open issues in current specification.

**Decision: Postponed.**

**R4-2310094 Correction to IDLE mode cat-M IoT NTN requirements**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7220 rev Cat: F (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

CR related to the open issues in current specification.

**Decision: Withdrawn.**

#### 9.7.6 RRM performance requirements

**R4-2307601 Discussion on RRM test cases for LTE NB-IoT and eMTC NTN**

*Type: discussion For: Decision  
 Source: CMCC*

**Decision: Noted.**

**R4-2307602 Draft CR on E-UTRAN RLM in DRX test and HO and CHO test for Cat-M1 UE in CEMode A**

*Type: draftCR For: Endorsement  
 38.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: CMCC*

**Decision: Endorsed.**

**R4-2307896 Discussion on RRM performance requirement for IoT NTN**

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

**Decision: Noted.**

**R4-2307897 Draft Big CR on NB-IoT/eMTC RRM performance requirements for NTN**

*Type: draftCR For: Endorsement  
 36.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

**R4-2307898 Introduction of test cases of Cell Re-Selection for NB-IoT**

*Type: draftCR For: Endorsement  
 36.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

**R4-2307899 Introduction of test cases of Intra-frequency Measurements and RSRP for M1**

*Type: draftCR For: Endorsement  
 36.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Revised to R4-2310095 (from R4-2307899).**

**R4-2310095 Introduction of test cases of Intra-frequency Measurements and RSRP for M1**

*Type: draftCR For: Endorsement  
 36.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: MediaTek inc.*

**Decision: Endorsed.**

**R4-2308313 Discussion on performance requirements for IoT NTN**

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

**Decision: Noted.**

**R4-2308314 DraftCR on RRC reestablishment test cases of NB-IoT for GEO**

*Type: draftCR For: Endorsement  
 36.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Endorsed.**

**R4-2308355 Discussion on performance aspects of IoT NTN**

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

**Decision: Noted.**

**R4-2308357 DraftCR on Cell Reselection Test cases for M1 UEs in satellite access**

*Type: draftCR For: Endorsement  
 36.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2310096 (from R4-2308357).**

**R4-2310096 DraftCR on Cell Reselection Test cases for M1 UEs in satellite access**

*Type: draftCR For: Endorsement  
 36.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Endorsed.**

**R4-2308359 CR on reference configurations for Cat-M1 in Satellite Access**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7217 rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision: Revised to R4-2310097 (from R4-2308359).**

**R4-2310097 CR on reference configurations for Cat-M1 in Satellite Access**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-7217 rev Cat: B (Rel-18)  
  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

**Decision: Endorsed.**

**R4-2309222 Discussions on NTN IoT RRM performance requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the performance requirements of IoT NTN WI.

**Decision: Noted.**

**R4-2309223 RRC re-establishment test cases for eMTC over NTN**

*Type: draftCR For: Endorsement  
 36.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

RRC re-establishment test cases for cat-M according to the worksplit.

**Decision: Endorsed.**

**R4-2309224 RMC for eMTC test cases over NTN**

*Type: draftCR For: Endorsement  
 36.133 v18.1.0 CR- rev Cat: B (Rel-18)  
  
 Source: Ericsson*

**Abstract:**

RMC for eMTC test cases covering 1.4 MHz BW.

**Decision: Merged.**

#### 9.7.8 Moderator summary and conclusions

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**Topic: [107][236] LTE\_NBIOT\_eMTC\_NTN\_req**

**Summary documents**

**R4-2309981 Topic summary for [107][236] LTE\_NBIOT\_eMTC\_NTN\_req**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Thursday, 5/25/2023)**

**Performance part**

Issue 1: PHR reporting for NB-IoT in GEO

* Discussion
  + E///: PHR reporting needs to be changed
* Agreements
  + Introduce a new PHR reporting table for NB-IoT in GEO and use legacy values in []
    - Note: whether any revision of values is needed can be discussed in the maintenance stage

Issue 3: Test for Segmented UL Transmissions

* Agreements
  + Define UE transmit timing accuracy test for UL segmented transmission in HD-FDD NB enhanced coverage test, only NGSO test configuration applies for this test. The test setup and test requirements in A.13.4.1.2.1 (HD-FDD NB1 standalone enhanced coverage test) Test 1 (DRX off) can be the starting point
  + Introduce a similar test for eMTC

