## 6 Rel-17 non-spectrum related work items for NR

### 6.4 NR RF requirement enhancements for frequency range 2 (FR2)

#### 6.4.6 RRM core requirements

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**Email discussion: [101-bis-e][202] NR\_RF\_FR2\_enh2\_RRM**

**R4-2202553 Email discussion summary: [101-bis-e][202] NR\_RF\_FR2\_enh2\_RRM**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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**R4-2201536 Draft Big CR on RRM requirements for FR2 Inter-band CA**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Draft Big CR on RRM requirements for FR2 Inter-band CA

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

##### 6.4.6.1 Inter-band DL CA requirements for CBM

###### 6.4.6.1.1 MRTD requirements

**R4-2200391 Further considering on remaining issues for RRM requirements for inter-band DL CA in NR FR2**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200425 MRTD requirements for CBM based Inter-band DL CA**

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

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

**R4-2200559 Discussion on MRTD for FR2 inter-band CA based on CBM**

*Type: discussion For: (not specified)  
 Source: LG Electronics*

**Abstract:**

It discusses X value in MRTD requirements for CBM based FR2 inter-band CA.

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

**R4-2200927 Discussion on CBM MRTD requirement for FR2 inter-band DL CA**

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

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

**R4-2201129 MRTD requirements for FR2 inter-band DL CA enhancements**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201537 discussion on MRTD for CBM inter-band FR2 DL CA**

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

**Abstract:**

discussion on MRTD requirements for inter-band FR2 DL CA for CBM

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

**R4-2201538 draftCR on MRTD for CBM inter-band FR2 DL CA**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

draftCR on MRTD requirements for inter-band FR2 DL CA for CBM

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

**R4-2201588 Timing requirements for inter-band DL CA**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Analysis of CBM requirements and remedies for MRTD=3 µs.

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

**R4-2201589 Timing requirements for inter-band DL CA**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR for MRTD requirements for CBM UE.

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

**R4-2201607 Discussion on MRTD requirements for FR2 inter-band DL CA with CBM**

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

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

###### 6.4.6.1.2 Other RRM requirements

**R4-2200426 RRM requirements for CBM based Inter-band DL CA**

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

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

**R4-2200742 Other RRM requirements for FR2 inter-band DL CA requirements for CBM**

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

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

**R4-2200928 Discussion on CBM RRM requirements for FR2 inter-band DL CA**

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

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

**R4-2200929 Introduction of SCell activation delay requirement for FR2 inter-band CA with common beam management**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: MediaTek inc.*

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

**R4-2201130 Other RRM requirements for FR2 inter-band DL CA enhancements**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201373 Discussion on RRM requirements of inter-band DL CA for CBM UE**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we provide our views on RRM requirements for FR2 inter-band DL CA UEs operating with CBM.

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

**R4-2201374 Draft CR on scheduling restriction for FR2 inter-band DL CA for CBM UE**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

We provide draft CR to introduce Scheduling restriction requirements for CBM UE

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

**R4-2201539 discussion on other RRM requirements for CBM inter-band FR2 DL CA**

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

**Abstract:**

discussion on other RRM requirements for inter-band FR2 DL CA for CBM

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

**R4-2201540 draftCR on measurement restriction for CBM inter-band FR2 DL CA**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

draftCR on measurement restriction for inter-band FR2 DL CA for CBM

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

**R4-2201608 Discussion on other RRM requirements for FR2 inter-band DL CA with CBM**

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

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

**R4-2201609 DraftCR on interruption requirements for FR2 inter-band CA with CBM**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

##### 6.4.6.2 Inter-band UL CA for IBM

**R4-2201131 Inter-band UL CA requirements for IBM**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201375 Discussion on RRM requirements for inter-band UL CA for IBM UE**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we provide our views on number of UL carrier to be supported for FR2 inter-band UL CA for IBM UE.

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

**R4-2201376 Draft CR on RRM requirements for FR2 inter-band UL CA for IBM UE**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

We introduce draft CR for FR2 inter-band UL CA

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

**R4-2201541 draftCR on RRM requirements for IBM inter-band FR2 UL CA**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

draftCR on RRM requirements for IBM inter-band FR2 UL CA

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

##### 6.4.6.3 UL gaps for self-calibration and monitoring

**R4-2200256 UL gaps for Tx power management RRM aspect and draft reply LS**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200257 Draft CR for UL gap for Tx power management RRM aspect**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Apple*

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

**R4-2200384 Network impact of UE FR2 UL Gap for UE Tx power enhancements**

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

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

**R4-2200427 UL gaps for self-calibration and monitoring**

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

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

**R4-2200590 Discussion on RRM impact of UL gap for Tx power management**

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

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

**R4-2200605 Discussion on RRM impacts of UL gaps for self-calibration and monitoring**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2201377 Discussion on UL gaps for self calibration and monitoring**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we provide our views on UL gaps for self-calibration and monitoring and its impacts on other RRM requirements.

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

### 6.8 Enhancement for NR high speed train scenario in FR1

#### 6.8.2 RRM core requirements

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**Email discussion: [101-bis-e][203] NR\_HST\_FR1\_enh\_RRM**

**R4-2202554 Email discussion summary: [101-bis-e][203] NR\_HST\_FR1\_enh\_RRM**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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**R4-2200062 Discussion on Rel-17 HST in FR1**

*Type: discussion For: Discussion  
 Source: MediaTek (Shenzhen) Inc.*

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

**R4-2200323 On NR FR1 HST RRM Requirements**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

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

##### 6.8.2.1 Intra-frequency measurements

**R4-2200626 Draft CR on NSCC\_SSB for CSSFoutside\_gap,i**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: CMCC*

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

##### 6.8.2.2 Inter-frequency measurements

**R4-2200095 Discussion on remaining issues for inter-frequency measurement for FR1 HST**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200635 Discussion on NR HST RRM enhancement for inter-frequency measurement**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200670 On R17 FR1 HST inter-frequency measurement**

*Type: discussion For: (not specified)  
 Source: Apple*

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

**R4-2200876 Inter-frequency measurements enhancement for NR HST in FR1**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Inter-frequency measurements enhancement for NR HST in FR1

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

**R4-2201172 Discussion on inter-frequency measurements for FR1 HST**

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

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

**R4-2201173 Draft CR on inter-frequency measurements for FR1 HST**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

##### 6.8.2.3 L1-SINR measurements

**R4-2200096 Discussion on L1-SINR measurements for FR1 HST**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200596 Discussion on L1-SINR measurements in R17 FR1 HST**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200671 On R17 FR1 HST L1-SINR**

*Type: discussion For: (not specified)  
 Source: Apple*

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

**R4-2200875 L1-SINR measurements requirements enhancement for NR HST in FR1**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

L1-SINR measurements requirements enhancement for NR HST in FR1

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

**R4-2201132 L1-SINR requirements for Rel17 FR1 HST**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201582 Further discussion on L1-SINR measurements for Rel-17 FR1 HST CA**

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

**Abstract:**

We present simulation results of L1-SINR and our views.

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

##### 6.8.2.4 Others

**R4-2200097 Discussion on other remaining issues for FR1 HST**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200246 On remaining issues for R17 FR1 HST**

*Type: discussion For: (not specified)  
 Source: Apple*

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

**R4-2200247 CR on L1-RSRP measurement in FR1 HST**

*Type: draftCR For: (not specified)  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Apple*

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

**R4-2200634 Discussion on general requirements for FR1 HST RRM**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200874 RRM requirements for NR HST in FR1**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Other requirments for NR HST in FR1

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

**R4-2201133 Other RRM requirements for Rel17 FR1 HST**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201174 Discussion on remaining issues in FR1 HST**

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

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

### 6.9 NR support for high speed train scenario in FR2

#### 6.9.4 RRM core requirements

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**Email discussion: [101-bis-e][204] NR\_HST\_FR2\_RRM\_1**

**R4-2202555 Email discussion summary: [101-bis-e][204] NR\_HST\_FR2\_RRM\_1**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
|  |  |  |  |  |

**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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**Email discussion: [101-bis-e][205] NR\_HST\_FR2\_RRM\_2**

**R4-2202556 Email discussion summary: [101-bis-e][2054] NR\_HST\_FR2\_RRM\_2**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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**R4-2200328 On NR FR2 HST RRM Requirements**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

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

##### 6.9.4.1 General

**R4-2200098 Discussion on general issues for FR2 HST**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200259 Discussion on general aspects for FR2 HST**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200581 General RRM requirements for HST FR2**

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

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

**R4-2200627 Discussion on general RRM requirements for FR2 HST**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200877 CR On RRC\_CONNECTED state mobility for HST FR2 RRM**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR On RRC\_CONNECTED state mobility for HST FR2 RRM

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

**R4-2200878 General requirements for HST FR2**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

General requirements for HST FR2

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

**R4-2200883 LS on FR2 HST RRM**

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

**Abstract:**

LS on network signalling for Rel-17 NR HST RRM

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

**R4-2201156 Discussion on general requirements for FR2 HST**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201175 General discussion on network signaling and UE capability in FR2 HST**

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

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

**R4-2201666 LS on network signalling for Rel-17 FR2 NR HST RRM**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2201667 Discussion on network signalling for FR2 HST RRM**

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

**Abstract:**

Addressing remaining open issues on network signalling.

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

**R4-2201766 Discussion on network signaling and UE capability for FR2 HST**

*Type: discussion For: Discussion  
 Source: Samsung*

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

**R4-2201767 LS on Network Signalling for Rel-17 NR FR2 HST RRM**

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

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

**R4-2201847 TP to TR 38.854 on Mobility Performance in HST FR2 Deployment Scenarios**

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

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

##### 6.9.4.2 Number of RX beams

**R4-2200099 Discussion on requirements on scenario-B with two-side RRH**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200260 Discussion on number of Rx beam for FR2 HST**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200582 Discussion on RX beam number for HST FR2**

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

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

**R4-2200881 Number of RX beams for HST FR2**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discuss how to deal with requirments with different number of RX beams for HST FR2

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

**R4-2201848 TP to TR 38.854 on the Number of Rx beams**

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

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

##### 6.9.4.3 RRC Idle/Inactive and connected state mobility requirements

**R4-2200100 Further discussion on RRC Idle/Inactive and connected state mobility requirements for FR2 HST**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200261 Discussion on mobility requirement for FR2 HST**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200583 Discussion on RRC Idle Inactive and Connected state mobility requirements for HST FR2**

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

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

**R4-2200628 Discussion on mobility requirements for FR2 HST**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200880 RRC Idle/Inactive and connected state mobility requirements for HST FR2**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

RRC Idle/Inactive and connected state mobility requirements for HST FR2

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

**R4-2201176 Discussion on RRC Idle/Inactive and connected state mobility requirements for HST in FR2**

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

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

**R4-2201651 On RRM measurement requirements for FR2 HST**

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

**Abstract:**

Intra-frequency measurement requirements in connected and cell reselection requirements in idle mode.

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

**R4-2201652 CR to TS 38.133: intra-frequency measurements without gaps for for FR2 NR HST**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Enhancements on intra-frequency measurements for FR2 HST.

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

##### 6.9.4.4 Timing requirements

**R4-2200101 Discussion on timing requirement for FR2 HST**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200262 Discussion on timing requirement for FR2 HST**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200584 Discussion on Timing Requirement for HST FR2**

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

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

**R4-2200882 On Timing requirements for HST FR2**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Present our views on one shot timing adjustment

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

**R4-2201768 Further Discussion on Timing Requirements for FR2 HST**

*Type: discussion For: Discussion  
 Source: Samsung*

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

**R4-2201769 Draft CR to introduce one shot large UL timing adjustment for FR2 HST UE**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung*

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

**R4-2201846 On UL Timing Adjustment in HST FR2 Deployments**

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

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

##### 6.9.4.5 Signalling characteristics requirements

**R4-2200102 Discussion on RLM/BFD requirement for FR2 HST**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200104 Draft CR on RLM/BFD requirement for FR2 HST**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

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

**R4-2200263 Discussion on signaling characteristic requirement for FR2 HST**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200585 Discussion on Signaling characteristics for HST FR2**

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

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

**R4-2200884 Signalling characteristics requirements for HST FR2**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Signalling characteristics requirements for HST FR2

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

**R4-2201177 Discussion on signaling characteristics requirements for high speed train scenario in FR2**

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

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

**R4-2201178 Discussion on RRM requirements for high speed train scenario in FR2**

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

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

**R4-2201770 Remaining Issues on signaling characteristics requirements for FR2 HST**

*Type: discussion For: Discussion  
 Source: Samsung*

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

**R4-2201771 Draft CR to introduce active TCI state switching delay requirement for FR2 HST UE**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Samsung*

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

##### 6.9.4.6 Measurement procedure requirements

**R4-2200103 Further discussion on measurement procedure requirements for FR2 HST**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200264 Discussion on measurement procedure requirement for FR2 HST**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200879 Measurement procedure requirements for HST FR2**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Measurement procedure requirements for HST FR2

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

### 6.10 Further RRM enhancement for NR and MR-DC

#### 6.10.1 General

#### 6.10.2 RRM core requirements

##### 6.10.2.1 SRS antenna port switching

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**Email discussion: [101-bis-e][206] NR\_RRM\_enh2\_1**

**R4-2202557 Email discussion summary: [101-bis-e][206] NR\_RRM\_enh2\_1**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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**2nd round email discussion conclusions**

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**WF/LS for approval**

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**R4-2200068 Further discussion on SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200069 Interruption requirement to LTE serving cell, and impacts to other LTE RRM requirement**

*Type: draftCR For: Endorsement  
 36.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

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

**R4-2200179 Discussion on SRS antenna port switching**

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

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

**R4-2200288 Discussion on SRS antenna port switching**

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

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

**R4-2200322 On SRS antenna switching**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

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

**R4-2200531 Discussion on SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200561 Discussion on interruption due to SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

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

**R4-2200597 Discussion on RRM requirements for SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200640 Discussion on SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200684 Further discussion on RRM requirements for SRS antenna switching**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200739 Discussion on SRS antenna port switching**

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

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

**R4-2200895 Interruption requirements at SRS antenna port switching**

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

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

**R4-2201134 RRM requirements for SRS ant port switch**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201201 Discussion on RRM requirements for SRS antenna port switching**

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

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

**R4-2201378 RRM requirements for SRS antenna port switching**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we provide our views on the open issues of SRS antenna port switching

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

**R4-2201379 Draft CR on Interruption requirement to NR serving cell, and impacts to other NR RRM requirement (if applicable)**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

We provide draft CR to introduce interruption requirements to NR serving cell

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

##### 6.10.2.2 HO with PSCell

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**Email discussion: [101-bis-e][207] NR\_RRM\_enh2\_2**

**R4-2202558 Email discussion summary: [101-bis-e][207] NR\_RRM\_enh2\_2**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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**Existing tdocs**

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**2nd round email discussion conclusions**

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**WF/LS for approval**

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**R4-2200070 Further discussion on HO with PSCell**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200289 Discussion on RRM requirement for handover with PSCell**

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

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

**R4-2200290 Draft CR on HO with PSCell for NR SA to EN-DC\_R17**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Apple*

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

**R4-2200416 HO with PSCell**

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

**Abstract:**

There are open issues from the last meeting. Therefore, we continue to share our views of the RRM requirements for HO with PSCell in this paper.

