**3GPP TSG-RAN WG4 Meeting # 100-e R4-211XXXX**

**Electronic Meeting, 16th – 27th August, 2021**

**Agenda item:** 6.1.9.3, 6.1.2.3, 6.1.2.4, 6.1.4.2, 6.1.4.3, 6.1.10.3, 6.3

**Source:** Moderator (Apple)

**Title:** Email discussion summary for [100-e][205] NR\_RRM\_maintenance\_R16

**Document for:** Information

# Introduction

Rel-16 NR RRM maintenance (general)

Rel-16 NR IAB RRM maintenance

Rel-16 MR-DC RRM maintenance

Rel-16 TEI: RRM requirements

R16 UE feature list (RRM aspects)

1) Include all R16 NR RRM maintenance not expplicitly mentioned in other threads (NR eMob, Power saving, HST, FR1 RF, FR2 RF, 2 step RACH)
2) R15 NR WI draft CRs R4-2111899, R4-2111900, R4-2112953, R4-2112955, R4-2114442, R4-2114443, R4-2114444 are moved to threads 201/202
3) Feature list: R4-2112261

# Topic #1: On direct SCell activation

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2112078**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112078.zip) | Apple | Proposal 1: Measurement period threshold value for requirement branching in NR FR1 should be:* **Case 1: Activation delay for an SCell which was a deactivated SCell prior to e.g. HO and now target for the direct SCell activation.**
	+ **Reuse requirements in 8.3.2**
* **Case 2: Other cells (i.e. cells which were not deactivated SCell prior to being target SCell in the direct activation)**
	+ **If the SCell is known and belongs to FR1, TCSI\_Reporting is specified in clause 8.3.2 and Tactivation\_time is defined as:**
		- **TFirstSSB+ 5ms, if the measurement period is equal to or smaller than [1280]ms.**
		- **TFirstSSB\_MAX + Trs + 5ms, if measurement period is larger than [1280]ms.**
 |
| [**R4-2114010**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114010.zip) | Nokia | 1. Revert the change related to baseline SCell activation delay in section 8.3.2 made in RAN4#99.
2. Define direct activation delay requirements for a direct activated cell not having been measured using measCycleScell
3. Increase the measurement period threshold used for Tactivation\_time for direct NR FR1 SCell activation from 1280ms.
4. RAN4 to define the measurement period threshold equal 5 seconds.
5. RAN4 to agree on option 5.
 |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 1-1

**Issue 1-1: for the known target cell in FR1, whether to define different requirements for the following two cases:**

1. **the SCell being direct activated has been measured using measCycleSCell**
2. **the SCell being direct activated has NOT been measured using measCycleSCell**
* Proposals
	+ Option 1: yes (Apple, Nokia)
	+ Option 2: no (Huawei)
* Recommended WF
	+ Apple and Nokia proposed option 1. Option 2 is not proposed but implicitly reflected in Huawei’s CR. Discussion is needed.

**Issue 1-2: if option 1 in issue 1-1 is agreed, what’s the condition for allowing additional time for AGC for case 1, i.e. the SCell being direct activated has been measured using measCycleSCell?**

* Proposals
	+ Option 1: Reuse legacy SCell activation requirements as defined in 8.3.2 (Apple, Nokia)
	+ Option 2: no (Huawei)
* Recommended WF
	+ Apple and Nokia proposed option 1. Option 2 is not proposed but implicitly reflected in Huawei’s CR. Discussion is needed.

**Issue 1-3: if option 1 in issue 1-1 is agreed, what’s the condition for allowing additional time for AGC for case 2, i.e. the SCell being direct activated has NOT been measured using measCycleSCell?**