Issue 4: Test case list

* Agreements
  + Define intra-frequency RRC Re-establishment TC for both NC and EC for NB-IoT
  + For Cat-M1, introduce test cases of measurement procedure and measurement performance for intra-frequency in GEO, including the following test cases

|  |  |  |  |
| --- | --- | --- | --- |
| Measurement Procedure | Event triggered reporting | E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells for Cat-M1 UE in CEModeA | M1 6-1 |
| E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells for Cat-M1 UE in CEModeA in DRX | M1 6-2 |
| E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells for Cat-M1 UE in CEModeA | M1 6-3 |
| E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells for Cat-M1 UE in CEModeA in DRX | M1 6-4 |
| Measurement Performance Requirements | RSRP accuracy | FD-FDD RSRP Intra frequency case for Cat-M1 UE in CEModeA | M1 7-1 |
| HD-FDD RSRP Intra frequency case for Cat-M1 UE in CEModeA | M1 7-2 |

Issue (2-2): Common delay in SIB31

* Proposals
  + The common delay parameters provided in SIB31 for the RRM test cases can be obtained assuming a reference point on Earth whose elevation angle to the satellite position given by the ephemeris does not fall below 30 degrees during the test

**WF/LS for approval**

**R4-2310098 WF on RRM requirements for NTN NB-IoT/eMTC**

*Type: other For: Approval  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**Big CRs**

**R4-2310180 Big CR on NB-IoT/eMTC RRM performance requirements for NTN**

*Type: CR For: Agreement  
 36.133 v18.1.0 CR-tba rev Cat: B (Rel-18)  
  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Agreed.**

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### 9.8 IoT (Internet of Things) NTN (non-terrestrial network) enhancements

#### 9.8.4 RRM core requirements

**R4-2307900 Discussion on RRM requirements for IoT NTN enhancement**

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

**Decision: Noted.**

**R4-2308315 Discussion on RRM requirements for IoT NTN enhancement**

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

**Decision: Noted.**

**R4-2308360 Core Requirements for mobility in IoT/eMTC for NTN**

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

**Decision: Noted.**

**R4-2308958 Discussion on RRM core requirements for IOT NTN enhancement**

*Type: discussion For: Discussion  
 Source: CMCC*

**Decision: Noted.**

**R4-2309220 Discussions on RRM requirements for IoT NTN enhancements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the RRM impact of IoT NTN enhancement WI.

**Decision: Noted.**

#### 9.8.5 Moderator summary and conclusions

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**Topic: [107][237] IoT\_NTN\_enh**

**Summary documents**

**R4-2309982 Topic summary for [107][237] IoT\_NTN\_enh**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Thursday, 5/25/2023)**

Issue 1-2: Scaling factor for multiple NGSO satellites

* Proposals:
  + Proposal 1: NB-IoT neighbour cell measurements in connected mode, the scaling factor for multiple NGSO satellites can be introduced. (MTK)
  + Proposal 1a: Introduce scaling factor for multiple NGSO satellites for NB intra-freuquency neighbour cell measurement in connected mode. FFS for inter-frequency measurements. (Ericsson)
* Agreements
  + Introduce scaling factor for multiple NGSO satellites for NB intra-frequency neighbour cell measurement in connected mode. FFS for inter-frequency measurements.

Issue 2-2: Requirements applicability for time-based neighbour cell measurements

* Proposals:
  + Proposal 1: Clarify that UE shall be able to detect, measure, and evaluate neighbour cells before *t-Service* is reached, and the relaxed neighbour cell measurement is only allowed when the relaxed monitoring criteria defined in clause 5.2.4.12 [1] are fulfilled and the time span to before *t-Servic* is longer than Ttrigger (Huawei)
  + Proposal 1a: For time-based NB-IoT neighbour cell measurements in connected mode, the UE shall start intra/inter frequency measurement in connected mode before the *t-Service* if present. The intra/inter frequency measurement requirement do not apply when the time span from when *t-Service* is broadcasted to *t-Service* is less than Ttrigger, which is the time UE completes measurements (MTK)
* Agreements
  + UE shall be able to detect, measure, and evaluate neighbour cells before *t-Service* is reached, and the relaxed neighbour cell measurement is only allowed when the relaxed monitoring criteria defined in clause 5.2.4.12 [1] are fulfilled and the time span to before *t-Servic* is longer than Ttrigger

Issue 6-1: GNSS re-acquisition, impact on RLM

* Proposals:
  + Proposal 1: Capture in specification that when a UE is measuring the GNSS in a GNSS-MG RLM monitoring is suspended. FFS on the impact on RLM requirements. (Nokia)
  + Proposal 1a: When RLM measurement and GNSS measurement are colliding, the RLM requirements need to be extended. (CMCC)
* Agreements
  + Capture in specification that when a UE is measuring the GNSS in a GNSS-MG RLM monitoring is suspended. FFS on the impact on RLM requirements.