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

**R4-2200532 Discussion on HO with PSCell**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200598 Discussion on RRM requirements for HO with PSCell**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200630 Discussion on HO with PSCell**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200673 Further discussion on RRM requirements for handover with PSCell**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200740 Discussion on RRM requirements for HO with PSCell**

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

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

**R4-2201135 RRM requirements for HO with PSCell**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201202 Discussion on RRM requirements for HO with PSCell**

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

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

**R4-2201203 Draft CR on requirements for HO with PSCell from EN-DC to EN-DC**

*Type: draftCR For: Endorsement  
 36.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2201380 RRM requirements for handover with PSCell**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we provide our views on the open issues for HO with PSCell

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

**R4-2201381 Drfat CR on HO with PSCell requirements for NE DC to NE-DC**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

We provide draft CR to introduce PSCell requirements for NE DC to NE-DC

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

**R4-2201542 discussion on HO with PSCell**

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

**Abstract:**

discussion on HO with PSCell

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

**R4-2201543 dratCR on HO with PSCell**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

DraftCR for HO with PSCell

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

**R4-2201851 Discussion on HO with PSCell**

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

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

##### 6.10.2.3 PUCCH SCell activation/deactivation

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**Email discussion: [101-bis-e][208] NR\_RRM\_enh2\_3**

**R4-2202559 Email discussion summary: [101-bis-e][208] NR\_RRM\_enh2\_3**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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**2nd round email discussion conclusions**

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**WF/LS for approval**

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**R4-2200071 Further discussion on PUCCH SCell activation\_deactivation**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200072 PUCCH Scell activation delay requirements with multiple Scell**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

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

**R4-2200180 Discussion on PUCCH SCell activation and deactivation**

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

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

**R4-2200181 Draft CR for PUCCH SCell deactivation delay requirements in TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek Inc.*

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

**R4-2200291 Discussion on PUCCH SCell activation and deactivation**

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

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

**R4-2200352 Discussions on PUCCH SCell Activation/Deactivation delay requirements**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: NTT DOCOMO, INC.*

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

**R4-2200390 Remaining issues for PUCCH SCell activation and deactivation**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200418 PUCCH SCell activation and deactivation**

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

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

**R4-2200533 Discussion on PUCCH SCell activation**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200639 Discussion on PUCCH SCell activation/deactivation**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200674 Further discussion on SCell activation and deactication requirements for PUCCH SCell**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200741 Discussion on PUCCH SCell activation and deactivation**

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

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

**R4-2200893 Discussion on the activation delay for deactivated PUCCH SCell**

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

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

**R4-2200894 38.133 draft CR on PUCCH SCell activation delay requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2201136 RRM requirements for PUCCH SCell Activation/Deactivation**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201204 Discussion on RRM requirements for PUCCH SCell activation**

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

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

**R4-2201205 Draft CR on interruption of PUCCH SCell activation**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2201382 RRM requirements for SCell activation/deactivation with PUCCH**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we provide our views on the RRM requirements for SCell (de)activation with PUCCH

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

**R4-2201383 Draft CR on Interruption requirements to LTE serving cell**

*Type: draftCR For: Endorsement  
 36.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

We provide draft CR to introduce Interruption requirements to LTE serving cell

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

### 6.11 NR and MR-DC measurement gap enhancements

#### 6.11.1 General

**R4-2200486 Discussion on UE features for measurement gap enhancement**

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

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

#### 6.11.2 RRM core requirements

##### 6.11.2.1 Pre-configured MG pattern(s)

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**Email discussion: [101-bis-e][210] NR\_MG\_enh\_2**

**R4-2202561 Email discussion summary: [101-bis-e][210] NR\_MG\_enh\_2**

*Type: other For: Information  
 Source: Moderator (Intel Corporation)*

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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**Existing tdocs**

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**2nd round email discussion conclusions**

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**WF/LS for approval**

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**R4-2200110 Further discussion on pre-configured MG pattern**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200111 Reply LS on R17 NR MG enhancements – Pre-configured MG**

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

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

**R4-2200112 Draft CR on measurement delay requirements with Pre-MG**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

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

**R4-2200240 On Pre-MG pattern**

*Type: discussion For: (not specified)  
 Source: Apple*

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

**R4-2200241 CR on Pre-MG activation/deactivation delay**

*Type: draftCR For: (not specified)  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Apple*

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

**R4-2200387 Remaining issues on pre configured MG patterns**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200487 Discussion on pre-configured gap**

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

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

**R4-2200488 Draft CR on 38.133 for L1 measurement impact of preconfigured gap**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

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

**R4-2200537 Discussion on pre-configured measurement gap**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200586 Views on pre-configured MG patterns**

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

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

**R4-2200638 Discussion on pre-configured MG pattern(s)**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200675 Further discussion on pre-configured MG pattern for NR**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200676 DraftCR on inter-RAT measurement delay requirements with pre-configured gaps**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Xiaomi*

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

**R4-2200693 DraftCR on inter-frequency measurement requirements with pre-MG in NR**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

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

**R4-2200761 On pre-configured measurement gaps**

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

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

**R4-2201137 On pre-configured MG pattern(s) for NR\_MG\_enh**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201138 Draft CR to 38133 on gap interruption for Pre-MG**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: OPPO*

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

**R4-2201621 Discussion on pre-configured MG**

*Type: LS out For: Approval  
 to RAN2  
 Source: Huawei, Hisilicon*

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

**R4-2201622 CR on pre-MG applicability**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2201977 Discussion on Pre-configured MG patterns**

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

**Abstract:**

Discussion on remaining issues for pre-configured NR MG patterns

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

**R4-2202009 Further analysis of pre-configured measurement gap pattern**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This document further analyzes RRM requirements for pre-configured MG in NR and MR-DC

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

**R4-2202010 Measurement requirements for Pre-MG in TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR defines RRM requirements for pre-configured MG in NR and MR-DC

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

**R4-2200595 Draft Reply LS to Reply LS onViews on Concurrent MG**

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

**Session chair: moved from AI 6.11.1 to AI 6.11.2.1. Correct title should be “Reply LS to Reply LS on Pre-configured MG”**

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

##### 6.11.2.2 Multiple concurrent and independent MG patterns

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**Email discussion: [101-bis-e][209] NR\_MG\_enh\_1**

**R4-2202560 Email discussion summary: [101-bis-e][209] NR\_MG\_enh\_1**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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**WF/LS for approval**

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**R4-2200113 Further discussion on multiple concurrent and independent MG patterns**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200114 Reply LS on R17 NR MG enhancements – Concurrent MG**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: CATT*

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

**R4-2200115 Draft CR on measurement delay requirements for concurrent MG patterns**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

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

**R4-2200242 On multiple concurrent and independent MG patterns**

*Type: discussion For: (not specified)  
 Source: Apple*

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

**R4-2200243 CR on CSSF for concurrent gaps**

*Type: draftCR For: (not specified)  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Apple*

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

**R4-2200388 Remaining issues on multiple concurrent and independent MG patterns**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200404 Draft CR on inter-RAT measurement requirements with concurrent gaps**

*Type: draftCR For: Approval  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

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

**R4-2200489 Discussion on concurrent gaps**

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

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

**R4-2200490 Draft CR on 38.133 for L1 measurement impact of concurrent gaps**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

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

**R4-2200538 Discussion on multiple and independent concurrent measurement gaps in NR**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200560 Discussion on multiple concurrent and independent MG patterns**

*Type: discussion For: (not specified)  
 Source: LG Electronics*

**Abstract:**

It discusses multiple concurrent and independent MG patterns.

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

**R4-2200587 Views on multiple concurrent and independent MGs**

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

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

**R4-2200631 Discussion on multiple concurrent and independent MG patterns**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200677 Further discussion on multiple concurrent and independent MG patterns for NR**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200678 DraftCR on inter-frequency measurement delay requirements with concurrent gaps**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Xiaomi*

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

**R4-2200694 DraftCR on positioning measurement requirements due to concurrent gap in NR**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

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

**R4-2200762 On multiple concurrent measurement gaps**

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

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

**R4-2201139 On multiple concurrent and independent MG patterns for NR\_MG\_enh**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201140 Draft CR to 38133 on CSI-RS based L3 measurement requirements with concurrent gap**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: OPPO*

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

**R4-2201213 Discussion on multiple concurrent MG patterns**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses concurrent gaps

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

**R4-2201214 draftCR on concurrent gaps (9.1.2B)**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This draft CR introduce the measurement requirement skeleton for concurrent gaps

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

**R4-2201623 Discussion on multiple concurrent MGs**

*Type: LS out For: Approval  
 to RAN2  
 Source: Huawei, Hisilicon*

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

**R4-2201624 CR on collision handling and MG related requirements for concurrent MGs**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2201694 Discussion on concurrent measurement gap enhancements**

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

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

**R4-2201695 Discussion on LS on R17 NR Concurrent MG enhancements**

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

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

##### 6.11.2.3 Network Controlled Small Gap

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**Email discussion: [101-bis-e][211] NR\_MG\_enh\_3**

**R4-2202562 Email discussion summary: [101-bis-e][211] NR\_MG\_enh\_3**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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**R4-2200116 Further discussion on Network Controlled Small Gap (NCSG)**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200117 Draft CR on measurement delay requirements with NCSG**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

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

**R4-2200244 On network controlled small gap**

*Type: discussion For: (not specified)  
 Source: Apple*

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

**R4-2200245 CR on NCSG applicability**

*Type: draftCR For: (not specified)  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Apple*

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

**R4-2200329 On NCSG requirement**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

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

**R4-2200389 Remaining issues for NCSG**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200405 Draft CR for interruption for de-activated SCell measurement due to NCSG**

*Type: draftCR For: Approval  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

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

**R4-2200491 Discussion on NCSG**

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

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

**R4-2200492 Draft CR on 38.133 for L1 measurement impact of NCSG**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

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

**R4-2200539 Discussion on NCSG in NR**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200588 Views on NCSG**

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

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

**R4-2200632 Further discussion on Network Controlled Small Gap**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200695 DraftCR on interruption of NCSG in NR**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

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

**R4-2201157 Draft CR to UE behaviour to group the frequency layers with NCSG**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: OPPO*

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

**R4-2201158 Discussion on NCSG for NR\_MG\_enh**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201232 Draft CR for UE behavior after the interruptions of NCSG**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: ZTE Corporation*

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

**R4-2201625 Discussion on NCSG**

*Type: LS out For: Approval  
 to RAN2  
 Source: Huawei, Hisilicon*

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

**R4-2201626 CR on use cases and CSSF for NCSG**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2201976 CR: NCSG scheduling restriction**

*Type: draftCR For: Approval  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Qualcomm communications-France*

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

**R4-2201978 Discussion on Network Controlled Small Gaps for NR**

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

**Abstract:**

Discussion on remaining issues for NR NCSG

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

**R4-2202011 Further analysis of network controlled small gap**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This document further analyzes RRM requirements for NCSG in NR and MR-DC

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

**R4-2202012 Measurement requirements for NCSG in TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

The CR defines RRM requirements for NCSG in NR and MR-DC

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

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

#### 6.13.5 RRM core requirements

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**Email discussion: [101-bis-e][212] NR\_NTN\_solutions\_RRM\_1**

**R4-2202563 Email discussion summary: [101-bis-e][212] NR\_NTN\_solutions\_RRM\_1**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (January 19, 2022)**

**CR work split & Issue 1-7: RRM Spec Documentation**

**Issue 1-4-2: Applicability of Legacy DRX Cycles for Earth-moving Cell**

* Proposals:
  + Proposal 1: (CATT, OPPO, Apple, Xiaomi)
    - No RRM requirements for 2.56s DRX cycle for earth-moving LEO deployment
  + Proposal 2: (LGE)
    - postpone RRM requirements for moving cell in the next release.
  + Proposal 3: (ZTE, Ericsson, HW)
    - All Rel-16 DRX cycle lengths are applicable
* Discussion
  + TBA
* Agreements
  + TBA

**Issue 2-1-3: Cell Selection/Reselection delay requirements**

* Proposals:
  + Proposal 1: (Xiaomi)
    - For timing and S/R criteria based cell reselection, when the legacy Srxlev/Squal conditions are not met before the time when serving cell stops covering the current area, UE starts to perform the neighbour cell measurements at the time when the legacy Srxlev/Squal conditions are not met.
    - For timing and S/R criteria based cell reselection, when the legacy Srxlev/Squal conditions are not met after the time when serving cell stops covering the current area, the UE starts to perform the neighbour cell measurements at the time when serving cell stops covering the current area regardless of legacy Srxlev/Squal condition are met or not.
  + Proposal 2: (QC)
    - RAN4 to introduce a scaling factor lesser than equal to 1 for UE Idle/Inactive mode measurement and mobility period. And the scaling factor can be configured by NW. FFS on the details on the scaling factor design for respective requirements, e.g. whether one scaling factor can be applied to all Idle/Inactive mode search, measurement, and evaluation periods for all DRX cycles, whether the same scaling factor can be applied to intra- and inter-frequency NR cells, whether any differentiation is needed between satellite type, etc.
  + Proposal 3: (HW)
    - Measurement delay requirements for Idle mode should be defined in the same way as Connected mode, e.g. taking into account multiple SMTC, different Doppler shift, etc.
* Discussion
  + TBA
* Agreements
  + TBA

**Issue 2-2-2: Details on CHO requirements**

* Proposals:
  + Proposal 1: (Xiaomi)
    - The measurement time delay for time and RSRP based CHO (Tmeasure\_NTN) is expressed:
      * , where
        + is the time when one or more conditions of RSRP trigger event are met.
        + T1 is the start time when the condition of timer trigger event is met
        + T2 is the end time when the condition of timer trigger event is met
    - The measurement time delay for location and RSRP based CHO (Tmeasure\_NTN) is expressed:
      * , where
        + is the time when one or more conditions of RSRP trigger event are met
        + is the time when the condition of location trigger event is met
  + Proposal 2: (Ericsson, OPPO)
    - The CHO procedure shall be ended between [t1] and [t2], if [t1] and [t2] is defined and applicable, where
      * [t1] represents the earliest point in time when the UE can perform CHO to the candidate target cell.
      * [t2] represents the end of the time window, i.e. the latest point in time when the UE shall perform CHO to the candidate target cell. The UE needs to perform CHO to the candidate target cell at [t2].
  + Proposal 3: (Ericsson)
    - Specify a restriction on delay (e.g. a fixed x ms) to limit the time to ‘perform HO (i.e. start Tinterrupt)’ in RRM, instead of vague wording: ‘UE location becomes further than threshold’.
  + Proposal 4: (QC)
    - RAN4 to discuss whether and how to modify ’3200Tc’ in measurement time of conditional handover requirement.
* Discussion
  + TBA
* Agreements
  + TBA

**Issue 1-8-1: Requirements related to Signalling Characteristics**

* Proposals
  + Proposal 1: (QC)
    - The following requirements in Signalling Characteristics are not relevant to NTN.
      * Interruption: no other active cells that can be interrupted by the other cell in NTN, i.e. no CA/DC.
      * SCell activation: no CA
      * UL carrier re-configuration: no SUL or CA
      * NE-DC/NR-DC PSCell addition: no DC
      * PSCell change: no DC
      * UL spatial relation switch: FR2 is not yet under discussion
  + Proposal 2: (QC)
    - For the following requirements, the legacy requirements are reused in NTN.
      * Active BWP switch
      * UE-specific CBW change
  + Proposal 3: (QC)
    - Consider the following candidates to enhance RLM and Link Recovery requirements.
      * Modification of hypothetical PDCCH format
      * Modification of BLER\_out/in
      * Introducing an intermediate BLER between BLER\_out and BLER\_in

**Issue 3-1-4: Measurement with multiple SMTCs**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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**WF/LS for approval**

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**Email discussion: [101-bis-e][213] NR\_NTN\_solutions\_RRM\_2**

**R4-2202564 Email discussion summary: [101-bis-e][213] NR\_NTN\_solutions\_RRM\_2**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (January 19, 2022)**

Issue 2-3-1: Double correction issue related to combination of open and closed loop TA control.