* Proposals
	+ Option 1: follow agreement in RAN4#98-e-bis (Apple)
		- If the SCell is known and belongs to FR1, TCSI\_Reporting is specified in clause 8.3.2 and Tactivation\_time is defined as:
			* TFirstSSB+ 5ms, if the measurement period is equal to or smaller than [1280]ms.
			* TFirstSSB\_MAX + Trs + 5ms, if measurement period is larger than [1280]ms.
	+ Option 2: change [1280]ms to 2400ms to align with normal SCell activation (Huawei)
		- If the SCell is known and belongs to FR1, TCSI\_Reporting is specified in clause 8.3.2 and Tactivation\_time is defined as:
			* TFirstSSB+ 5ms, if the measurement period is equal to or smaller than 2400ms.
			* TFirstSSB\_MAX + Trs + 5ms, if measurement period is larger than 2400ms.
	+ Option 3 change [1280]ms to 5s (Nokia)
		- If the SCell is known and belongs to FR1, TCSI\_Reporting is specified in clause 8.3.2 and Tactivation\_time is defined as:
			* TFirstSSB+ 5ms, if the measurement period is equal to or smaller than 5s.
			* TFirstSSB\_MAX + Trs + 5ms, if measurement period is larger than 5s.
* Recommended WF
	+ Discussion is needed.

## Companies views’ collection for 1st round

### Open issues

Sub topic 1-1: remaining issue on the direct SCell activation

|  |  |
| --- | --- |
| **Company** | **Comments** |
| MTK | **Issue 1-1**Support Option 2. We are not sure whether Case 1 is a typical case in the real network. Typically, if an SCell has such a large coverage that it can be overlapped by both source and target PCells, then it should be configured as a PCell instead. **Issue 1-2**No need to have this discussion.**Issue 1-3**Firstly, even if Option 1 in Issue 1-1 is not agreed, we still need to discuss the requirement for Case 2. And we support Option 2 to align with the updated Rel-15 spec. |
| Ericsson | Issue 1-1:We support Option 1.Issue 1-2:We support Option 1.Issue 1-3:We support Option 2 (align to 2400ms i.e. to SCell activation baseline). |
| Qualcomm | **Issue 1-1 ~ I-3**We don’t have a strong opinion on the issues, but slightly prefer Option 2 to all three issues just from spec readability perspective. And as 2400ms was already adopted for the condition of FR1 known SCell AGC, we do not see much point in considering smaller values for essentially the same criterion, if we’re not missing something here. |
| Apple | Issue 1-1:We support option 1. In our view, case 1 is a possible scenario.Issue 1-2:Support option 1.Issue 1-3:We support option 1 and can also accept option 2. |
| Nokia | **Issue 1-1: for the known target cell in FR1, whether to define different requirements for the following two cases:**1. **the SCell being direct activated has been measured using measCycleSCell**
2. **the SCell being direct activated has NOT been measured using measCycleSCell**

Option 1:As discussed in our paper we believe such split will ensure that RAN4 correctly cover both scenarios addressing legacy when the target cell is a former SCell which has been measured (hence, had the parameter measCycleScell configured) and when the target cell is not a former SCell (and hence does not have the parameter measCycleScell configured).**Issue 1-2: if option 1 in issue 1-1 is agreed, what’s the condition for allowing additional time for AGC for case 1, i.e. the SCell being direct activated has been measured using measCycleSCell?**Option 1.In our understanding the behavior here is similar to legacy and the legacy requirements in section 8.3.2 applies.**Issue 1-3: if option 1 in issue 1-1 is agreed, what’s the condition for allowing additional time for AGC for case 2, i.e. the SCell being direct activated has NOT been measured using measCycleSCell?**Option 3 is preferred. As discussed, using 1280ms is very short considering impact from other potential measurements ongoing. The side effect of having such short time can be limitations in the used DRX in connected mode, it becomes difficult to use deactivated state and SCells are kept in activated state.  |
| Huawei | Issue 1-1:No strong view. We slightly prefer option 2 but we can also accept option 1 if companies consider it as a valid scenario to cover.Issue 1-2:Support option 1, if option 1 is agreed for issue 1-1 Issue 1-3:Option 2. |