Issue 1-1: Measurement capabilities on number of NGSO satellites

* Proposals:
  + Proposal 1: RAN4 to clarify that the neighbor satellite for inter-frequency measurements that the UE shall be capable to measure in each frequency layer in NGSO scenarios are not necessary the same. (Nokia)
* Agreements
  + Clarify that the sets of neighbor satellites for inter-frequency measurements that the UE shall be capable to measure in each frequency layer in NGSO scenarios are not necessary the same

**WF/LS for approval**

**R4-2310099 WF on IoT NTN enhancements RRM requirements**

*Type: other For: Approval  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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## 10 Liaison and output to other groups

### 10.1 R17 related

#### 10.1.2 On monitoring of paging occasions for CG-SDT with HD-FDD Redcap UEs (R2-2304562)

**R4-2307456 Discussion on reply LS on Monitoring of paging occasions for CG-SDT with HD-FDD Redcap UEs**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision: Noted.**

**R4-2308340 Reply LS on Monitoring of paging occasions for CG-SDT with HD-FDD Redcap UEs**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: Huawei, HiSilicon*

**Decision: Noted.**

**R4-2308341 Modification on interruption in paging reception for HD-FDD RedCap UEs**

*Type: CR For: Agreement  
 38.133 v17.9.0 CR-3220 rev Cat: F (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

**R4-2308342 Modification on interruption in paging reception for HD-FDD RedCap Ues R18**

*Type: CR For: Agreement  
 38.133 v18.1.0 CR-3221 rev Cat: A (Rel-18)  
  
 Source: Huawei, HiSilicon*

**Decision: Postponed.**

**R4-2309226 Monitoring of paging occasions for CG-SDT with HD-FDD Redcap UEs**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the RAN2 incoming LS R2-2304562.

**Decision: Noted.**

**R4-2309230 CR on monitoring of paging occasions for CG-SDT with HD-FDD Redcap UEs**

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

**Abstract:**

In this contribution we discuss the RAN2 incoming LS R2-2304562.

**Decision: Postponed.**

**R4-2309429 Discussion on Monitoring of paging occasions for CG-SDT with HD-FDD Redcap Ues**

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

**Decision: Noted.**

### 10.3 Moderator summary and conclusions

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**Topic: [107][238] Reply\_LS**

**Summary documents**

**R4-2309983 Topic summary for [107][238] Reply\_LS**

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

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Online session (Thursday, 5/25/2023)**

Sub-topic 1-1: Should there be any network handling to void overlapping of CG-SDT occasions with all paging occasions for a HD RedCap UE?

* Proposals
  + Option 1: NW should not configure CG-SDT occasions overlaps with all paging occasions for a HD RedCap UE. (Qualcomm)
* Discussion
  + E///: Disagree with Option 1 as this is a network requirement. We can discuss the solutions.
  + Nokia: Agree with E///
  + QC/vivo/MTK: Based on RAN1 spec UE does not expect such behavior
  + Huawei: Option 1 is a typical case and can be supported.
* Candidate WF
  + HD RedCap UE may expect that CG-SDT occasions will not overlap with all paging occasions

Sub-topic 1-2: What if the configured CG-SDT occasions are overlapping with any paging occasions?

* Proposals
  + Option 1: The scenario where a paging occasion overlaps with CG-SDT transmission will not happen. (vivo)
  + Option 2: In case the paging occasions overlap with CG-SDT transmission, the UE is allowed to drop the CG-SDT. (Huawei, MTK, Ericsson)
  + Option 3: Any paging occasion within the modification period can be used to monitor the paging for SI change. In case the paging occasion always overlaps with CG-SDT transmission, the UE is allowed to drop the CG-SDT. (Ericsson, Nokia, MTK)
  + Option 4: It is up to UE implementation whether to monitor the paging during the overlapping paging occasions. (Qualcomm, MTK)

**WF/LS for approval**

**R4-2310150 WF on monitoring of paging occasions for CG-SDT with HD-FDD Redcap UEs**

*Type: other For: Approval  
 Source: Apple*

**Abstract:**

**Discussion:**

**Decision: Approved.**

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