* Proposals
  + Option 1: (Apple, Intel, Xiaomi)
    - RAN4 to define a requirement to address double-correction issue based on the framework of gradual timing adjustment accuracy requirement, e.g., the requirement regulates the maximum amount of UE specific TA change of shot adjustment due to UE position change, the minimum and maximum aggregate adjustment rates.
    - Such requirement could be under the framework of legacy NTN gradual timing adjustment requirement with some additional clarification.
  + Option 1a: (Apple)
    - RAN4 to define a requirement to address double-correction issue based on the framework of gradual timing adjustment accuracy requirement, e.g., the requirement regulates the maximum amount of UE specific TA change of shot adjustment due to UE position change, the minimum and maximum aggregate adjustment rates.
    - Such requirement could be under the framework of legacy NTN gradual timing adjustment requirement with some additional clarification.
    - The gradual timing requirement to address the double correction issue could be based on either of the following options:
      * Option 1: when open-loop TA is updated, UE to reset the close-loop TA for Tx timing reference point, or
      * Option 2: when open-loop TA is updated, UE to slow down the gradual timing adjustment but retain the previous close-loop TA for Tx timing reference point
  + Option 2: (Qualcomm)
    - RAN4 to down select one between the following two options.
      * Option 1) replace gradual timing adjustment requirement with NTN UE initial timing accuracy requirement, i.e. NTN UE initial timing accuracy requirement applies to all UL transmissions. And add a margin to the NTN UE initial timing accuracy requirement for UL transmissions not the first transmission in a DRX cycle or DRX is not in use. The margin can be, e.g. [10]% of the effective UE position estimation error that is assumed for the derivation of UE initial transmission timing error (50m).
      * Option 2) introduce the following requirement and values of x1, x2, x3, x4, T1 and T2 are FFS:
        + In connected mode , when UE specific TA calculated based on the UE location corresponds to the last applied UE specific TA differs from the UE specific TA calculated based on most recent GNSS fix by more than x1 , i.e., |TA\_ue(GNSS\_f, sat\_current)-TA\_ue(GNSS\_c, sat\_current)|>x1, where GNSS\_f is the most recent GNSS fix, GNSS\_c is the UE location corresponding to the last applied UE specific TA, and sat\_current is the current satellite location, UE is required to adjust the UE location when calculating the UE specific TA such that the applied UE-specific TA is closer to the TA calculated using the most recent GNSS fix than using GNSS\_c. The adjustment made to UE specific TA due to UE location adjustments shall satisfy the following conditions:
        + the maximum amount of UE specific TA change of one adjustment due to UE location update shall be y, i.e, |TA\_ue\_applied-TA\_ue(GNSS\_c, sat\_current)|<x2.
        + the minimum aggregate adjustment rate shall be x3 per T1 seconds.
        + the maximum aggregate adjustment rate shall be x4 per T2 seconds.
  + Option 3: (LGE)
    - RAN4 to replace gradual timing adjustment requirement with NTN UE initial timing accuracy requirement for double correction issue as Option 1.
    - RAN4 to define the following UE behavior for UE specific TA updating to avoid double correction issue.
      * The UE specific TA or open loop TA should be updated at least before uplink transmission (applying TA command) slot.
  + Option 4: (CMCC)
    - There are two alternatives for defining gradual timing adjustment requirement and addressing the “double correction issue”:
      * Alt 1: Relax the requirement accordingly to accommodate the timing change/drift, i.e. updating Tq, Tp, and/or the rate.
      * Alt 2: Replace the gradual timing adjustment requirement by UE specific TA requirement, limiting the error between the subsequent UL transmissions and reference timing within Te\_NTN.
  + Option 5: (Nokia)
    - The solutions to resolve the issue on combination of open and closed loop TA control should not be left up to the UE implementation only and further study and specification of solutions involving the gNB is needed.
    - RAN4 sends an LS to RAN1 to clarify that stability of the TA control mechanism cannot be guaranteed by RAN4 specifications and dedicated solutions must be specified in RAN1.
    - RAN4 evaluates whether the existing UL timing requirements are sufficient or need to be refined.
* Discussion
  + TBA
* Agreements
  + TBA

Issue 2-4-1: The principle for gradual timing adjustment.

* Proposals
  + Option 1: (Apple)
    - Relax the requirement accordingly to accommodate the timing change/drift, i.e. updating Tq, Tp, and/or the rate
    - NTN UE is required to adjust its UL timing towards updated UE specific TA and DL timing gradually, according to minimum and maximum aggregate adjustment rate requirements
    - the design principle for Tq/Tp is:
    - ,
    - Where, Tq\_NTN= Tp\_NTN
  + Option 2: (Xiaomi)
    - RAN4 is to define one single set of gradual timing adjustment requirements to incorporate the legacy downlink timing drift and UE specific TA change.
    - Option 3: (Intel)
    - RAN4 is to define a requirement based on the framework of gradual timing adjustment accuracy requirement, e.g. the requirement regulates the maximum amount of UE specific TA change of shot adjustment due to UE position change, the minimum and maximum aggregate adjustment rates.
    - Specify a set of stand-alone requirements where an NTN UE is required to adjust its UL timing towards updated UE specific TA gradually, according to minimum and maximum aggregate adjustment rate requirements.
  + Option 4: (Huawei)
    - It is suggested to define the gradual timing adjustment requirements according to the propagation delay drift rate, i.e. the maximum aggregate adjustment rate need to be aligned with the propagation delay drift rate.
    - For GEO, the propagation delay drift rate equals to the serving link delay drift rate.
    - For LEO, the propagation delay drift rate includes the feeder link delay drift rate and the serving link delay drift rate.
  + Option 5: (Ericsson)
    - Keep existing gradual timing adjustment requirements for the closed loop terms NTA+NTA,offset.
    - The best we can do is to put limits based on the characteristics of at least the UE GNSS positioning accuracy part, for NTA,UE-specific.
    - All adjustments made to the UE uplink timing, for shall follow these rules:
    - The UE GNSS position accuracy is 50 meters from true position.
    - The maximum amount UE GNSS position update rate corresponds to a UE speed < 500 km/h.
    - The maximum amount of deviation from true displacement between UE GNSS position updates < , where is time between UE GNSS position updates.
    - The values of k1 and k2 are FFS.
  + Option 6: (Qualcomm)
    - Replace gradual timing adjustment requirement with NTN UE initial timing accuracy requirement, i.e. NTN UE initial timing accuracy requirement applies to all UL transmissions. And add a margin to the NTN UE initial timing accuracy requirement for UL transmissions not the first transmission in a DRX cycle or DRX is not in use. The margin can be, e.g. [10]% of the effective UE position estimation error that is assumed for the derivation of UE initial transmission timing error (50m).
  + Option 7: (MTK)
    - For NTN gradual timing adjustment requirement, the timing reference should account for the UE autonomous TA adjustment, i.e. reuse the timing reference as used in Te\_NTN requirement.

Issue 2-4-6: The gradual timing adjustment requirement

* Discussion
  + TBA
* Agreements
  + TBA

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency Range | SCS of uplink signals (kHz) | Tq\_NTN for LEO | Tp\_NTN for LEO |
| 1 | 15 | X1\*64\*Tc | T1\*64\*Tc |
|  | 30 | X2\*64\*Tc | Y2\*64\*Tc |
|  | 60 | X3\*64\*Tc | Y3\*64\*Tc |
| NOTE: Tc is the basic timing unit defined in TS 38.211 | | | |

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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##### 6.13.5.1 General

**R4-2200075 Further discussion on RRM requirements for NTN**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200419 General and RRM requirements impacts**

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

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

**R4-2200564 Discussion on NTN general requirements**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

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

**R4-2200737 Discussion on General RRM Requirements for NTN UE**

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

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

**R4-2200890 General requirements for NTN**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

General requirements for NTN

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

**R4-2200930 Discussion on general RRM requirements in NTN**

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

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

**R4-2201141 Discussion on general RRM requirements for NTN**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201520 On the SMTC windows**

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

**Abstract:**

We present our views on measurement gaps.

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

**R4-2201587 Reply LS to RAN1: LS on open loop closed loop dual correction of timing**

*Type: LS out For: Approval  
 to RAN1  
 Source: Ericsson*

**Abstract:**

Draft Reply LS to RAN1 regarding open loop closed loop dual correction of timing.

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

**R4-2201627 Discussion on general issues for NTN RRM**

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

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

**R4-2201628 CR on general issues for NTN**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

##### 6.13.5.2 GNSS-related requirements

**R4-2200076 Further discussion on GNSS-related requirements**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200804 Discussion on NTN GNSS related issues**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2201142 Discussion on GNSS-related requirements for NTN**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201631 Discussion on GNSS related issue for NTN**

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

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

##### 6.13.5.3 Mobility requirements

**R4-2200077 Further discussion on mobility requirements for NTN**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200420 Mobility requirements**

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

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

**R4-2200523 Discussion on the mobility aspects for NR NTN UE**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200679 Further discussion on mobility requirements for NR NTN**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200864 Discussion on mobility requirement for NR NTN**

*Type: discussion For: Discussion  
 Source: LG Electronics UK*

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

**R4-2200892 Mobility requirements for NTN**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Mobility requirements for NTN

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

**R4-2201159 Discussion on mobility requirements for NTN**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201629 Discussion on mobility requirements for NTN RRM**

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

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

**R4-2201630 CR on mobility requirements for NTN**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

##### 6.13.5.4 Timing requirements

**R4-2200078 Further discussion on timing requirements for NTN**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200297 Discussion on timing requirements for NR NTN**

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

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

**R4-2200421 Timing requirements**

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

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

**R4-2200525 Discussion on the remaining issues for NTN timing requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200565 Discussion on NTN timing requirements**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

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

**R4-2200680 Further discussion on timing requirements for NR NTN**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200681 DraftCR on timing requirements for NR NTN**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Xiaomi*

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

**R4-2200738 Discussion on timing requirements for NTN UE**

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

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

**R4-2200805 Discussion on NTN timing requirements**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200931 Discussion on timing requirements in NTN**

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

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

**R4-2201160 Discussion on UL timing requirements for NTN**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201445 On timing advance control**

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

**Abstract:**

In this contribution we describe the problem of the combination of open and closed loop TA control and propose a way forward

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

**R4-2201493 LS on Timing Advance control for Rel-17 NTN RRM**

*Type: LS out For: Approval  
 to RAN1  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2201585 UE Timing requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Analysis of remaining NTN timing requirements.

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

**R4-2201586 Reply LS to RAN1: LS on NTN UL time and frequency synchronization requirements (Timing)**

*Type: LS out For: Approval  
 to RAN1  
 Source: Ericsson*

**Abstract:**

Draft Reply LS to RAN1 regarding UE timing requirements.

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

**R4-2201610 Discussion on UE timing related requirements for NR NTN**

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

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

##### 6.13.5.5 Measurement procedure requirements

**R4-2200079 Further discussion on measurement procedure requirements for NTN**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200298 Discussion on measurement procedure requirements for NTN**

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

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

**R4-2200422 Measurement procedure requirements**

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

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

**R4-2200524 Discussion on multiple SMTC and measurement gaps for NTN UE**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200682 Further discussion on measurement requirements for NR NTN**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200865 Discussion on NTN measurement requirements**

*Type: discussion For: Discussion  
 Source: LG Electronics UK*

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

**R4-2200891 Measurement requirements for NTN**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Measurement requirements for NTN

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

**R4-2201161 Discussion on measurement procedure requirements for NTN**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201632 Discussion on measurement requirements for NTN**

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

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

### 6.14 UE Power Saving Enhancements for NR

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**Email discussion: [101-bis-e][214] NR\_UE\_pow\_sav\_enh**

**R4-2202565 Email discussion summary: [101-bis-e][214] NR\_UE\_pow\_sav\_enh**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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**Existing tdocs**

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**2nd round email discussion conclusions**

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**WF/LS for approval**

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#### 6.14.1 General

**R4-2200599 LS on signalings for enabling RLM and BFD relaxation in R17 UE power saving**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: vivo*

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

#### 6.14.2 RRM core requirements

**R4-2200325 On Power Saving RRM Requirement**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

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

**R4-2200530 Discussion on NR UE power saving for RLM and BM**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

##### 6.14.2.1 UE measurements relaxation for RLM and/or BFD

**R4-2200105 Further discussion on RLM/BFD relaxation for UE power saving enhancement**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200106 Draft CR on relaxed measurement criteria for BFD**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

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

**R4-2200258 UE measurements relaxation for RLM and/or BFD**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200600 Discussion on RLM and BFD relaxation for NR UE power saving**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200601 draft CR on CSI-RS RLM requirements relaxation for R17 UE power saving**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

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

**R4-2200685 Further discussion on UE measurements relaxation for RLM and/or BFD**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200686 Draft CR Minimum requirement for CSI-RS based beam failure detection for UE configured with relaxed measurement criterion**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Xiaomi*

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

**R4-2200797 Draft CR for TS 38.133 Minimum requirement for SSB based BFD for UE configured with relaxed measurement criterion**

*Type: draftCR For: Approval  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: CMCC*

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

**R4-2200806 Discussion on RLM/BFD relaxation for NR power saving enhancement**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200896 Discussion about RLM/BFD measurement relaxation**

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

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

**R4-2200897 38.133 draft CR on RLM relaxation criteria**

*Type: draftCR For: Discussion  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2201143 Discussion on RRM requirements for R17 RLM/BFD relaxation**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201406 RLM and RLF relaxation for UE power saving**

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

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

**R4-2201611 Discussion on UE measurement relaxation for RLM/BFD**

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

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

**R4-2201612 DraftCR on SSB based relaxed RLM requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2201867 Discussions on UE power saving for RLM and BFD**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the remaining issues of Rel-17 UE power saving.

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

**R4-2201868 Draft CR: Applicability rule for relaxed BFD requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

Draft CR: Applicability rules for relaxed BFD requirements

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

**R4-2201962 Discussion on Rel-17 RLM/BFD measurement relaxation**

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

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

**R4-2201963 CR on TS38.133 for applicability of RLM measurement relaxation**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek inc.*

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

### 6.15 NR Sidelink enhancement

#### 6.15.5 RRM core requirements

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**Email discussion: [101-bis-e][215] NR\_SL\_enh\_RRM**

**R4-2202566 Email discussion summary: [101-bis-e][215] NR\_SL\_enh\_RRM**

*Type: other For: Information  
 Source: Moderator (LG Electronics)*

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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**2nd round email discussion conclusions**

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**WF/LS for approval**

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**R4-2200326 On NR SL RRM Requirement**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

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

##### 6.15.5.1 Intra-band con-current V2X operation

**R4-2200107 Draft CR on UE transmit timing requirements for sidelink enhancement**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: CATT*

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

**R4-2200687 Further discussion on RRM requirements for intra-band con-current V2X operation**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2201144 Discussion on RRM impact of intra-band concurrent V2X operation**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201365 Further discussion on Intra-band con-current V2X operation RRM requirements**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2201404 RRM requirements for FDM based intra-band con-current SL operation**

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

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

**R4-2201613 Discussion on RRM requirements related to intra-band con-current V2X operation**

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

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

##### 6.15.5.2 SL-DRX

**R4-2200108 Further discussion on RRM requirements related to SL-DRX**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200557 RRM requirements for SL-DRX**

*Type: discussion For: (not specified)  
 Source: LG Electronics*

**Abstract:**

It discusses RRM core requirements related to SL-DRX.

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

**R4-2200688 Further discussion on RRM requirements related to SL-DRX**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2201162 Discussion on SL-DRX**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201366 Further discussion on SL-DRX RRM requirements**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2201367 Draft CR on Selection Reselction of V2X Synchronization Reference Source for sidelink enhancement**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

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

**R4-2201403 Discussions on DRX in NR SL enhancement**

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

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

**R4-2201614 Discussion on RRM requirements related to SL DRX**

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

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

**R4-2201871 Discussions on SL DRX for Rel-17 SL operation**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Sidelink DRX was discussed at previous meeting and a number of open issues were identified in [1]. In this contribution, we discuss and provide our view on those.

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

##### 6.15.5.3 Others

**R4-2200109 Discussion on L1-RSRP measurement for sidelink enhancement**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision: Withdrawn.**

**R4-2200558 draft CR on interruption requirement for SL**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: LG Electronics*

**Abstract:**

It is draftCR to introduce interrutption requirement for NR SL enh.