### CRs/TPs comments collection

*For close-to-finalize WIs and maintenance work, comments collections can be arranged for TPs and CRs. For ongoing WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [**R4-2112079**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112079.zip)CR on direct SCell activation (R16) | MTK: pending on the Open issue discussion |
| Ericsson: We would like to see [2400]ms instead. |
| Apple: pending outcome of open issue. We can revise the CR accordingly. |
| Nokia: Need more discussion and pending ongoing discussion |
| [**R4-2114011**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114011.zip) **Draft CR for Direct SCell activation delay** | MTK: pending on the Open issue discussion |
| Ericsson: We would like to see [2400]ms instead. |
| Apple: we don’t think RAN4 shall revert change w.r.t. SCell measurement cycle, which has been discussed and agreed in previous RAN4 meeting. |
| Nokia: Need more discussion and pending ongoing discussion |
| [**R4-2114267**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114267.zip)CR on direct SCell activation requirements | MTK: pending on the Open issue discussion |
| Apple: pending outcome of discussion on the open issue. |
| Nokia: Need more discussion and pending ongoing discussion |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic #1** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

## Discussion on 2nd round (if applicable)

# Topic #2: scheduling restriction applicability for FR1 and FR1+FR2 inter-band CA

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2112121**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112121.zip) | Apple | ***Proposal 1: RAN4 to introduce applicability of scheduling availability requirement for FR1 inter-band CA such that the scheduling availability requirements for FR1 inter-band CA are not applicable if the network configures simultaneous UL/DL between two FR1 bands but the UE does not have the capability of supporting simultaneousRxTxInterBandCA.******Proposal 2: RAN4 to introduce applicability of scheduling availability requirement for FR1+FR2 inter-band CA such that the scheduling availability requirements for FR1+FR2 CA are not applicable if the network configures simultaneous UL/DL between FR1 and FR2 bands but the UE does not have the capability of supporting simultaneousRxTxInterBandCA*** ***on this band combination.*** |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 2-1

**Proposal 1: RAN4 to introduce applicability of scheduling availability requirement for FR1 inter-band CA such that the scheduling availability requirements for FR1 inter-band CA are not applicable if the network configures simultaneous UL/DL between two FR1 bands but the UE does not have the capability of supporting simultaneousRxTxInterBandCA.**

**Proposal 2: RAN4 to introduce applicability of scheduling availability requirement for FR1+FR2 inter-band CA such that the scheduling availability requirements for FR1+FR2 CA are not applicable if the network configures simultaneous UL/DL between FR1 and FR2 bands but the UE does not have the capability of supporting simultaneousRxTxInterBandCA on this band combination.**

## Companies views’ collection for 1st round

### **Open issues**

**Subtopic 2-1: scheduling restriction applicability for FR1 and FR1+FR2 inter-band CA**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| MTK | It is not clear by saying “the scheduling applicability requirement is not applicable, do”, because one may assume that UE still has to transmit UL signal even if it collides with symbols for DL measurement. We prefer to have sentence like All requirements in x.y.z, … assume the network will not configure simultaneous UL/DL between two FR1 bands if the UE does not indicate the supporting of simultaneousRxTxInterBandCA |
| Ericsson | We are fine with introducing scheduling restriction on inter-band CA for FR1 and FR1 with FR2 for the case where the UE does not have the capability of supporting simultaneousRxTxInterBandCA. |
| Apple | Reply to MTK’s comment:Our original wording is to reuse the same wording in existing section 3.6.9, and no scheduling restriction requirement applied means UE behavior is up to implementation. But we are open to adopt MTK’s suggestion on the wording if infra vendors are also fine. |
| Nokia | In general, we see this as a network configuration error for which RAN4 would not need to define anything. Anyhow, due to having some existing similar requirements we can accept this update. Alternative is removing this section?However, for FR1+FR2 inter-band CA, there is no scheduling restrictions between the bands, and it is not fully clear why we need to specify the scheduling restriction applicability.  |
| Huawei | We think this is a valid issue and we agree to consider UE capability on simultaneous Tx/Rx for FR1 inter-band CA and FR1+FR2 CA, but we think the statement “the scheduling applicability requirement is not applicable” is ambiguous. It may be understood as UE is not required to Tx or Rx during some time period (which is unclear), but we understand that UE is only allowed to not Tx (but can still Rx) following the existing scheduling restriction for FR1 TDD (where UE is assumed to perform the DL measurement). We suggest to capture the exact scheduling restriction e.g. in clause 9.2.5.3 |