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

**R4-2200689 Draft CR on requirements for InitiationCease of SLSS Transmissions impact by SL-DRX**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Xiaomi*

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

**R4-2201615 DraftCR on scheduling availability requirements for NR eV2X**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2202021 CR: SL autonomous resource allocation requirements**

*Type: draftCR For: Approval  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Qualcomm communications-France*

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

### 6.16 Extending current NR operation to 71GHz

#### 6.16.7 RRM core requirements

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**Email discussion: [101-bis-e][216] NR\_ext\_to\_71GHz\_RRM\_1**

**R4-2202567 Email discussion summary: [101-bis-e][216] NR\_ext\_to\_71GHz\_RRM\_1**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (January 18, 2022)**

**Sub-topic 2-2: Synchronization aspects**

Issue 2-2-1: Assumption on deriveSSB-IndexFromCell

* Proposals
  + Proposal 1: *deriveSSB-IndexFromCell* is always enabled for the following in FR2-2:
    - Option 1a (Vivo, Nokia, Ericsson, QC): 480 kHz SCS
    - Option 1b (Ericsson):960 kHz SCS
  + Proposal 2: *deriveSSB-IndexFromCell* may be either enabled or not enabled and up to network configuration for the following in FR2-2:
    - Option 2a (CATT, Intel, LGE, Huawei): 480 kHz SCS
    - Option 2b (CATT, Vivo, Intel, LGE, Huawei, Nokia): 960 kHz SCS
    - Option 2c (CATT): It is suggested to add additional judgment conditions for *deriveSSB-IndexFromCell*, and whether it is feasible is related to RAN2
* Tentative agreements
  + deriveSSB-IndexFromCell configuration
    - 480 kHz [DL] SCS
      * **Option 1A: deriveSSB-IndexFromCell is always enabled (vivo, Nokia, E///, QC)**
      * Option 1B: deriveSSB-IndexFromCell is up to NW configuration (CATT, Intel, LGE, HW)
    - 960 kHz [DL] SCS
      * Option 2A: deriveSSB-IndexFromCell is always enabled (E///, QC, Apple)
      * **Option 2B: deriveSSB-IndexFromCell is up to NW configuration (CATT, vivo, Intel, LGE, HW, Nokia, E///)**
* Discussion
  + Apple: We mean SSB SCS. Option 1A is fine. Option 2B is also fine since 960kHz is not for initial access.
  + E///: Support 1A. For 960kHz the intention of deriveSSB-IndexFromCell was to avoid decoding SI. We can compromise to Option 2B.
  + QC: We agree with 1A. For 960kHz – we prefer to keep signalling always enabled and relax the number of symbols uncertainty.
  + LGE: For 1A some companies commented that FR2-2 cell coverage is 1km and it can be always enabled, but we don’t have any consensus. What to do in case of mixed SCS?
  + vivo: Support 1A and 2B. For 1A there may be additional conditions. Suggest 3 SSB symbols tolerance.
  + Intel: Ok with 1A. Agree with vivo comment on 3SSB symbols tolerance. Cell radius = ISD/2. We would like to discuss if we should capture our assumptions on possible deployment constraints.
  + Nokia: We are fine 1A and 2B. SCS is the SSB SCS.
  + CATT: 1B and 2B.
* Agreement
  + deriveSSB-IndexFromCell configuration
    - For 480 kHz SSB SCS
      * deriveSSB-IndexFromCell is always enabled by the network
    - For 960 kHz SSB SCS
      * FFS: deriveSSB-IndexFromCell is up to network configuration (i.e. can be enabled or disabled)
    - The agreement applies at least for the case of same SCS in the serving and neighbor cell. FFS whether and how to handle the cases with mixed SCS in the serving and neighbor cells
    - FFS whether to relax tolerance for UE assumptions on frame boundary alignment

**Sub-topic 3-1: UE transmit timing error**

Issue 3-1-4: Percentage of UL CP length Te can occupy for UL SCS of 480/960 kHz

* Proposals
  + Option 1 (Apple): 50%
  + Option 2 (CATT, ZTE, Intel, E///): 30%
  + Option 3 (Huawei): For SSB SCS ≥ UL SCS, and SSB periodicity: 80ms – 40%, 20ms – 30%,
  + Option 4 (Ericsson): 28%
  + Option 5 (Qualcomm): For SSB periodicity of 20ms – 38%.
    - FFS: 120kHz SSB SCS and 960kHz UL SCS
* Tentative agreements
  + Te can occupy [35%] of UL CP length for 480/960 kHz UL SCS
* Discussion
  + QC: need to discuss 480 and 960 separately. Also need to agree on SSB periodicity
  + E///: Option 2 is ok. In case we have wide SSB then we can go below 30% if this is technically feasible. For SSB periodicity – prefer 160ms similar to legacy requirements. We can be ok with 80ms as well.
  + Nokia: Based on our simulation results 30% leads to big degradation performance in UL. For SSB periodicity we suggest 80ms and our calculations of clock drift show it is fine.
  + Apple: Effective delay spread in FR2-2 will be smaller than nominal delay spread due to narrow beamforming. So, we cannot reuse RAN1 model directly. We cannot go anything below 38%. We suggest to discuss testing jointly with Core requirements as another way to help UE to meet the requirements. UE capability is another approach.
  + Huawei: we do not think a single value can apply to different scenarios. Prefer several set of requirements
  + vivo: agree with Huawei that we can exclude some scenarios in terms of SCS
* Agreements
  + UE transmit timing error requirements for UL SCS of 480/960 kHz are defined under the following assumptions
    - SCS:
      * SSB SCS ≥ UL SCS
      * FFS if other SCS combinations shall be considered
    - At least one SSB is available at the UE during the last: 20ms, 40ms, 80ms
      * Note: If multiple set of requirements are defined, then the requirements will be defined for at most for 2 periodicities
    - Max delay spread:
      * [30ns] for 480kHz
      * [20ns] for 960kHz
  + FFS if a single set or multiple sets of requirements need to be defined
  + FFS how to design test case for UE transmit timing error requirements

**1st round email discussion conclusions**

**New tdocs**

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**Existing tdocs**

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**2nd round email discussion conclusions**

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**WF/LS for approval**

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**Email discussion: [101-bis-e][217] NR\_ext\_to\_71GHz\_RRM\_2**

**R4-2202568 Email discussion summary: [101-bis-e][217] NR\_ext\_to\_71GHz\_RRM\_2**

*Type: other For: Information  
 Source: Moderator (Intel Corporation)*

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (January 18, 2022)**

Issue 4-1-3: Baseline for RRM requirements with LBT in FR2-2

* Proposals
  + Proposal 1 (Nokia): Use the FR2 RRM requirements as baseline for the RRM requirements with LBT in FR2-2, considering that the probability of failure of LBT in FR2-2 is nearly zero.
  + Proposal 2 (Huawei): Requirements defined for Rel-16 NR-U should be taken as starting point for evaluating LBT impacts for operation in FR2
    - Proposal 2a (Intel, ZTE Corporation): Adopt the relaxation methods used in NR-U (core requirements are extended by the missed samples) as a baseline.
* Agreements
  + Adopt the relaxation methods used in NR-U (core requirements are extended to compensate the missed samples) as a baseline

Issue 4-2-1: Impact of FR2-2 LBT on the TS 38.133 specification

* Proposals
  + Proposal: RAN4 to consider Table below for the discussion of the impact of FR2-2 for requirements with CCA, taking into account the timeline of Rel-17 work

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Requirements and clauses** | | **Comments** | | |
| **Nokia** | **Intel** | **vivo** |
| Cell reselection | **4.2A.2.2**  **Measurement of serving cell** | Table 4.2A.2.2-1 to be revisited.  FR2 scaling factor N1 to be considered for requirements with CCA | *Nserv\_CCA, Tdetect,NR\_Intra\_CCA, Tmeasure,NR\_Intra\_CCA, Tevaluate,NR\_Intra\_CCA, Tdetect,NR\_Inter\_CCA, Tmeasure,NR\_Inter\_CCA, Tevaluate,NR\_Inter\_CCA* need to consider Rx beam sweeping scaling factor  FFS whether to scale *Mm,max, Md,max,Me,max* | - |
| **4.2A.2.3**  **Intra-frequency** | Table 4.2A.2.3-1 to be revisited.  FR2 scaling factor N1 to be considered for requirements with CCA | New requirements are defined |
| **4.2A.2.4**  **Inter-frequency** | Table 4.2A.2.4-1 to be revisited.  FR2 scaling factor N1 to be considered for requirements with CCA |
| 4.2A.2.5  Inter-RAT | No impact for FR2-2  This requirement is band agnostic. | FFS |
| 4.2A.2.6  Maximum interruption on paging reception when CCA is used in Target Cell | No impact for FR2-2  This requirement is band agnostic. | - |
| Handover | **6.1B Handover to target cell using CCA** | Discuss for which scenarios the requirements with CCA are to be defined for:   * FR2-FR2 handover * FR2-FR1 handover * FR1-FR2 handover * E-UTRAN - NR FR2 handover: if possible, there is need to assess the impact on TS 36.133 as well | Add requirements for FR2-FR2 and FR1-FR2 using requirements from 6.1.1 as a baseline and modifying them in the same way as it is done for FR1-FR1 case | New requirements are defined |
| RRC Connection Mobility Control | **6.2.1A**  **RRC re-establishment with CCA** | Time to identify target NR cell to be defined for FR2 requirements with CCA  Revisit Table 6.2.1.2.1-2: | *Tidentify\_intra\_NR\_CCA, Tidentify\_inter\_NR\_CCA,i*need to be defined for FR2-2. Consider using requirements from 6.2.1 as a baseline and modifying them in the same way as it is done for FR1 | New requirements are defined |
| 6.2.2A Random access when CCA is used | No impact for FR2-2  Existing requirements with CCA are also applicable for FR2-2 | - | Current requirements for CCA may be applicable |
| **6.2.3.2.3**  **RRC release with redirection to NR carrier subject to CCA** | Time to identify target NR cell needs to be defined for FR2 requirements with CCA  Revisit Table 6.2.3.2.3-1: | *Tidentify-NR\_CCA* needs to be defined for FR2-2  FFS whether to scale *L1,max* | New requirements are defined |
| UE timing | 7.1  UE transmit timing | Subject to agreements on UE transmit timing in FR2-2.  FFS number of SSB candidate positions | - | Current requirements for CCA may be applicable |
| 7.2 UE timer accuracy | No impact for FR2-2  Reuse FR2 or FR2-2 requirements | - | - |
| 7.3 Timing advance | No impact for FR2-2  Reuse FR2 or FR2-2 requirements | - | - |
| 7.5 UE maximum receive timing difference | No impact for FR2-2  Reuse FR2 or FR2-2 requirements | - | - |
| 7.6 UE maximum transmission timing difference | No impact for FR2-2  Reuse FR2 or FR2-2 requirements | - | - |
| Signalling characteristics | **8.3A SCell activation and deactivation delay** | Clarify that the current requirements in this clause are applicable only to FR1  FR2-2 specific requirements to be defined, like the Tactivation\_time\_withCCA, | Identify the set of cases for which the FR2-2 requirements are needed.  Define *Tactivation\_time\_withCCA* for FR2-2 for all identified cases. | New requirements are defined |
| Interruption | FFS if impact on interruptions due to Active BWP switching Requirement | - | New requirements are defined |
| PSCell addition and release delay | No impact for FR2-2 | - | New requirements are defined |
| **8.10A Active TCI state switching delay** | Clarify that the current requirements in this clause are applicable only to FR1  Requirements with CCA should include FR2-2 specific timing TL1-RSRP for MAC-CE based TCI state switch delay | *TL1-RSRP* need to be added to the delay of MAC-CE based TCI state switch and RRC based TCI state switch for the case of unknown target TCI state | New requirements are defined |
| 8.6 Active BWP switching delay | No impact for FR2-2  Impact is generic and covered with FR2-2 requirements without CCA | - | Current requirements for CCA may be applicable |
| PSCell change | No impact for FR2-2 | - | New requirements are defined |
| Conditional PSCell change | No impact for FR2-2 | - | New requirements are defined |
| **8.1A Radio link monitoring** | The following needs to be defined for FR2-2 with CCA:   * Maximum number of RLM resources, in Table 8.1A.1-2 * Include a table with the evaluation period TEvaluate\_out\_SSB,CCA and TEvaluate\_in\_SSB,CCA, in FR2-2 * Measurement restrictions * Scheduling availability of UE during radio link monitoring fir FR2-2 * Discuss whether to define CSI-RS requirements for RLM in FR2-2, since there are no CSI-RS RLM requirements for unlicensed spectrum in FR1. | *NRLM* , *TEvaluate\_out\_SSB,CCA TEvaluate\_in\_SSB,CCA* need to be defined for FR2-2.  Measurement restrictions need to be defined for FR2-2  The following sections should be added:   * 8.1A.6.3 Scheduling availability of UE performing radio link monitoring on FR2-2 * 8.1A.6.4 Scheduling availability of UE performing radio link monitoring on FR1 or FR2-2 in case of FR1-FR2-2 inter-band CA and NR-DC | New requirements are defined |
| **8.5A Link recovery procedures** | Clarify that the current requirements in this clause are applicable only to FR1  Define TEvaluate\_BFD\_SSB\_CCA, TEvaluate\_CBD\_SSB\_CCA for FR2-2 (Clause 8.5A.2.2)  Measurement restriction for FR2-2 in clause 8.5A.2.3  Define requirements for scheduling availability of UE performing beam failure detection on FR2-2 with CCA  Discuss whether to define CSI-RS requirements for BFD in FR2-2, since there are no CSI-RS RLM requirements for unlicensed spectrum in FR1. | *TEvaluate\_BFD\_SSB\_CCA, TEvaluate\_CBD\_SSB\_CCA* need to be defined for FR2-2  Measurement restrictions need to be defined for FR2-2  The following sections should be added:   * 8.5A.7.3 Scheduling availability of UE performing beam failure detection on FR2-2 * 8.5A.7.3 Scheduling availability of UE performing beam failure detection on FR1 or FR2-2 in case of FR1-FR2-2 inter-band CA and NR-DC * 8.5A.8.3 Scheduling availability of UE performing L1-RSRP measurements on FR2-2 * 8.5A.8.3 Scheduling availability of UE performing L1-RSRP measurements on FR1 or FR2-2 in case of FR1-FR2-2 inter-band CA and NR-DC | New requirements are defined |
| Uplink spatial relation switch delay | No impact for FR2-2 | - | - |
| UE specific CBW change | No impact for FR2-2 | - | - |
| Pathloss reference signal switch delay | No impact for FR2-2 | - | - |
| Measurement requirements | Measurement gap | No impact for FR2-2 | - | - |
| UE measurement capability | No impact for FR2-2 | - | - |
| **9.2A Intra-frequency** | Switching time for FR2  SS-RSRP, SS-RSRQ, SS-SINR side conditions for FR2  Number of Cell and SSBs for FR2  Include tables with the requirements for: TPSS/SSS\_sync\_intra\_CCA,T SSB\_measurement\_period\_intra\_CCA and  TSSB\_time\_index\_intra\_CCA in FR2, with and without gaps  FFS: RSSI measurement details depend on RAN1 decision. | SS-RSRP, SS-RSRQ, SS-SINR side conditions need to be defined for FR2-2  *TPSS/SSS\_sync\_intra\_CCA, TSSB\_time\_index\_intra\_CCA, TSSB\_measurement\_period\_intra\_CCA* need to be defined for FR2-2  The following sections should be added:   * 9.2A.5.3.3 Scheduling availability of UE performing measurements on FR2-2 * 9.2A.5.3.4 Scheduling availability of UE performing measurements on FR1 or FR2-2 in case of FR1-FR2-2 inter-band CA and NR-DC   FFS whether Intra-frequency RSSI and Channel occupancy measurements need to be defined for RF2-2 | New requirements are defined |
| **9.3A Inter-frequency** | Switching time for FR2  SS-RSRP, SS-RSRQ, SS-SINR side conditions for FR2  Number of Cell and SSBs for FR2  Include tables with the requirements for: TPSS/SSS\_sync\_inter\_CCA,T SSB\_measurement\_period\_inter\_CCA and  TSSB\_time\_index\_inter\_CCA in FR2.  FFS: RSSI measurement details depend on RAN1 decision. | SS-RSRP, SS-RSRQ, SS-SINR side conditions need to be defined for FR2-2  *TPSS/SSS\_sync\_inter\_CCA, TSSB\_time\_index\_inter\_CCA, TSSB\_measurement\_period\_inter\_CCA* need to be defined for FR2-2 | New requirements are defined |
| Inter-RAT | No impact for FR2-2 |  | FFS |
| **9.5A L1-RSRP measurements for reporting** | Side conditions  *nrofReportedRS* must be defined for FR2  The measurement period of TL1-RSRP\_Measurement\_Period\_SSB\_CCA must be defined for FR2-2 | TL1-RSRP\_Measurement\_Period\_SSB\_CCA needs to be defined for FR2-2  Measurement restrictions need to be defined for FR2-2 | New requirements are defined |
| L1-SINR measurements for reporting | No impact for FR2-2 | - | - |
| Cross link interference measurements | No impact for FR2-2 | - | - |
| CSI-RS based measurement | No impact, if RAN4 uses NR-U requirements in FR1 as baseline | - | - |
| Measurement accuracy requirements | Intra-frequency SS-RSRP/SS-RSRQ/SS-SINR  Intra-frequency CSI-RSRP/CSI-RSRQ/CSI-SINR | - | - | Current intra-frequency measurement accuracy requirements for FR2 apply. |
| Inter-frequency SS-RSRP/SS-RSRQ/SS-SINR  Inter-frequency CSI-RSRP/CSI-RSRQ/CSI-SINR | - | - | Current inter-frequency measurement accuracy requirements for FR2 apply. |
| L1-RSRP accuracy (SSB based and CSI-RS based) | - | - | Current L1-RSRP accuracy measurement accuracy requirements for FR2 apply. |