### CRs/TPs comments collection

*Major close to finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [**R4-2112122**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112122.zip)Draft CR on scheduling restriction applicability for FR1 and FR1+FR2 inter-band CA R16 | MTK: As commented in sub-topic 2-1. |
| Ericsson: OK |
| Qualcomm: Should we include following?for FR1-FR2 inter-band CA, 9.5A.6.3/9.8.6.4For FR1 inter-band CA, 9.7.4.1/9.8.6.1/9.8.6.2 |
| Nokia: It depends on the conclusion of subtopic 2-1. |
| Huawei: pending on the conclusion of subtopic 2-1. |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic#1** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

*Moderator can provide summary of 2nd round here. Note that recommended decisions on tdocs should be provided in the section titled ”Recommendations for Tdocs”.*

# Topic #3: Void

# Topic #4: measurement requirements for relaxed carriers and non-relaxed carriers

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2113826**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113826.zip) | Huawei | **Proposal1: When Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ, measurements for UE fulfilling low mobility or not-at-cell edge criteria UE are specified as Ncarrier\_Relax \* Trelax + Ncarrier\_Non\_relax \* Tnon-Relax** **where** **Trelax is the relaxed measurement requirements specified in clause 4.2.2.10 and 4.2.2.11 in TS38.133,****Tnon-Relax is the normal measurement requirements specified in clause 4.2.2.4 and 4.2.2.5 in TS38.133,****Ncarrier\_Relax is the total number of configured inter-frequency/inter-RAT carriers required to meet relaxed measurement requirements (i.e., non-EMR carriers and EMR carriers while T331 is not running).****Ncarrier\_Relax is the total number of configured inter-frequency/inter-RAT carriers required to meet non relaxed measurement requirements (i.e., EMR carriers while T331 is running).** |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 3-1

**Proposal: When Srxlev ≤ SnonIntraSearchP or Squal ≤ SnonIntraSearchQ, measurements for UE fulfilling low mobility or not-at-cell edge criteria UE are specified as Ncarrier\_Relax \* Trelax + Ncarrier\_Non\_relax \* Tnon-Relax**

**where**

**Trelax is the relaxed measurement requirements specified in clause 4.2.2.10 and 4.2.2.11 in TS38.133,**

**Tnon-Relax is the normal measurement requirements specified in clause 4.2.2.4 and 4.2.2.5 in TS38.133,**

**Ncarrier\_Relax is the total number of configured inter-frequency/inter-RAT carriers required to meet relaxed measurement requirements (i.e., non-EMR carriers and EMR carriers while T331 is not running).**

**Ncarrier\_Relax is the total number of configured inter-frequency/inter-RAT carriers required to meet non relaxed measurement requirements (i.e., EMR carriers while T331 is running).**

## Companies views’ collection for 1st round

### **Open issues**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| MTK | One comment to the proposal about the definition for **Ncarrier\_Relax**. If T331 timer already expired, UE should be allowed to even not to measure any non-overlapping EMR carriers. Then, why should we still need to count the EMR carriers in **Ncarrier\_Relax**? Suggest to revise the definition like* **(i.e., non-EMR carriers and ~~non-~~overlapping EMR carriers while T331 is not running)**
 |
| Ericsson | The current requirements are clear and cover all cases involving EMR and non-EMR carriers. The interworking between EMR and non-EMR carriers in relaxed mode was discussed also in release 16 which led to current requirements based on EMR timer. Our view is that current requirements are complete and should be kept as they as. In addition, the power saving gain when UE is in relaxed mode on one carrier but in non-relaxed mode on other carriers is questionable. We don't think there is much power saving gain in this case.  |
| Qualcomm | The coexistence of both high priority and idle mode measurements has been taken into account at least for the higher priority search requirements e.g. in 4.2.2.7. Second, the requirements as proposed in this CR would all scale with the number of carriers, which in our interpretation is not what the current requirements assume. E.g., if there are no *non\_relax* *carriers* configured, the current requirement would be scaled up anyway by the number of *relax* *carriers.*As such we doNOT think the CR needs to be introduced. |
| Nokia | The proposal from Huawei seems reasonable to us. We have one question for clarification:**Ncarrier\_Relax is the total number of configured inter-frequency/inter-RAT carriers required to meet relaxed measurement requirements (i.e., non-EMR carriers and EMR carriers while T331 is not running).****Ncarrier\_Relax is the total number of configured inter-frequency/inter-RAT carriers required to meet non relaxed measurement requirements (i.e., EMR carriers while T331 is running).**The upper Ncarrier\_Relax should be Ncarrier\_non\_Relax? |
| Huawei | To MTK: the comment is reasonable. **To Ericsson**In the approved WF [R4-2009265], it is indicated that if T331 is running, the carriers which are configured for EMR shall not be performed with relaxed measurement. For other carriers which are configured for mobility (not for EMR), if UE has fulfilled low mobility or not-at-cell edge criteria, UE shall perform relaxed measurement. Then the question is how to define the requirements when there are both non-relaxed measurement carriers and relaxed measurement carriers. The existing requirements defined in section 4.2.2.10 and 4.2.2.11 only specified the relaxed measurement requirements and the mixed cases are not considered. If the mixed case is not specified, then there are no requirements when both non-relaxed measurement carriers and relaxed measurement carriers exist. This is harmful to both UE and network. |

### CRs/TPs comments collection

*Major close to finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [**R4-2113827**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113827.zip)Correction on measurement requiements in relaxed measurement | MTK: same comment as sub-topic 3-1 |
| Ericsson: We do not think there is much power saving gain in this case, and hence do not see the CR as necessary. |
| Nokia:Can Huawei clarify how following is to be understood:‘When multiple SMTCs are configured, the SMTC periodicity in this note is the one used by the cell being identified’In general the CR looks like good base however, we have some detailed comments:* Technical: we have question related to the counting of carriers. We prefer to clarify what Ncarrier\_non\_relax is when T331 is not running. Additionally, we think it needs to be defined what Ncarrier\_Relax is when T331 is running.
* one detailed comment on one removal of requirement in 4.2.2.10.3
* Have a proposal on change for better readability

We are fine to work offline with Huawei on these topics. |
| Huawei: to MTK, the following change in the CR is made as per your comments:The parameter Ncarrier\_Relax is the total number of configured inter-frequency carriers indicated by the serving cell and the number of NR inter-frequency carriers configured for mobility and for idle mode CA measurements (while T331 is not running). |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic#1** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

*Moderator can provide summary of 2nd round here. Note that recommended decisions on tdocs should be provided in the section titled ”Recommendations for Tdocs”.*

# Topic #5: DAPS handover

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2113515**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113515.zip) | Ericsson | **Proposal 1 : Prior to random access procedure autonomous interruption is done in communication towards the target cell as necessary to enable the UE to have sufficient switching time, and after the random access procedure autonomous interruption is done in communication towards source cell as necessary to allow the UE to have sufficient switching time.** |
| [**R4-2113813**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113813.zip) | Huawei | ***Observation 1: For DAPS handover, the UE is not required to perform PDCCH/PDSCH reception or uplink transmission on target cell before starting RACH procedure.******Observation 2: For PRACH transmission on target cell, no additional interruption is needed when the target cell downlink timing is earlier than the source cell downlink timing.******Observation 3: For PRACH transmission on target cell, an interruption of up to 6us due to DL-to-UL or UL-to-DL switching may be needed when the target cell downlink timing is later than the source cell downlink timing.******Observation 4: For option 2, the UE is required to perform timing comparison between source cell and target cell, which would introduce additional complexity into UE implementation.******Proposal 1: The clarification on DL-to-UL and UL-to-DL switching time for intra-band DAPS handover can be defined as follows:**** ***Note 2: For DAPS handover on a TDD band, after starting RACH procedure, a UE is not required to transmit in the uplink to any of source and target cells earlier than NRX-TX after the end of the last received downlink symbol from any of source and target cells in the same TDD band where NRX-TX=25600Tc.***
* ***Note 3: For DAPS handover on a TDD band, after starting RACH procedure, a UE is not required to receive in the downlink from any of source and target cells earlier than NTX-RX after the end of the last transmitted uplink symbol to any of source and target cells in the same TDD band where NTX-RX=25600Tc.***
 |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 1-1