* Agreement
  + RAN4 will define FR2-2 RRM requirements with CCA in Rel-17
  + The set of requirements is FFS
* Tentative agreements

|  |  |
| --- | --- |
| **Requirements and clauses** | |
| Cell reselection | 4.2A.2.2 Measurement of serving cell |
| **4.2A.2.3 Intra-frequency** |
| **4.2A.2.4 Inter-frequency** |
| 4.2A.2.5 Inter-RAT |
| 4.2A.2.6 Maximum interruption on paging reception when CCA is used in Target Cell |
| Handover | **6.1B Handover to target cell using CCA** |
| RRC Connection Mobility Control | **6.2.1A RRC re-establishment with CCA** |
| 6.2.2A Random access when CCA is used |
| **6.2.3.2.3 RRC release with redirection to NR carrier subject to CCA** |
| UE timing | 7.1 UE transmit timing |
| 7.2 UE timer accuracy |
| 7.3 Timing advance |
| 7.5 UE maximum receive timing difference |
| 7.6 UE maximum transmission timing difference |
| Signalling characteristics | **8.3A SCell activation and deactivation delay** |
| Interruption |
| PSCell addition and release delay |
| **8.10A Active TCI state switching delay** |
| 8.6 Active BWP switching delay |
| PSCell change |
| Conditional PSCell change |
| **8.1A Radio link monitoring** |
| **8.5A Link recovery procedures** |
| Uplink spatial relation switch delay |
| UE specific CBW change |
| Pathloss reference signal switch delay |
| Measurement requirements | Measurement gap |
| UE measurement capability |
| **9.2A Intra-frequency** |
| **9.3A Inter-frequency** |
| Inter-RAT |
| **9.5A L1-RSRP measurements for reporting** |
| L1-SINR measurements for reporting |
| Cross link interference measurements |
| CSI-RS based measurement |

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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**R4-2200660 Reply LS on the minimum time gap for wake-up and Scell dormancy indication for NR operation in 52.6 to 71GHz**

*Type: LS out For: Approval  
 to RAN1  
 Source: vivo*

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

##### 6.16.7.1 General

**R4-2200125 Further discussion on General RRM requirements for extension to 71GHz**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200562 Discussion on general RRM measurement requirements for extension to 71GHz**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

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

**R4-2200654 Further discussion on RRM impacts for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200655 Draft CR to 38.133 Introducing applicability of requirements for FR2**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

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

**R4-2200888 General RRM requirements for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

General RRM requirements for extending NR operation to 71GHz

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

**R4-2200889 On general measurement requriement for extending NR operation to 71GHz**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

On general measurement requriement for extending NR operation to 71GHz

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

**R4-2200914 Discussion on general RRM requirements for extension to 71 GHz**

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

**Abstract:**

Discussion on general scenarios for FR2-2 and deriveSSB-IndexFromCell for RRM requriements

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

**R4-2200932 Discussion on RRM requirements in FR2-2**

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

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

**R4-2200933 Introduction of scheduling restriction for FR2-2**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: MediaTek inc.*

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

**R4-2201194 Discussion on general RRM requirements for FR2-2**

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

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

##### 6.16.7.2 Timing requirements

**R4-2200126 Further discussion on RRM timing requirements for higher SCS**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200283 UE transmit timing for NR operation in 52.6GHz - 71GHz**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200563 Discussion on MTTD/MRTD for extension to 71GHz**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

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

**R4-2200661 Further discussion on timing for 52.6-71GHz**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200915 Discussion on RRM timing requirements for extension to 71 GHz**

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

**Abstract:**

Discussion on Te values, including proposals for boundaries and values to be applied when operating on FR2-2

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

**R4-2200916 Draft CR adding timing requirements for FR2-2**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The following additions are included by this CR:

-Placeholder for Te values for new SCSs

-Modified SSB availability for new SCSs in FR2-2

-Timing advance accuracy requirements as per agreements in the last meetings

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

**R4-2200934 Discussion on timing requirements in FR2-2**

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

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

**R4-2201195 Discussion on timing requirements for extending NR operation to 71GHz**

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

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

**R4-2201407 On Te requirements for NR systems extended to 71 GHz**

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

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

**R4-2201583 UE Timing requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Analysis of timing requirements.

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

**R4-2201787 Discussion on timing requirements for NR 52.6 – 71 GHz**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2202033 Timing requirements in FR2-2**

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

**Abstract:**

In this paper, we discuss the UL timing error related issues

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

**R4-2202048 Draft CR for timing requirements for FR2-2 – MRTD, MTTD**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

The draftCR updates clause 7.5 and 7.6 based on agreements related to MRTD and MTTD

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

##### 6.16.7.3 Interruption requirements

**R4-2200656 Furthr discussion on interruption for 52.6-71GHz**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200657 Draft CR to 38.133 Introducing interruption requirements of FR2-2 to cover 52.6-71GHz**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

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

**R4-2200885 Interruption requirements for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Interruption requirements for extending NR operation to 71GHz

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

**R4-2200917 Discussion on interruption requirements for FR2-2**

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

**Abstract:**

Proposals to updated agreements reached for CA in previous meetings and apply them also for the DC cases that were missing.

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

**R4-2201196 Discussion on interruption requirements for extending NR operation to 71GHz**

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

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

**R4-2201788 Discussion on interruption requirements for NR 52.6 – 71 GHz**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

##### 6.16.7.4 Active BWP switching delay requirements

**R4-2200127 Discussion on cross-carrier active BWP switching for extension to 71GHz**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200284 Active BWP switch delay for NR operation in 52.6GHz - 71GHz**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200658 Further discussion on active BWP switching delay for 52.6-71GHz**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200872 On cross-carrier BWP switch delay for extension to 71 GHz**

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

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

**R4-2200887 Active BWP switching delay requirements for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Active BWP switching delay requirements for extending NR operation to 71GHz

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

**R4-2201197 Discussion on BWP switching requirements for extending NR operation to 71GHz**

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

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

**R4-2201198 Draft CR on BWP switching requirements for extending NR operation to 71GHz**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2201409 Active BWP switching delay requirements for NR systems extended to 71 GHz**

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

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

**R4-2201789 Discussion on BWP switching delay for NR 52.6 – 71 GHz**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

##### 6.16.7.5 Measurement gap interruption requirements

**R4-2200659 Further discussion on measurement gap interruption for 52.6-71GHz**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200886 Measurement gap interruption requirements for extending NR operation to 71GHz**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Measurement gap interruption requirements for extending NR operation to 71GHz

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

**R4-2201199 Discussion on measurement gap interruption requirements for extending NR operation to 71GHz**

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

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

##### 6.16.7.6 LBT impacts on RRM requirements

**R4-2200285 LBT impacts on RRM requirements for NR operation in 52.6GHz - 71GHz**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200873 LBT impacts on NR RRM requirements for extension to 71GHz**

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

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

**R4-2201200 Discussion on LBT impacts on RRM requirements for extending NR operation to 71GHz**

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

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

**R4-2201371 Discussion on LBT requirements for FR2-2**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2201408 On LBT impacts on RRM for NR systems extended to 71 GHz**

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

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

**R4-2201790 Discussion on LBT impacts on RRM requirements for NR 52.6 – 71 GHz**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2201791 DraftCR on LBT impacts on RRM requirements for NR 52.6 – 71 GHz**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

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

### 6.17 Enhancements to Integrated Access and Backhaul (IAB) for NR

#### 6.17.3 RRM core requirements

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**Email discussion: [101-bis-e][218] NR\_IAB\_enh\_RRM**

**R4-2202569 Email discussion summary: [101-bis-e][218] NR\_IAB\_enh\_RRM**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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**R4-2201405 On RRM for eIAB**

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

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

**R4-2201849 On IAB Enhanced RRM Requirements**

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

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

**R4-2201850 TP to TS 38.174 on RRM Timing Requirements**

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

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

**R4-2202019 Further analysis of RRM requirements for enhanced IAB**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper further analyzes the impact of RRM on IAB enhancement

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

**R4-2202052 CLI measurement requirement for R17 NR eIAB RRM**

*Type: discussion For: Discussion  
 Source: Qualcomm CDMA Technologies*

**Decision: Withdrawn.**

#### 6.17.4 Others

### 6.19 Further enhancements on MIMO for NR

#### 6.19.3 RRM core requirements

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**Email discussion: [101-bis-e][219] NR\_feMIMO\_RRM**

**R4-2202570 Email discussion summary: [101-bis-e][219] NR\_feMIMO\_RRM**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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##### 6.19.3.1 Unified TCI for DL and UL

**R4-2200182 Discussion on unified TCI for DL and UL in R17 feMIMO**

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

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

**R4-2200277 Discussion on RRM requirements for Unified TCI**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200593 Discussion on Unified TCI for DL and UL**

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

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

**R4-2200602 Discussion on RRM requirements for unified TCI in R17 feMIMO**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200642 Discussion on unified TCI**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200649 Discussion on requirements of unified TCI for DL and UL**

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

**Abstract:**

This paper discusses TCI switching delay requirements under Rel-17 unified TCI framework

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

**R4-2200787 Discussion on Unified TCI state in NR FeMIMO**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2201363 Unified TCI in FeMIMO**

*Type: discussion For: Approval  
 Source: Samsung*

**Abstract:**

Overall specfication structure for unified TCI and proposals for open issues of unified TCI

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

**R4-2201384 RRM requirements of unified TCI state for FeMIMO**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we discuss RRM requirements for unified TCI state design requirements.

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

**R4-2201616 Discussion on RRM requirements related to unified TCI framework for NR FeMIMO**

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

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

##### 6.19.3.2 Inter-cell beam management

**R4-2200183 Discussion on inter cell beam management in R17 feMIMO**

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

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

**R4-2200278 Discussion on RRM requirements for inter-cell beam management**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200594 Discussion on RRM requirements for inter-cell beam management**

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

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

**R4-2200603 Discussion on RRM requirements for inter-cell L1 beam measurements in R17 feMIMO**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200643 Discussion on inter-cell beam management**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200650 Discussion on requirements of inter-cell beam management**

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

**Abstract:**

This paper discusses Rel-17 feMIMO beam management and L1-RSRP measurements

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

**R4-2200788 Discussion on inter-cell beam management in NR FeMIMO**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2201385 RRM requirements of inter-cell BM in FeMIMO**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we discuss RRM requirements of inter-cell BM in FeMIMO

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

**R4-2201617 Discussion on inter-cell beam management requirements for NR FeMIMO**

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

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

**R4-2201960 Inter-cell beam management in FeMIMO**

*Type: discussion For: Approval  
 Source: Samsung*

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

##### 6.19.3.3 Others

**R4-2200184 Discussion on general and RRM requirements impacts in R17 feMIMO**

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

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

**R4-2200279 Discussion on other RRM requirements for FeMIMO**

*Type: discussion For: Discussion  
 Source: Apple*

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

**R4-2200535 Discussion on remaining issues in FeMIMO**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200536 DraftCR on TCI chain update for Rel-17 NR FeMIMO**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

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

**R4-2200604 Discussion on other RRM impacts in R17 feMIMO**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200651 Discussion on other items of Rel-17 feMIMO RRM requirements**

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

**Abstract:**

This paper discusses Rel-17 feMIMO BFD/CBD/BFRQ and UE capability and requirements on simultaneous reception

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

**R4-2201387 Discussion on FeMIMO other open issues**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribtuion, we discuss QCL definition update, and link recovery procedures for inter-cell beam management operation

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

**R4-2201618 Discussion on other RRM requirements for NR FeMIMO**

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

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

### 6.20 Support of reduced capability NR devices

#### 6.20.3 RRM core requirements

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**Email discussion: [101-bis-e][220] NR\_redcap\_RRM\_1**

**R4-2202571 Email discussion summary: [101-bis-e][220] NR\_redcap\_RRM\_1**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (January 17, 2022)**

**Sub-topic 2-4 Random access**

Issue 2-4-2: Impact on 1 Rx RSRP accuracy in RSRP threshold

* Proposals
  + Option 1 (E///, CMCC, Nokia): Inform RAN2 about the need to introduce separate RSRP thresholds for RedCap UE with 1 Rx in procedures that depend on RSRP based thresholds such as RA.
  + Option 2 (Xiaomi, Apple, vivo): No need to define separate threshold for 1 Rx RedCap UE
* Discussion
  + Apple: the difference is only in accuracy. NW does not know the UE conditions.
  + E///: Due to worse accuracy for 1RX UE we would like to avoid UE to make wrong decisions.
  + CMCC: Option 1
  + vivo: Same view as Apple. For legacy UEs we have different number of antennas (2/4), but we did not use such approach.
  + Nokia: Option 1.

**Sub-topic 1-1: Measurement capability**

Issue 1-1-1: Measurement capability in IDLE/INACTIVE state

* Proposals
  + Option 1 (vivo, Xiaomi, ZTE, MTK): Measurement capability of RedCap UE in IDLE/INACTIVE states is reduced.
    - Option 1a (MTK): The RedCap UE shall be capable of monitoring at least:
      * Intra-frequency carrier, and
      * Depending on UE capability, 5 NR inter-frequency carriers, and
      * Depending on UE capability, 5 FDD E-UTRA inter-RAT carriers, and
      * Depending on UE capability, 5 TDD E-UTRA inter-RAT carriers.
      * A total of 10 carrier frequency layers, which includes serving layer, comprising of any above defined combinations of E-UTRA FDD, E-UTRA TDD and NR layers.
  + Option 2 (CMCC, E///, Apple, Nokia, ZTE): Reuse existing measurement capability for Rel-17 RedCap UE
  + Option 3: The RedCap UE shall be capable of monitoring at least: (MTK, Apple, vivo, OPPO, E///, ZTE)
    - Intra-frequency carrier, and
    - Depending on UE capability, 6 NR inter-frequency carriers, and
    - Depending on UE capability, 6 FDD E-UTRA inter-RAT carriers, and
    - Depending on UE capability, 6 TDD E-UTRA inter-RAT carriers.
    - A total of 12 carrier frequency layers, which includes serving layer, comprising of any above defined combinations of E-UTRA FDD, E-UTRA TDD and NR layers.
  + Option 4: The RedCap UE shall be capable of monitoring at least: (QC)
    - Intra-frequency carrier, and
    - Depending on UE capability, 4 NR inter-frequency carriers, and
    - Depending on UE capability, 4 FDD E-UTRA inter-RAT carriers, and
    - Depending on UE capability, 4 TDD E-UTRA inter-RAT carriers.
    - A total of 8 carrier frequency layers, which includes serving layer, comprising of any above defined combinations of E-UTRA FDD, E-UTRA TDD and NR layers.
* Discussion
  + CMCC: mobility is important for RedCap UEs and it is not clear why we need to reduce the number of layers
  + QC: We discuss minimum requirements. RedCap addresses different segments. It makes sense to reduce the capabilities.
  + ZTE: Can support Option 3 as well.
  + CMCC, QC: can compromise
* Agreements
  + Measurement capability in IDLE/INACTIVE state
    - The RedCap UE shall be capable of monitoring at least
      * Intra-frequency carrier, and
      * Depending on UE capability, 6 NR inter-frequency carriers, and
      * Depending on UE capability, 6 FDD E-UTRA inter-RAT carriers, and
      * Depending on UE capability, 6 TDD E-UTRA inter-RAT carriers.
      * A total of 11 carrier frequency layers, which includes serving layer, comprising of any above defined combinations of E-UTRA FDD, E-UTRA TDD and NR layers.
  + Measurement capability in CONNECTED state
    - The RedCap UE shall be capable of monitoring at least:
      * Depending on UE capability, 6 NR SSB inter-frequency carriers configured by PCell, and
      * Depending on UE capability, 7 NR inter-frequency carriers including SSB and CSI-RS in total configured by PCell, and
      * Depending on UE capability, 6 E-UTRA TDD inter-RAT carriers configured by PCell, and
      * Depending on UE capability, 6 E-UTRA FDD inter-RAT carriers configured by PCell, and
      * In addition to the requirements defined above, the UE shall be capable of monitoring a total of at least 10 effective carrier frequency layers comprising of any above defined combination of NR, E-UTRA FDD, and E-UTRA TDD.