**Issue 5-1: how to handle impact from TDD UL-DL and DL-UL switching for intra-band TDD case:**

* Proposals
	+ Option 1 (Huawei): The clarification on DL-to-UL and UL-to-DL switching time for intra-band DAPS handover can be defined as follows:
		- Note 2: For DAPS handover on a TDD band, after starting RACH procedure, a UE is not required to transmit in the uplink to any of source and target cells earlier than NRX-TX after the end of the last received downlink symbol from any of source and target cells in the same TDD band where NRX-TX=25600Tc.
		- Note 3: For DAPS handover on a TDD band, after starting RACH procedure, a UE is not required to receive in the downlink from any of source and target cells earlier than NTX-RX after the end of the last transmitted uplink symbol to any of source and target cells in the same TDD band where NTX-RX=25600Tc.
	+ Option 2 (Ericsson): prior to random access procedure autonomous interruption is done in communication towards the target cell as necessary to enable the UE to have sufficient switching time, and after the random access procedure autonomous interruption is done in communication towards source cell as necessary to allow the UE to have sufficient switching time:

**Table: Mitigation of constraints for DL to UL switching**

|  |  |
| --- | --- |
| * Scenario
 | Mitigation action |
| Early target, late source, prior to start of random access | Not applicable (no target transmission) |
| Late target, early source, prior to start of random access | Skip last part of target DL |
| Early target, late source, after start of random access | Skip last part of source reception |
| Late target, early source, after start of random access | Skip first part of source transmission |

**Table: Mitigation of constraints for UL to DL switching**

|  |  |
| --- | --- |
| Scenario | Mitigation action |
| Early target, late source, prior to start of random access | Skip first part of target DL |
| Late target, early source, prior to start of random access | Not applicable (no target transmission) |
| Early target, late source, after start of random access | Skip last part of source transmission |
| Late target, early source, , after start of random access | Skip first part of source reception |

## Companies views’ collection for 1st round

### Open issues

Sub topic 5-1: how to handle impact from TDD UL-DL and DL-UL switching for intra-band TDD case:

|  |  |
| --- | --- |
| **Company** | **Comments** |
| MTK | Support Option 1.We prefer to follow the same logic as TS38.211, i.e., what comes early has a higher priority and only the later one might be dropped. Option 2 seems too complicated for UE implementation. |
| Ericsson | We support Option 2.Regarding Option 1, the observations are technically correct, but we do not agree with leaving it open for the UE implementation to do whatever it wants when the N\_RX\_TX, N\_TX\_RX minimum time of 13 µs = 25600 Tc cannot be met. |
| Apple | Support option 1. Option 2 would introduce extra complexity for UE implementation without significant gain can be observed. |
| Qualcomm | We still prefer Option1 in line with RAN1 spec and less UE impact. |
| Nokia | This is related also to the LTE discussion. And we think they should be discussed together.In general, we prefer the option which has minimal impact on the network side and general operation of the cells involved in the DAPS HO. The UE which is DAPS HO execution will be aware of its timing conditions and by allowing UE the flexibility of not transmitting and/or receiving when not possible due to timing constraints, will solve the issue for the UE which support DAPS and is in DAPS HO. We believe our preference is what is proposed by Ericsson, but we are open for further discussion and clarification. |
| Huawei | Support option 1.Before UE starts RACH procedure to target cell, the UE will not perform PDCCH/PDSCH reception or uplink transmission for target cell. The UE only needs to perform DL/UL switching according to source cell timing. There is no need to introduce the rules of option 2.After UE starts RACH procedure to target cell, when target cell is later than source cell, it can be seen that the interrupted or dropped part are the same for both option 1 and option 2. When target cell is earlier than source cell, no additional interruption will occur.For option 2, there is no benefit and the complexity of UE implementation will be increased. |

### CRs/TPs comments collection

*For close-to-finalize WIs and maintenance work, comments collections can be arranged for TPs and CRs. For ongoing WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| **[R4-2113516](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113516.zip) CR on TS38.133 for dual active protocol stack handover** | MTK: As commented in Issue 5-, this approach is not preferred. |
| Qualcomm: the CR is not supported. |
| Nokia: pending outcome of discussion |
| [**R4-2113814**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113814.zip) **Correction to DAPS handover requirements R16** | MTK: Suggest to follow the terminology in TS38.211, i.e., NRX-TX is only 25600, while NRX-TXTc is the in the unit of second.

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| Note 2: For DAPS handover on a TDD band, after starting RACH procedure, a UE is not required to transmit in the uplink to any of source and target cells earlier than NRX-TXTcafter the end of the last received downlink symbol from any of source and target cells in the same TDD band where NRX-TX=25600~~Tc~~. Note 3: For DAPS handover on a TDD band, after starting RACH procedure, a UE is not required to receive in the downlink from any of source and target cells earlier than NTX-RXTc after the end of the last transmitted uplink symbol to any of source and target cells in the same TDD band where NTX-RX=25600~~Tc~~. |

 |
| Ericsson: Please see our comment to Issue 5-1. The CR is not agreeable to us. |
| Qualcomm: the CR can be supported. |
| Nokia: pending outcome of discussion |
| Huawei: OK with MTK’s modification. |
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## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic #1** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

# Topic #6: Miscellaneous CR

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

### CRs/TPs comments collection

*Major close to finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |  |
| --- | --- | --- |
| **CR/TP number** |  **Title** | **Comments collection** |
| **[R4-2111961](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2111961.zip)** | Draft CR on UE power saving requirements | Ericsson: OK |
| Nokia: CR is OK |
| [**R4-2111963**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2111963.zip) | Draft CR on cell reselection test case for UE Power saving | Ericsson: OK |
| Qualcomm: we suggest following. Otherwise the CR is not agreeable to us.*- Use the same value for SSearchThresholdP=35 in T1 and T2 (and not use infinity) preferred in both A.7.1.1.6.2 and A.7.1.1.4.2;* ***Or,*** *- Switch the (T1, T2) fields for both Cell 1 and Cell2 for SSearchThresholdP in A.7.1.1.6.2 (i.e. Cell1/T1 infinity, Cell1/T2 35 and vice versa for Cell2);* |
| Nokia: CR is OK |
| **[R4-2111965](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2111965.zip)** | Draft CR on cell reselection test case for HST in FR1 | Ericsson: OK |
| Nokia: CR is OK |
| [**R4-2112513**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2112513.zip) | Draft CR on measurement delay requirements for Rel-16 HST requirements | Ericsson: Correction looks ok. For the consistency, we suggest to use 'SMTC period' instead of 'SMTC periodicity' and 'SMTC' in Notes 2 and 3 in Table 9.2.5.2-5.

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| NOTE 2: M2 = 1.5 if SMTC periodicity > 40 ms, otherwise M2=1NOTE 3: Y=3 when SMTC <= 40ms, Y=5 when SMTC > 40ms |

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| CMCC: we are ok with Ericsson’s suggestion, and will update the wording. |
| Nokia: Would it be clarified if the existing requirements is incorrect or it is just a simplification? |
| CMCC: response to Nokia’s comment: as mentioned in the “Reason for change” part of the coversheet, when highSpeedMeasFlag-r16 is configured, for 160ms < DRX cycle≤ 320ms, there is max(SMTC period, DRX cycle) in the delay requirements T SSB\_measurement\_period\_intra. However, the maximum value of SMTC is 160ms, for the case of DRX > 160ms, no need to take the maximum between SMTC period and DRX cycle, similar as the requirements for the case with DRX cycle>320ms. |
| [**R4-2113266**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113266.zip) | Draft CR to TS 38.133 on RRC\_IDLE and RRC\_INACTIVE state mobility | Ericsson: OK |
| Nokia: CR is OK |
| ZTE: Fine with the technical content. Just a reminder that the CR shall not touch the editorial mistakes. We’re fine to endorse the CR. |
| [**R4-2113855**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113855.zip) | draft CR to TS38.133[R16] Updating the introduction of EN-DC Interruption | Ericsson: OK |
| Nokia: In general ok. But ‘SCell dormancy’ does not list any actions on the dormancy SCell. This needs to be clarified. |
| **[R4-2113884](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113884.zip)** | [draft CR] maintenance for conditional PSCell change | Ericsson: OK  |
| Nokia: CR is OK |
| [**R4-2114013**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114013.zip) | Draft CR for Idle Mode measurements of inter-RAT CA candidate cells for early reporting (TC#3) | Anritsu: We appreciate taking into account of our previous comments on the table structure to the CR (R4-2111277) at #99-e topic group 212. However there were other comments on Noc before and it seems that those values are still kept. It is appreciated if the intention to maintain those values is explained. We would like to extract the previous comments as follows.b) In several tables Cell 2 Noc/15kHz is stated twice, once with a fixed value of -98dBm/15kHz and again with band-dependent values, which is a contradiction. To meet the test purpose, it is probably not necessary to use band-dependent values. One fixed value may be OK, and is much simpler.c) It is not clear why Cell 1 needs different Noc values of -98dBm/15kHz during T1, T2, T5 and -102dBm/15kHz during T3, T4. Could this be simplified to a constant -98dBm/15kHz during T1..T5?d) The derived parameters need to be re-evaluated when issues a) b) and c) are resolved. |
| Ericsson: OK |
| Nokia: Thank you very much, Anritsu, for the detailed review and good comments. We will account those and we propose to work further offline with Anritsu on the CR. |
| [**R4-2114149**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114149.zip) | Correction to test cases of inter-RAT cell re-selection with relaxed measurement criterion R16 | MTK: A suggestion as follows. For LTE, we also need to use RRCConnectionRequest instead of RRCSetupRequest