**Topic #4: Signalling characteristics**

Issue 4-5-1: New BWP switching delay when only center-frequency is changed in Rel-17

* Proposals
  + Option 1 (CMCC, E///, Huawei, Nokia):  Define new BWP switching delay involving only changing of the center-frequency of the BWP without changing its BW, SCS or any other parameter for RF retuning as follows:

|  |  |  |
| --- | --- | --- |
| Frequency Range | Type 1 Delay (us) | Type 2 Delay (us) |
| 1 | 200 | 1050 |
| 2 | 200 | 1050 |

* + Option 2 (Xiaomi, vivo, Oppo, ZTE, MTK, QC, Apple): RAN4 to reuse the legacy BWP switching delay for RedCap UE in Rel-17.
* Discussion
  + ZTE: we are fine to reuse legacy requirements.
  + E///: for RedCap the switching may happen more often and only LO changes.
  + CMCC: Option 1
  + Huawei: Option 1. Only center frequency change reduces the UE processing time.
  + QC: this is not a common scenario. BWP switching is not applicable to SSB reading use case
  + Apple / vivo / MTK: Option 2.
  + Nokia: Option 1.
  + Session chair: continue the discussion

**1st round email discussion conclusions**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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**Email discussion: [101-bis-e][221] NR\_redcap\_RRM\_2**

**R4-2202572 Email discussion summary: [101-bis-e][221] NR\_redcap\_RRM\_2**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (January 17, 2022)**

**Topic #2: RRM measurement relaxations**

Issue 2-2-1: Relaxation when Rel-17 stationarity criterion is configured and fulfilled, or if both Rel-17stationarity criterion and Rel-17 not-at-cell-edge criterion are configured however UE meets only the R17 stationarity criterion:

* Proposals
  + Option 1: using single scaling factor (Apple, vivo, Huawei, xiaomi, CMCC, oppo, MTK, Ericsson)
  + Option 2: using multiple scaling factor and only one is broadcast at a time (Nokia Qualcomm)
* Recommended WF
  + RAN2’s signalling impact need be considered when considering whether to use option 1 or option 2.
* Discussion
  + Nokia: We prefer a single scaling factor, but prefer to keep it configurable
  + QC: RedCap use cases are different (mobile and stationary UEs). So, different scaling factors are required.
  + E///: we have an agreement that we’ll use Rel-16 relaxation as baseline. Both Rel-16 and Rel-17 relaxations can be configured jointly and we can have 2 factors.
  + MTK: this is more RAN2 discussion. Prefer Option 1.
  + Apple: Option 1. Not clear how network can decide the value to configure in IDLE state
  + CMCC: for this specific issue the assumption is that UE meets the Rel-17 stationary criteria
  + Session chair: continue discuss and make decision in this meeting.

**Topic #1: Extended DRX enhancements**

Issue 1-1-1: eDRX requirements for FR2

* Proposals
  + Option 1: Define requirements for FR2 (Ericsson, vivo, Huawei, Nokia, Apple, CMCC, Xiaomi, OPPO)
  + Option 2: de-prioritizing FR2 requirements (ZTE, MTK)
* Discussion
  + MTK: eDRX benefits for FR2 are not justified
    - E///: the mentioned example is a corner case and does not preclude definition of requirements for other cases.
* Agreements
  + Define eDRX requirements for FR2
  + Further assess the benefits and feasibility of eDRX cycle length of 20.48 [s]

**Sub-topic 3-2 Reply to RAN1 LS R1-2112802 on use of NCD-SSB or CSI-RS in DL BWPs for RedCap UE**

Issue 3-2-2: CSI-RS based method

* Proposals
  + Option 1a: A RedCap UE can indicate not need NCD-SSB: a RedCap UE can in addition optionally support relevant operation based on CSI-RS and FG 6-1a by reporting optional capabilities (Huawei Ericsson)
  + Option 1b: A RedCap UE can in addition optionally support relevant operation based on CSI-RS and FG 6-1a by reporting optional capabilities and No new UE capabilities are needed. (CMCC)
  + Option 2: A RedCap UE that supports FG 6-1a operates in a BWP that does not include the CD-SSB or an NCD-SSB, the UE can support RLM/BFD based CSI-RS but cannot support RRM based CSI-RS’ (MTK)
  + Option 3: Do not consider CSI-RS as an alternative to NCD-SSB for separate initial DL BWP and reply accordingly to RAN1 (Nokia)
  + Option 3a: due to the incapability of CSI-RS for neighbor cell RRM measurement, serving cell timing requirement and TCI state switch requirements, feasibility issue is identified regarding this working assumption (Not need NCD-SSB: A RedCap UE can in addition optionally support relevant operation based on CSI-RS (working assumption) and/or FG 6-1a by reporting optional capabilities) (vivo)
* Discussion
  + CMCC: We can confirm RAN1 working assumption
  + Intel: Agree with CMCC and send reply to RAN1
  + Huawei: Option 1a
  + ZTE: ok with 1a or 1b
  + Apple: L3 CSI-RS measurements capability needs to be supported as well. Agree with Option 2
  + vivo: RAN1 working assumption is unclear. It means that UE needs to support L1/L3 measurements, etc based on CSI-RS. There are no requirements
  + MTK: It is not feasible to support measurements and we need to inform RAN1.
  + Nokia: We are not supporting confirming working assumption. Further study is required.
  + Session chair:
    - Continue the discussion.
    - Possible compromise agreement is to confirm the working assumption and do not define the requirements in Rel-17
    - Separate WF shall be discussed in the 2nd round.

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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**R4-2201857 Updated WI work plan for RedCap for RRM**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Updated work plan and work split.

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

##### 6.20.3.1 Impacts from UE complexity reduction

###### 6.20.3.1.1 General

**R4-2200392 On general aspects on complexity reduction of Redcap**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200692 Further discussion on general requirements on Redcap UE**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200808 On general requirements for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

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

**R4-2201183 Discussion on general RRM requirements impacts for RedCap UE**

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

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

**R4-2201394 reply LS on capability related assumptions for RedCap**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: ZTE Corporation*

**Abstract:**

We provide a draft LS reply to RAN2 LS R2-2109218 on UE capability assumptions.

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

**R4-2201397 Discussions on general RRM aspects for RedCap UEs**

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

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

**R4-2201773 General discussion UE capability and scheduling availability**

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

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

**R4-2201858 Discussions on general requirements for RedCap**

*Type: LS out For: Approval  
 to RAN1  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss general requirements that apply in all RRC states for RedCap.

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

**R4-2201979 Discussion on PBCH simulation assumptions for RedCap**

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

**Abstract:**

Discussion on PBCH simulation assumptions for NR\_redcap

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

###### 6.20.3.1.2 Mobility requirements

**R4-2200292 Discussion on mobility requirement for RedCap**

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

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

**R4-2200393 On mobility requirements for Redcap**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200809 On mobility requirements for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

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

**R4-2200871 Discussion on mobility requirements for RedCap**

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

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

**R4-2201184 Discussion on UE mobility requirements due to UE complexity reduction**

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

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

**R4-2201388 Requirements under RRC Connected mode for RedCap UEs**

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

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

**R4-2201774 Discussion on mobility requirements**

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

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

**R4-2201859 Discussions on RedCap mobility requirements**

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

**Abstract:**

In this contribution we discuss the mobility requirements for RedCap, HO, RRC re-establishment, RA and RRC connection release with redirection.

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

###### 6.20.3.1.3 Timing requirements

**R4-2200810 On timings requirements for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

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

**R4-2201185 Discussion on UE timing requirements due to UE complexity reduction**

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

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

**R4-2201389 Timing requirements for RedCap UEs**

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

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

**R4-2201775 UE complexity reduction impact on timing requirements**

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

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

**R4-2201860 On UE transmit timing requirements in Redcap**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the UE transmit timing requirements based on last WF.

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

###### 6.20.3.1.4 Signalling characteristics

**R4-2200293 Discussion on signalling characteristics for RedCap**

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

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

**R4-2200394 On signalling characteristics for Redcap**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200399 Simulation results for RLM and BFD**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200400 Simulation results for PDCCH RLM and BFD**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200811 On Signalling characteristics requirements for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

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

**R4-2200867 Simulation Results: RLM for RedCap**

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

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

**R4-2200868 Discussion on hypothetical PDCCH parameters for RedCap**

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

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

**R4-2201145 RRM impact from UE complexity reduction for Redcap UE - signaling characteristics**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201186 Discussion on signaling characteristics due to UE complexity reduction**

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

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

**R4-2201187 Simulation results for RLM and BFD due to complexity reduction for RedCap UE**

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

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

**R4-2201390 On Signalling characteristics of RedCap UEs**

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

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

**R4-2201776 Discussion on RLM and BFD in RedCap**

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

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

**R4-2201861 Discussions on RedCap signaling characteristics**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss signaling characteristics for RedCap, e.g. RLM, link recovery etc.

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

**R4-2202030 Impact of UE complexity reduction impact on signalling characteristics**

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

**Abstract:**

In this paper, we discuss the simulation results for RLM

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

###### 6.20.3.1.5 Measurement procedure

**R4-2200294 Discussion on cell identification and measurement for RedCap**

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

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

**R4-2200395 On measurement procedure for Redcap**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200401 Simulation results for cell detection, PBCH detection, SSB measurement and L1 RSRP measurement**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200812 On Measurement procedure for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

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

**R4-2200869 Discussion on measurement procedures for RedCap**

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

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

**R4-2200870 Simulation Results: cell detection performance for RedCap**

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

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

**R4-2201146 RRM impact from UE complexity reduction for Redcap UE - measurement requirements**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201188 Discussion on measurement requirements due to UE complexity reduction**

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

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

**R4-2201189 Simulation results for cell detection, L3 measurement and L1 RSRP measurement**

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

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

**R4-2201391 Measurement procedure of RedCap UEs**

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

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

**R4-2201777 Simulation performance results for RedCap**

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

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

**R4-2201862 Discussions on RedCap measurement procedure**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss CONNECTED mode measurement procedure for RedCap.

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

**R4-2202031 Impact of UE complexity reduction on measurement procedures**

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

**Abstract:**

In this paper, we discuss the simulation results for cell detection and PBCH decoding

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

##### 6.20.3.2 Extended DRX enhancements

**R4-2200295 Discussion on RRM requirement with eDRX for RedCap**

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

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

**R4-2200396 On Redcap eDRX enhancement**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200690 Further discussion on RRM requirements for extended DRX enhancements for RedCap**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200813 On Extended DRX cycle for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

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

**R4-2200866 Discussion on eDRX enhancements for RedCap**

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

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

**R4-2201147 Extended DRX enhancements for Redcap UE**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201190 Discussion on Extended DRX enhancements for RedCap UE**

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

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

**R4-2201392 On extended DRX enhancements for RedCap**

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

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

**R4-2201778 Extended DRX in IDLE mode and INACTIVE mode**

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

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

**R4-2201863 Discussions on eDRX requirements for RedCap**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss eDRX requirements for RedCap

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

##### 6.20.3.3 RRM measurement relaxations

**R4-2200296 Discussion on RRM relaxation requirement for RedCap**

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

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

**R4-2200397 On Redcap RRM relaxation**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200691 Further discussion on RRM measurement relaxations for RedCap UE**

*Type: discussion For: Discussion  
 Source: Xiaomi*

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

**R4-2200814 On RRM measurement relaxation for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

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

**R4-2201148 RRM measurement relaxations for RedCap UE**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201191 Discussion on RRM measurement relaxations for RedCap UE**

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

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

**R4-2201393 Discussions on RRM measurement relaxations for RedCap UEs**

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

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

**R4-2201779 RRM measurements relaxation for stationary criterion**

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

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

**R4-2201864 Discussions on RRM measurement relaxations**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss RRM measurement relaxation for RedCap.

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

**R4-2201980 On RRM measurement relaxation for neighbouring cells**

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

**Abstract:**

Discussion on RRM relaxation for NR\_redcap

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

**R4-2202032 RRM relaxations enhancements for RedCap UE**

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

**Abstract:**

In this paper we discuss RRM relaxations enhancements for RedCap UE

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

##### 6.20.3.4 Others

**R4-2200398 On NCD-SSB or CSI-RS in DL BWPs for RedCap UE**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200815 Reply LS on use of NCD-SSB or CSI-RS in DL BWPs for RedCap UE**

*Type: discussion For: Decision  
 Source: CMCC*

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

**R4-2201192 Discussion on NCD-SSB and CSI-RS**

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

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

**R4-2201395 Reply LS on use of NCD-SSB for RedCap UE**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: ZTE Corporation*

**Abstract:**

We provide a draft LS reply to RAN1 LS R1-2110600 (R4-2117599). RAN4 provided some answers for part of the questions asked, and we propose to provide answers for all questions with another LS.

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

**R4-2201396 reply LS on use of NCD-SSB or CSI-RS in DL BWPs for RedCap UE**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: ZTE Corporation*

**Abstract:**

We provide a draft LS reply to RAN1 LS R1-2112802 (R4-2200044) on use of NCD-SSB or CSI-RS in DL BWPs for RedCap UE.

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

**R4-2201760 On capability and NCD-SSB design for RedCap RRM**

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

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

**R4-2201780 Discussion on the use of NCD-SSB**

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

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

**R4-2201865 RRM Discussions on RedCap UE capabilities**

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

**Abstract:**

In this contribution we discuss the RRM aspects of this LS on UE capability and provide our view, and a draft response LS is provided in the Annex.

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

**R4-2201981 Discussion on use of NCD-SSB or CSI-RS in DL BWPs for RedCap UE**

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

**Abstract:**

Discussion based on incoming RAN1 LS

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

### 6.21 Positioning enhancements for NR

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**Email discussion: [101-bis-e][222] NR\_pos\_enh\_1**

**R4-2202573 Email discussion summary: [101-bis-e][222] NR\_pos\_enh\_1**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (January 19, 2022)**

**Issue 1-1-2: AGC conditions for PRS measurements (One or more conditions under which samples for AGC is reduced or not required for PRS measurements)**

* Proposals
  + Condition 2: QC
    - The UE has a valid Rx AGC for the serving cell and Condition 1 (WF in R4-2120419)
  + Condition 3: PRS Es/Iot for condition 1B in WF in R4-2120419
    - Condition 3a: CMCC, Vivo, HW, E///, CATT
      * When target cell PRS Es/Iot ≥ -6dB
    - Condition 3b: Nokia, ZTE, OPPO, E///, CATT
      * When magnitude difference between serving and target cells’ PRS Es/Iot≤ [6] dB
  + Condition 4: QCL
    - Condition 4a: Intel, Vivo, CMCC, QC, Nokia
      * When UE is provided with the QCL information of the PRS (dl-PRS-QCL-Info)
    - Condition 4b: E///
      * If PRS QCL information is provided with SSB as reference with QCL Type A, Type D and average gain
    - Condition 4c: QC
      * If PRS QCL information is provided with SSB as reference with QCL Type A, Type D and average gain, and
      * the UE was previously configured to measure the reference SSB and measured the reference SSB within X ms (FFS) of the start of the PRS measurement period.
  + Condition 5: PRS configuration parameters:
    - Condition 5a: CATT, Nokia
      * PRS resource repetitions (in different slots) within one PRS instance. Number of repetitions is FFS
    - Condition 5b: CATT
      * For the PRS measurement with small periodicity
* Discussion
  + TBA
* Agreements
  + TBA

**Issue 1-1-3: Applicability conditions for reduced Rx beam sweeping factor (<8) capability**

* Proposals
  + Option 1: CATT, Vivo, OPPO, E///, HW, Nokia, CMCC, Intel
    - UE capability is applicable without any condition.
  + Option 2:
    - Option 2a: CMCC, Nokia
      * Applicable if UE is provided with QCL info of PRS (dl-PRS-QCL-Info)
    - Option 2b: QC
      * Applicable under following conditions:
        + At least Type-D QCL information (dl-PRS-QCL-Info) is provided for PRS with SSB as QCL reference, and
        + the UE was previously configured to measure the reference SSBs and measured the reference SSBs within X ms (FFS) of the start of the PRS measurement period, and
        + the LMF requests the UE to use a reduced Rx beam sweeping factor in the location request.
* Discussion
  + TBA
* Agreements
  + TBA

**Issue 1-1-4: Rx beam sweep numbers for reduced Rx beam sweeping factor (<8) capability**

* Proposals
  + Option 1: Vivo
    - 4
  + Option 2: CATT
    - 1, 2, 4
  + Option 3: Huawei
    - 4, 6
  + Option 4: OPPO, Intel, E///?
    - 4
* Discussion
  + TBA
* Agreements
  + TBA

**Issue 2-1-1: Is Rel-15 SRS (*SRS-Resource*) supported for UE Rx-Tx time difference in Rel-17?**

* Proposals
  + Option 1: HW, E///, ZTE, Intel
    - Yes
  + Option 2: CATT, Nokia, Vivo, OPPO
    - No
* Discussion
  + TBA
* Agreements
  + TBA