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| A.6.1.2.3.3 Test RequirementsThe cell reselection delay to a lower priority E-UTRAN cell with UE fulfilling low mobility criterion is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the *~~RRCSetupRequest~~* *RRCConnectionRequest* message to perform a Tracking Area Update procedure on cell 2. |

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| Ericsson: OK |
| Nokia: CR is OK |
| **[R4-2114431](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114431.zip)** | Side conditions in IAB-MT RRC connection mobility requirements in TS 38.174 | Nokia: CR is OK |
|  |
| **[R4-2114432](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114432.zip)** | Correction to IAB-MT RRM tests in TS 38.174 | Nokia: CR is OK |
|  |
| **[R4-2114441](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2114441.zip)** | Missing n259 RRM performance requirements in Rel-17 | Nokia: CR is OK |
|  |
| **[R4-2113443](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113443.zip)** | Draft CR on 38.171 requirements for support of A-GNSS (R16) | Ericsson: OK |
| Nokia: CR is OK |
| **[R4-2113444](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_100-e/Docs/R4-2113444.zip)** | Draft CR on 36.171 requirements for support of A-GNSS (R17)Note: this is not identical to **R4-2113443** | Nokia: CR is OK |
|  |
| **R4-2114168** | **DraftCR (R16) Clean-up of test cases for Direct SCell activation and SCell dormancy** | Nokia: CR is OK |
|  |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary**  |
| **Sub-topic#1** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

*Moderator can provide summary of 2nd round here. Note that recommended decisions on tdocs should be provided in the section titled ”Recommendations for Tdocs”.*

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |
| --- | --- | --- |
| **Title** | **Source** | **Comments** |
| WF on … | YYY |  |
| LS on … | ZZZ | To: RAN\_X; Cc: RAN\_Y |
|  |  |  |

**Existing tdocs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation**  | **Comments** |
| R4-210xxxx | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
|  |  |  |  |  |
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|  |  |  |  |  |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics incl. existing and new tdocs.
2. For the Recommendation column please include one of the following:
	1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
	2. Other documents: Agreeable, Revised, Noted
3. For new LS documents, please include information on To/Cc WGs in the comments column
4. Do not include hyper-links in the documents

## 2nd round

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation**  | **Comments** |
| R4-210xxxx | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| R4-210xxxx | WF on … | YYY | Agreeable, Revised, Noted |  |
| R4-210xxxx | LS on … | ZZZ | Agreeable, Revised, Noted |  |
|  |  |  |  |  |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics.
2. For the Recommendation column please include one of the following:
	1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
	2. Other documents: Agreeable, Revised, Noted
3. Do not include hyper-links in the documents

# Annex

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Note:

1. Please add your contact information in above table once you make comments on this email thread.
2. If multiple delegates from the same company make comments on single email thread, please add you name as suffix after company name when make comments i.e. Company A (XX, XX)