**Issue 2-2-1: Can Rel-15 SRS (*SRS-Resource*) be used for gNB Rx-Tx time difference in Rel-17?**

**Issue 3-2-1: RAN1 LS on UL SRS-RSRPP definition**

* Response to RAN1 LS in R1-2112744: UL SRS-RSRPP definition
* Proposals:
  + Option 1: E///, HW
    - The reference point for UL SRS-RSRPP shall be:
      * for type 1-C base station TS 38.104 [9]: the Rx antenna connector,
      * for type 1-H base station TS 38.104 [9]: the Rx Transceiver Array Boundary connector,
      * for type 1-O or 2-O base station TS 38.104 [9]: based on the combined signal from antenna elements corresponding to a given receiver branch.
  + Option 2: Nokia
    - Study the path UL-RSRP measurement for UL-SRSP with option-1 that The same RX branch(es) as applied for the first path UL SRS-RSRPP measurements are used.
    - For path UL-RSRP, the same argument as DL path-RSRP exists. RAN4 takes the same framework for UL-RSRP, if RAN4 makes agreements on DL path-RSRP measurements and reporting.
* Discussion
  + TBA
* Agreements
  + TBA

**1st round email discussion conclusions**

**New tdocs**

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**2nd round email discussion conclusions**

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**WF/LS for approval**

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**Email discussion: [101-bis-e][223] NR\_pos\_enh\_2**

**R4-2202574 Email discussion summary: [101-bis-e][223] NR\_pos\_enh\_2**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (January 19, 2022)**

**Issue 1-1-1: Timing error margins associated with Rx TEGs for UE/TRP**

* Proposals
  + Option 1a: (CATT, ZTE)
    - Define multiple margin values (M1, M2, …) associated with TEGs per UE/TRP.
    - The association between TEG ID and margin value is decided and reported by UE/TRP itself. The margins for different TEGs can be same or different.
  + Option 1b: (Nokia)
    - Multiple timing error margins per UE/TRP are defined based on the maximum single-sided timing error achieved after calibration.
  + Option 1c: (OPPO)
    - The number of timing error margins N is determined by UE/TRP itself, FFS the value of N.
      * Considering hierarchical TEG reporting framework to further divide TEG sub-group with a small error margin.
  + Option 2a: (Intel)
    - RAN4 shall define a static timing error margin (e.g. ≤2 fixed margin) associated with all TEGs per UE/TRP.
  + Option 2b: (Ericsson)
    - Define two margin values for the UE Rx TEG for different time scopes:
      * Value 1: X, valid for all measurements in the same measurement report
      * Value 2: Y (< X), valid for measurements associated with same time stamp
      * The value of X and Y may be dependent on PRS BW and FR.
  + Option 2c: (Huawei)
    - Define a single margin value (X) for the UE Rx TEG for the time scope of “same time stamp”, i.e. LMF assumes timing error difference between two measurements is smaller than X if they are associated with same TEG ID and same time stamp.
  + Option 3a: (vivo)
    - A single timing error margin associated with one TEG is defined for a UE/TRP.
    - There is no need to define multiple timing error margins for multiple TEGs, which is up to UE/TRP implementation.
  + Option 3b: (Qualcomm)
    - A single timing error margin is associated with each TEG, and its value is configured by the UE/TRP.
    - RAN4 should finalize margins for RSTD and UE Rx-Tx measurement accuracy in Rel-16 before deciding on timing error margins for TEGs.
* Questions
  + #1 Number of timing error margins associated with each TEG
    - Option 1: 1
    - Option 2: 2
    - Option 3: multiple
  + #2: if UE/TRP has multiple TEGs, whether the margin is the same or not for all Rx TEGs.
  + #3: whether the margin is a constant or a configurable value.
  + #4: the exact value of margin
* Discussion
  + TBA
* Agreements
  + TBA

**Issue 1-2-1: Time-variant (semi-static or dynamic) TEGs**

* Proposals
  + Option 1a: (CATT, vivo, OPPO, ZTE)
    - The timing error can be time variant but TEG is up to UE implementation, i.e., there is no need to consider time variant of TEG from RRM requirements perspective.
  + Option 1b: (Huawei)
    - RAN4 not to consider the time variation of TEG provided that time scope of TEG is defined as ‘same time stamp’
  + Option 2a: (Intel)
    - The static TEG within a specific time window can be taken as the start point.
  + Option 2b: (Nokia)
    - There is no need to consider time variant TEGs for UE and gNB. They can be considered to stay valid for a longer period of time and hence to have semi-static character.
  + Option 3: (Ericsson)
    - Temporal Rx TEG validity is up to implementation assuming that Rx TEG association is based on a per measurement report basis.
    - Temporal validity of Tx TEG expires when UE UL transmission timing changes due to network configured timing advance.
    - Temporal validity of UE RxTx TEG can be associated to the change in antenna panel used for Rx – Tx timing measurement.
  + Option 4: (Qualcomm)
    - The temporal validity or applicability of a UE Rx TEG is limited to measurements contained within the measurement report in which the Rx TEG information is provided, unless the UE can provide explicit indication of the Rx TEG validity.
    - UE Rx TEG ID #n may be configured with a different timing error margin in each measurement report.
    - The principles for UE Rx TEG (i.e. first two bullets) also apply to UE RxTx TEGs
    - For UL+DL positioning, the temporal validity or applicability of a UE Tx TEG is limited to measurements contained within the measurement report in which the Tx TEG is information is provided, unless the UE can provide explicit indication of the Tx TEG validity.
    - For UL+DL positioning, UE Tx TEG ID #n may be configured with a different timing error margin in each measurement report.
    - For UL TDOA positioning, the temporal validity or applicability of a UE Tx TEG is limited to SRS resource instances transmitted during one reporting period.
    - For UL TDOA positioning, UE Tx TEG ID #n may be configured with a different timing error margin in each reporting period.
  + Recommended WF
    - Approach 1: clarify that the Rx TEG association is only applied for the measurement report with same time stamp
    - Approach 2: define another margin value [Y] for the measurement report with different time stamps
    - Other approaches.
* Discussion
  + TBA
* Agreements
  + TBA

**Issue 1-5-1 How to decide when the Tx TEG association is changed**

* Proposals
  + Option 1a: (CATT, vivo)
    - The UE Tx TEG association between UE Tx TEG IDs and SRS resources for positioning is up to UE implementation, so it is not necessary and practical to define the condition when the TEG association is changed.
  + Option 1b: (Huawei)
    - Tx TEG association is considered to be changed if at least two SRS resources that used to belong to a same TEG no longer belong to a same TEG.
    - When Tx TEG association change occurs depends on UE implementation
  + Option 2: (Ericsson)
    - Tx TEG association is considered changed when UE uplink transmission timing changes due to the network-configured timing advance command.
  + Option 3: (Nokia)
    - For defining the decision criteria, when UE shall inform gNB and LMF on the change of Tx TEG association information for UL-TDOA, RAN4 will have further investigation once the TEG framework is stable, i.e. how Tx TEG and Rx TEG association information is defined. RAN4 should inform RAN1 on this proceeding.
  + Recommended WF
    - Discuss based on the following:
      * Tx TEG association is considered to be changed if at least two SRS resources that used to belong to a same TEG no longer belong to a same TEG.
      * The UE Tx TEG association between UE Tx TEG IDs and SRS resources for positioning is up to UE implementation, so it is not necessary and practical to define the condition when the TEG association is changed.
* Discussion
  + TBA
* Agreements
  + TBA

Issue 2-4-12: LS to RAN2/3 about DRX cycle in RRC\_INACTIVE state

* Proposals
  + Option 1: (Qualcomm, OPPO, ZTE, Nokia)
    - RAN4 should send an LS to RAN2/RAN3 notifying them that RAN4 has agreed that the PRS measurement period requirement will depend on the DRX cycle length configured for the UE and that, consequently, the response time requested by the LMF should be adjusted accordingly. RAN4 requests RAN2/RAN3 to introduce new signalling, if necessary.
  + Option 2: (CATT)
    - It is not necessary to inform the DRX cycle to LMF even if it is considered in the PRS measurement requirements in RRC\_INACTIVE state.
* Discussion
  + TBA
* Agreements
  + TBA

**1st round email discussion conclusions**

**New tdocs**

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**Existing tdocs**

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**2nd round email discussion conclusions**

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**WF/LS for approval**

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#### 6.21.1 General

**R4-2202015 Work split on RRM core requirements for postioning**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

The paper provides structure of requirements and work split for CRs

**Session chair: moved from AI 6.21.2.1 to 6.26.1**

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

**R4-2202016 Big DraftCR on Positioning Enhancement**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This is Big Draft CR provided by rapporteur providing skeleton structure

**Session chair: moved from AI 6.21.2.1 to 6.26.1**

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

#### 6.21.2 RRM core requirements

##### 6.21.2.1 UE Rx/Tx and/or gNB Rx/Tx timing delay mitigation

**R4-2200118 Discussion on UE Rx/Tx and/or gNB Rx/Tx timing delay mitigation**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200119 Reply LS on the reporting of the Tx TEG association information**

*Type: LS out For: Approval  
 to RAN1, cc RAN2/RAN3  
 Source: CATT*

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

**R4-2200540 Discussion on timing mitigating for NR positioning enhancement**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200668 Further discussion on timing delay error mitigation**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200757 On UE Rx/Tx timing error mitigation**

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

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

**R4-2201163 Discussion on UE Rx/Tx and/or gNB Rx/Tx timing delay mitigation**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201293 Impact of RX/TX TEG on UE requirements**

*Type: discussion For: (not specified)  
 Source: Ericsson Inc.*

**Decision: Withdrawn.**

**R4-2201398 UE RxTx and gNB RxTx timing delay mitigation**

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

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

**R4-2201636 Discussion on timing error mitigation for positioning**

*Type: LS out For: Approval  
 to RAN1, RAN2, cc RAN3  
 Source: Huawei, Hisilicon*

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

**R4-2201668 Impact of RX/TX TEG on UE requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution addresses open issues on TEG

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

**R4-2201982 Discussion on timing error mitigation for NR positioning**

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

**Abstract:**

Discussion on timing error mitigation for NR positioning

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

##### 6.21.2.2 Latency reduction of positioning measurement

**R4-2200120 Discussion on latency reduction of positioning measurement**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200541 Discussion on latency reduction for NR positioning enhancement**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200542 Simulation results summary for conditions with less PRS measurement samples**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200637 Discussion on latency reduction of positioning measurement**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200645 Discussion on latency reduction of positioning measurement**

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

**Abstract:**

Discussion on latency reduction of Rel-17 positioning measurement

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

**R4-2200646 Discussion on PRS measurement performance with reduced sample**

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

**Abstract:**

Discussion on simulation results of PRS measurements with reduced sample

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

**R4-2200664 Simulation results for PRS measurement with reduced sample**

*Type: other For: Information  
 Source: vivo*

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

**R4-2200665 Further discussion on latency reduction of positioning measurement**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200667 Reply LS on the condition of PRS measurement outside the MG**

*Type: LS out For: Approval  
 to RAN1  
 Source: vivo*

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

**R4-2200758 Simulation results with reduced number of PRS samples**

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

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

**R4-2200759 On latency reduction of NR positioning measurements**

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

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

**R4-2201164 Discussion on latency reduction of positioning measurements**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201294 Link level simulation results for latency reduction for UE measurements**

*Type: discussion For: (not specified)  
 Source: Ericsson Inc.*

**Decision: Withdrawn.**

**R4-2201306 On latency reduction for positioning measurement**

*Type: discussion For: (not specified)  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Ericsson Inc.*

**Decision: Withdrawn.**

**R4-2201370 Draft CR to 38.133 Introducing requirements for latency reduction of positioning measurement**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

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

**R4-2201399 Discussions on latency reduction of positioning measurement**

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

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

**R4-2201637 Simulation results for reduced sample number for PRS measurement**

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

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

**R4-2201638 On latency reduction for positioning measurement**

*Type: LS out For: Approval  
 to RAN1  
 Source: Huawei, Hisilicon*

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

**R4-2201639 CR on latency reduction of positioning measurements**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2201669 Link level simulation results for latency reduction for UE measurements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses simulation results for latency reduction

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

**R4-2201670 On latency reduction for positioning measurement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discussess impact of sample reduction on positioning accuracy

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

##### 6.21.2.3 Measurement in RRC\_INACTIVE state

**R4-2200121 Discussion on measurement in RRC\_INACTIVE state**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200543 Discussion on measurements in RRC\_INACTIVE for NR positioning enhancement**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200636 Discussion on positioning measurement in RRC\_INACTIVE state**

*Type: discussion For: Discussion  
 Source: CMCC*

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

**R4-2200760 On NR positioning measurements in RRC\_INACTIVE**

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

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

**R4-2201165 Discussion on PRS measurements in RRC\_INACTIVE state**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201364 Further discussion on measurement in RRC\_INACTIVE state**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2201400 Positioning measurements in RRC\_INACTIVE state**

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

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

**R4-2201640 Discussion on PRS measurement in RRC\_INACTIVE**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Huawei, Hisilicon*

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

**R4-2201641 CR on positioning measurements in RRC Inactive state**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2201983 Discussion on measurement in RRC\_INACTIVE state**

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

**Abstract:**

Discussion on positioning measurements in RRC\_Inactive

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

**R4-2202017 Analysis PRS measurement requirements in RRC inactive state**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper further analyzes the positioning requirements in RRC inactive state

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

##### 6.21.2.4 Impact on existing UE positioning and RRM requirements

**R4-2200122 Discussion on impact on existing UE positioning and RRM requirements**

*Type: discussion For: Discussion  
 Source: CATT*

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

**R4-2200647 Discussion on Impact on NR positioning RRM requirements**

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

**Abstract:**

Discussion on Impact on existing UE positioning and RRM requirements including SRS antenna port switching

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

**R4-2200663 Further discussion on impact to existing UE positioning and RRM requirements**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2201166 Impacts of SRS antenna port switching on positioning**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201307 Impact of enhanced positioning on existing RRM**

*Type: discussion For: (not specified)  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Ericsson Inc.*

**Decision: Withdrawn.**

**R4-2201401 Impact on existing UE positioning and RRM requirements**

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

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

**R4-2201642 Discussion on RAN4 specific enhancements for positioning**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Huawei, Hisilicon*

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

**R4-2201671 Impact of enhanced positioning on existing RRM**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discsses impact of enhanced positioning procedures on RRM procedures.

**Decision: Noted.**

**R4-2202018 Impact of RRM on positioning requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper further analyzes the impact of RRM on positioning requirements

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

##### 6.21.2.5 Enhancements of A-GNSS positioning

##### 6.21.2.6 Others

**R4-2200123 Reply LS on the condition of PRS measurement outside the MG**

*Type: LS out For: Approval  
 to RAN1  
 Source: CATT*

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

**R4-2200124 Reply LS on lower Rx beam sweeping factor for latency improvement**

*Type: LS out For: Approval  
 to RAN1  
 Source: CATT*

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

**R4-2200648 Discussion on other items of NR ePos requirements**

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

**Abstract:**

Discussion on DL PRS path RSRP, UL SRS path RSRP and RSTD reporting enhancement

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

**R4-2200662 Further discussion on First path PRS-RSRP requirments**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2200666 Link level simulation assumption for first path PRS-RSRP measurement**

*Type: discussion For: Approval  
 Source: vivo*

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

**R4-2201167 Other issues of positioning enhancements for NR**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201309 LS response on SRS on UL SRS-RSRPP definition**

*Type: LS out For: (not specified)  
 to RAN1  
 Source: Ericsson Inc.*

**Decision: Withdrawn.**

**R4-2201402 on PRS measurement outside the measurement gap**

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

**Abstract:**

This paper discusses the matter of PRS measurement outside the measurement gap based on RAN1 LS.

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

**R4-2201643 Discussion on path RSRP**

*Type: LS out For: Approval  
 to RAN1  
 Source: Huawei, Hisilicon*

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

**R4-2201672 LS response on SRS on UL SRS-RSRPP definition**

*Type: LS out For: Approval  
 to RAN1  
 Source: Ericsson*

**Abstract:**

This contribution is a response to LS sent out by RAN1 on reference point for UL SRS-RSRPP measurement.

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

### 6.22 Multi-Radio Dual-Connectivity enhancements

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**Email discussion: [101-bis-e][224] LTE\_NR\_DC\_enh2**

**R4-2202575 Email discussion summary: [101-bis-e][224] LTE\_NR\_DC\_enh2**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (January 19, 2022)**

**Sub-topic 1-1: MAC CE/ DCI based SCell activation**

Issue 1-1-1: Whether RAN4 need to specify requirements for Option 2 in LS [R4-2107609]

* Proposals
  + Option 1a (MTK, Apple, OPPO, Huawei): No, RAN4 only specify requirements for option 1a in LS [R4-2107609].
  + Option 1b (Nokia): UE requirements for Option 2 can be defined provided they are defined as UE requirements without functional requirements.
  + Option 2 (QC, Ericsson): Yes, RAN4 specify requirements for both option 1a and option 2 in LS [R4-2107609]
* Discussion
  + TBA
* Agreements
  + TBA

**Sub-topic 1-4: Multiple SCell activation enhancement**

Issue 1-4-1: Whether option 1a based multiple SCell activation delay need to be specified?

* Proposals
  + Option 1(QC): yes
* Discussion
  + TBA
* Agreements
  + TBA

**Topic #2: Efficient activation/de-activation mechanism for one SCG**

Issue 2-1-1: DRX configuration for deactivated SCG measurement requirements

* Proposals
  + Option 1a (MTK, Apple, vivo, Nokia, Ericsson, QC): Introduce a parameter measCyclePSCell for relaxation of RRM measurement on deactivated PSCell
  + Option 1b (QC):
    - Apply requirements corresponding to a hypothetical DRX cycle of [X] for all L1/L3 measurement requirements, i.e. measurement period is defined assuming DRX Cycle of [X] is applied to all cells in SCG, and X is FFS, e.g. 320ms,, 640ms, etc.
    - For deactivated PSCell L3 measurement period requirements, SMTC period is replaced with measCycleSCell
  + Option 2 (Intel, Huawei): Specify deactivated SCG measurement requirements assuming no RRM relaxation; and revisit the details if needed after RAN2 conclusions.

**1st round email discussion conclusions**

**New tdocs**

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**2nd round email discussion conclusions**

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**WF/LS for approval**

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#### 6.22.1 General

#### 6.22.2 RRM core requirements

##### 6.22.2.1 Efficient activation/de-activation mechanism for SCells

**R4-2200063 Discussion on efficient activation/de-activation mechanism for SCell**

*Type: discussion For: Discussion  
 Source: MediaTek (Shenzhen) Inc.*

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

**R4-2200248 On efficient activation/de-activation mechanism for SCells**

*Type: discussion For: (not specified)  
 Source: Apple*

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

**R4-2200403 Draft CR for Interruption due to A-TRS based fast SCell activation**

*Type: draftCR For: Approval  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

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

**R4-2200423 Efficient activation and deactivation mechanism for SCells**

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

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

**R4-2201149 Discussion on efficient activation/de-activation mechanism for Scells**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201179 Discussion on efficient activation/de-activation mechanism for Scells**

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

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

**R4-2201180 Draft CR on fast activation delay**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2201690 Discussion on efficient activation/de-activation mechanism for Scells**

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

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

**R4-2201886 On efficient (de)activation of Scell**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Scell activation delay discussion

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

##### 6.22.2.2 Efficient activation/de-activation mechanism for one SCG

**R4-2200064 Discussion on efficient activation/de-activation mechanism for one SCG**

*Type: discussion For: Discussion  
 Source: MediaTek (Shenzhen) Inc.*

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

**R4-2200249 On efficient activation/de-activation mechanism for one SCG**

*Type: discussion For: (not specified)  
 Source: Apple*

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

**R4-2200250 CR on interruptions due to SCG activation/deactivation**

*Type: draftCR For: (not specified)  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Apple*

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

**R4-2200424 Efficient activation and deactivation mechanism for one SCG**

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

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

**R4-2200526 Discussion on efficient activation for one SCG**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2200527 DraftCR on interruptions due to RRM measurements on deactivated SCG**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

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

**R4-2200652 Further discussion on efficient activation deactivation mechanism for one SCG**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2201150 Discussion on efficient activation/de-activation mechanism for one SCG**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201181 Discussion on efficient activation/de-activation mechanism for one SCG**

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

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

**R4-2201691 Views on efficient activation/de-activation mechanism for one SCG**

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

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

**R4-2201761 CR on TS36.133 for interruptions due to SCG activation/deactivation**

*Type: draftCR For: (not specified)  
 36.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Apple*

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

**R4-2201887 On efficient (de)activation of SCG**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

SCG activation delay, interruption, deactivated status measurement relaxation

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

**R4-2201890 Interruptions requirments due to RLM/BFD on deactivated SCG**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

draft CR for Interruptions due to RLM/BFD on deactivated SCG

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

##### 6.22.2.3 Conditional PSCell change and addition

**R4-2200065 Discussion on conditional PSCell addition**

*Type: discussion For: Discussion  
 Source: MediaTek (Shenzhen) Inc.*

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

**R4-2200066 Draft CR on 38.133 for Conditional PSCell addition delay**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: MediaTek (Shenzhen) Inc.*

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

**R4-2200251 On conditional PSCell change and addition**

*Type: discussion For: (not specified)  
 Source: Apple*

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

**R4-2200653 Further discussion on conditional PSCell change and addition**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2201151 Discussion on conditional PSCell change and addition**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201182 Discussion on conditional PSCell change and addition**

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

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

**R4-2201692 Conditional PSCell change and addition**

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

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

**R4-2201888 On conditional Pscell change addition**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Conditional Pscell change delay

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

##### 6.22.2.4 Others

**R4-2201152 Draft CR to 38133 on SCG Activation and deactivation delay**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: OPPO*

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

**R4-2201153 Draft CR to 36133 on SCG Activation and deactivation delay**

*Type: draftCR For: Endorsement  
 36.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: OPPO*

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

**R4-2201889 LS on Measurement requirement for deactivated SCG**

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

**Abstract:**

Draft LS to RAN 2 to clarify whether will introduce parameter for deactivated SCG measurement

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

### 6.23 Enhanced IIoT and URLLC support

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**Email discussion: [101-bis-e][225] NR\_IIOT\_URLLC\_enh**

**R4-2202576 Email discussion summary: [101-bis-e][225] NR\_IIOT\_URLLC\_enh**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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#### 6.23.1 General

#### 6.23.2 RRM core requirements

##### 6.23.2.1 Propagation delay compensation enhancements

**R4-2201168 Discussion on propagation delay compensation enhancements**

*Type: discussion For: Discussion  
 Source: OPPO*

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

**R4-2201368 Further discussion on propagation delay compensation enhancements**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2201584 Propagation Delay Compensation Enhancements for Time Synchronization**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Requirements for RTT PDC.

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

**R4-2201633 On RRM requirements for PDC enhancements**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Huawei, Hisilicon*

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

**R4-2201634 CR on requirements for UE Rx-Tx measurement for PDC**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

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

**R4-2201721 Discussion of RRM Requirements for Propagation Delay Compensation Enhancements**

*Type: discussion For: Discussion  
 Source: Nokia*

**Decision: Withdrawn.**

**R4-2201723 Discussion of RRM Requirements for Propagation Delay Compensation Enhancements**

*Type: discussion For: Discussion  
 Source: Nokia*

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

**R4-2201781 RTT-based PDC enhancements in URLLC**

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

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

##### 6.23.2.2 Reference point for Te requirements

**R4-2200528 DraftCR to clarify timing reference point for UE UL timing test cases**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Intel Corporation*

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

**R4-2201369 Further discussion on reference point for Te requirements**

*Type: discussion For: Discussion  
 Source: vivo*

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

**R4-2201635 On reference point for Te requirements**

*Type: LS out For: Approval  
 to RAN1  
 Source: Huawei, Hisilicon*

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

**R4-2201673 Discussion on reference point for Te requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

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

**R4-2201722 Further discussion on the reference point for UE transmit timing requirement**

*Type: discussion For: Discussion  
 Source: Nokia*

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

**R4-2201782 Reference point for Te requirements**

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

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

**R4-2202013 LS response on UE transmit timing error**

*Type: LS out For: Approval  
 to RAN1  
 Source: Ericsson*

**Abstract:**

This document further analyze the remaining issue of the reference point definition for UE timing error requirements. It is continuation of LS response to RAN1 in R4-2105850.

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

**R4-2202014 Correction to reference point defintion for UE timing in TS 38.133**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson, Intel, Huawei, HiSilicon*

**Abstract:**

Definition of reference point for UE timing error is clarified

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

##### 6.23.2.3 Others

### 6.24 NR Sidelink Relay

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**Email discussion: [101-bis-e][226] NR\_SL\_relay**

**R4-2202577 Email discussion summary: [101-bis-e][226] NR\_SL\_relay**

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

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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#### 6.24.1 General

**R4-2201154 CR to 38133 on measurement requirements for Selection/reselection of relay UE**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: OPPO*

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

#### 6.24.2 RRM core requirements

**R4-2200324 On NR SL relay RRM Requirement**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

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

**R4-2200330 CR: SL discovery signal intra-frequency measurement accuracy requirements**

*Type: draftCR For: Approval  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Qualcomm, Inc.*

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

**R4-2201155 RRM requirements for SL relay (re)selection**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision:** The document was **not treated**.

**R4-2201619 Discussion on RRM requirements for R17 NR sidelink relay**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**R4-2201620 DraftCR on interruption requirements for NR SL relay**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**R4-2201872 RRM requirements for Rel-17 SL relay operation**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

The release 17 work item on NR sidelink relay was discussed at previous meeting, work plan was agreed and a number of issues were identified for further discussions in [1]. In this contribution, we discuss and provide our view on those.

**Decision:** The document was **not treated**.

### 6.25 NR small data transmissions in INACTIVE state

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**Email discussion: [101-bis-e][227] NR\_SmallData\_INACTIVE**

**R4-2202578 Email discussion summary: [101-bis-e][227] NR\_SmallData\_INACTIVE**

*Type: other For: Information  
 Source: Moderator (ZTE)*

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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**Existing tdocs**

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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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#### 6.25.1 General and work plan

**R4-2200918 On BS demodulation performance requirements for CG-SDT**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion n requirements for CG-SDT and proposals on how to handle remaining timing offset errors in RAN4.

**Decision:** The document was **not treated**.

#### 6.25.2 RRM core requirements

**R4-2200300 On RRM requirement for CG-SDT**

*Type: discussion For: Discussion  
 38.133 v CR- rev Cat: (Rel-17)  
  
 Source: Apple*

**Decision:** The document was **not treated**.

**R4-2200417 RRM requirements for NR-SDT**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Abstract:**

We continue to discuss the RRM requirments for NR-SDT

**Decision:** The document was **not treated**.

**R4-2200919 TA validation requirements for CG-SDT**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on TA validation requirements, and proposals on improvements in relation to the LTE PUR requirements.

**Decision:** The document was **not treated**.

**R4-2200920 Draft CR TA validation for Small Data Transmissions**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction of TA validation core requirements for CG-SDT.

**Decision:** The document was **not treated**.

**R4-2201644 Discussion on remaining issues for SDT RRM**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**R4-2201645 CR on UL timing requirements for SDT**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**R4-2201792 Draft big CR for SDT RRM requirements**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Worksplit according to the approved workplan for SDT RRM requirements (R4-2120339)

**Decision:** The document was **not treated**.

**R4-2201793 Further discussion on RRM requirements for SDT**

*Type: discussion For: Discussion  
 Source: ZTE Wistron Telecom AB*

**Decision:** The document was **not treated**.

**R4-2201853 RRM requirements for SDT**

*Type: discussion For: Discussion  
 Source: MediaTek Inc.*

**Decision:** The document was **not treated**.

**R4-2201869 Discussions on RRM requirements for Small Data Transmissions**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we provide an overview of the RRM requirements for CG-SDT that RAN4 needs to introduce.

**Decision:** The document was **not treated**.

**R4-2201870 Draft CR to TS 38.133: Requirements on UE synchoronization for SDT**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

According to workplan in R4-2120339, requirements are UE synchonization for small data transmissions are introduced in this CR.

**Decision:** The document was **not treated**.

### 6.26 Support for Multi-SIM devices for LTE/NR

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**Email discussion: [101-bis-e][228] LTE\_NR\_MUSIM**

**R4-2202579 Email discussion summary: [101-bis-e][228] LTE\_NR\_MUSIM**

*Type: other For: Information  
 Source: Moderator (vivo)*

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

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| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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#### 6.26.1 General and work plan

**R4-2200669 Work plan for Multi-SIM devices for LTE/NR**

*Type: Work Plan For: Approval  
 Source: vivo*

**Decision:** The document was **not treated**.

**R4-2200385 Work plan for Multi-SIM devices for LTE/NR**

*Type: discussion For: Approval  
 Source: vivo*

**Session chair: moved from AI 6.21.1 to 6.26.1**

**Decision:** The document was **withdrawn**.

**R4-2201210 Further LS response on gap handling for MUSIM**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the LS on gap handling for MUSIM

**Decision:** The document was **not treated**.

#### 6.26.2 RRM core requirements

**R4-2200386 On MUSIM requirements**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision:** The document was **not treated**.

**R4-2200402 Draft CR for introducing gap patterns for MUSIM**

*Type: draftCR For: Approval  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: vivo*

**Decision:** The document was **not treated**.

**R4-2200428 Discussion on MUSIM requirements**

*Type: discussion For: Discussion  
 Source: Charter Communications, Inc*

**Decision:** The document was **not treated**.

**R4-2200529 Discussion on MUSIM RRM impacts**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Decision:** The document was **not treated**.

**R4-2200672 Discussion on RAN2 LS (R2-2108861) on gap handling for MUSIM**

*Type: discussion For: (not specified)  
 Source: Apple*

**Decision:** The document was **not treated**.

**R4-2200683 Discussion on the gap pattern for MUSIM**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Decision:** The document was **not treated**.

**R4-2201169 Discussion on RRM core requirements for Multi-SIM devices**

*Type: discussion For: Discussion  
 Source: OPPO*

**Decision:** The document was **not treated**.

**R4-2201211 New gap pattern for MUSIM**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the new MGPs for MUSIM

**Decision:** The document was **not treated**.

**R4-2201212 draftCR on New gap pattern for MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

This draftCR introduce the new MGPs for MUSIM

**Decision:** The document was **not treated**.

**R4-2201646 Discussion on gap patterns for MU-SIM**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**R4-2201647 CR on measurement gap patterns for MUSIM**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**R4-2201698 Requirements for MUSIM switching gaps**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **not treated**.

**R4-2201699 Introduction of MUSIM switching gaps**

*Type: draftCR For: Endorsement  
 38.133 v17.4.0 CR- rev Cat: (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **not treated**.

## 8 Rel-17 Work Items for LTE

### 8.9 Additional enhancements for NB-IoT and LTE-MTC

#### 8.9.4 RRM core requirements

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**Email discussion: [101-bis-e][229] NB\_IOTenh4\_LTE\_eMTC6\_RRM**

**R4-2202580 Email discussion summary: [101-bis-e][229] NB\_IOTenh4\_LTE\_eMTC6\_RRM**

*Type: other For: Information  
 Source: Moderator (Huawei)*

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
|  |  |  |  |  |

**2nd round email discussion conclusions**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
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**WF/LS for approval**

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##### 8.9.4.1 Neighbour cell measurement in RRC Connected state for NB-IoT

**R4-2200764 On NB-IoT neighbor cell measurements in RRC\_CONNECTED**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision:** The document was **not treated**.

**R4-2201208 Discussion on RRM requirements for Rel-17 NB-IoT**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**R4-2201437 Draft CR on including channel quality table for 16 QAM for Rel-17 NB-IoT**

*Type: draftCR For: Endorsement  
 36.133 v17.4.0 CR- rev Cat: B (Rel-17)  
  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**R4-2201866 Discussions on remaining issues of RRM requirements for NB-IoT**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contriution we discuss the open issues of Rel-17 NB-IoT.

**Decision:** The document was **not treated**.

#### 8.9.5 Others

**R4-2201431 Introduction of channel quality report table for NB-IoT supporting 16QAM**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution proposes how to capture the channel quality reporting mapping table in RAN4 specification.

**Decision:** The document was **not treated**.

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**Email discussion: [101-bis-e][2xx] TBA**

**R4-22xxxxx Email discussion summary: [101-bis-e][2xx] TBA**

*Type: other For: Information  
 Source: Moderator (TBA)*

**Abstract:**

**Discussion:**

**Decision: Return to.**

**GTW session (TBA)**

**1st round email discussion conclusions**

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Comments** |
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**Existing tdocs**

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| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
|  |  |  |  |  |

**2nd round email discussion conclusions**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
|  |  |  |  |  |

**WF/LS for approval**

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**R4-22AAAAA WF on XXXX**

*Type: other For: Approval  
 Source: TBA*

**Abstract:**

**Discussion:**

**Decision: Return to.**