**3GPP TSG-RAN WG4 Meeting #104-eR4-22xxxxx**

**Electronic Meeting, 15 – 26 August, 2022**

**Agenda item:** 4.8

**Source:** Moderator (Huawei)

**Title:** Email discussion summary for [104-e][201] Maintenance\_R15\_R16\_RRM

**Document for:** Information

# Introduction

The scope of this email discussion includes the following agenda items:

|  |
| --- |
| 4.5 RRM requirements [WI code]4.5.1 RRM core requirements (38.133/36.133) [WI code]4.5.2 RRM performance requirements (38.133/36.133) |

In providing comments, companies are encouraged to:

* Ensure that the comments are inserted in the latest version of the document by checking the folder before uploading
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* Pay attention to the rule for shortening file name

It is appreciated that the delegates for this topic put their contact information in the table below.

Contact information

|  |  |  |
| --- | --- | --- |
| **Company** | **Name** | **Email address** |
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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)

# Topic #1: Rel-15 NR RRM maintenance

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc** | **Company** | **Proposals / Observations** |
| Core part |
| [**R4-2211836**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211836.zip) | Apple | CRThe scheduling restriction shall be revised for the case when the symbol after SSB is not DL symbol, and 2 symbols after SSB would have scheduling restriction. |
| [**R4-2211855**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211855.zip) | Apple | CRAdded exception rule to scheduling restriction in FR1 for L3 measurement when UE receives system update through paging. |
| [**R4-2211913**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211913.zip) | Apple | CRAdd “otherwise” back to make restriction applies when repetition is ON. |
| [**R4-2212253**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212253.zip) | ZTE Corporation | CRSpecify that N\_TA\_offset is specified in clause 7.1.2 instead of 7.1.2.2. |
| [**R4-2212922**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212922.zip) | Huawei, HiSilicon | CR (36133)Interruption length for SSB-less SCell and SCell without SMTC configuration are updated with x = number of consecutive slots which contains all SSBs indicated by ssb-PositionsInBurst |
| [**R4-2212925**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212925.zip) | Huawei, HiSilicon | CR (38133)Interruption length for SSB-less SCell and SCell without SMTC configuration are updated with x = number of consecutive slots which contains all SSBs indicated by ssb-PositionsInBurst |
| [**R4-2213934**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213934.zip) | Ericsson | CRT∆ definition is corrected so that consistent wording will be present across all the HO scenarios |
| [**R4-2213935**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213935.zip) | Ericsson | CR1st change:Interruption requirements are corrected to consider the SSB less SCell activation scenario. When the SCell activation delay requirement contains both Tuncertainty\_MAC +TFineTiming, and TFirstSSB\_MAX,interruption requirement is clarified. 2nd change: adding TReport as 0 in TL1-RSRP, measure |
| Perf part |
| [**R4-2211541**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211541.zip) | Anritsu Corporation | CR1. Change SR.3.1 TDD 🡪 SR.3.3 TDD, CR.3.1 TDD 🡪 CR.3.2 TDD, and CCR.3.1 TDD 🡪 CCR.3.7 TDD in Table A.5.6.3.3.2-1 and Table A.5.6.3.4.2-1
2. Changed “CSI-RS SCS” 🡪 “SSB SCS” in Table A.5.6.3.3.1-1 and Table A.5.6.3.4.1-1.
 |
| [**R4-2211544**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211544.zip) | Anritsu Corporation | CR* For the FR2 SS-RSRP Inter frequency relative accuracy in Table 10.1.5.1.2-1, refer to accuracy relaxation Ginter when the pair of cells are configured by inter frequency.
* For the FR2 SS-RSRP relative accuracy test requirement in Tables A.5.7.1.2.3-2 and A.7.7.1.2.3-2, Note 5 and 6 are reworded.
* Specify parameter Ginter in new clause B.2.1.5.2
* Specify parameter D in new clause B.2.1.5.3
 |
| [**R4-2211608**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211608.zip) | Rohde & Schwarz | CRChange 1: In CSI-RS.3.2 TDD for SCS=120kHz (Table A.3.14.2-3) Offset changed from 8 to 16. Change 2: In TCs A.5.6.1.3 / A.5.6.1.4 for the CSI-RS parameters of PSCell clarification “resource #0” added (to CSI-RS.3.2 TDD). |
| [**R4-2211669**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211669.zip) | CATT | CRFix the misalignments in parameter setting. |
| [**R4-2211887**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211887.zip) | Apple | **Proposal 1: two options to address testability issue for FR2 inter-frequency RSRP accuracy****Option 1: add A.5.7.1.3 and A.7.7.1.3 in A.3.13A to allow UE not to pass the tests.****Option 2: update the criteria for selecting FR1/LTE+FR2 test with OTA testability problem approved in RAN4#100e:****Proposal 2: add additional margins E=[3]dB to the upper bound for FR2 inter-frequency relative RSRP accuracy test requirements** |
| [**R4-2211888**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211888.zip) | Apple | CRUpdate test applicability in A.3.13A to allow UE skip A.5.7.1.3 and A.7.7.1.3. |
| [**R4-2212251**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212251.zip) | ZTE Corporation | CRSpecify the correct values to replace TBD, and correct the wrong reference numbers. |
| [**R4-2212288**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212288.zip) | CMCC | CRModify the Cell 2 to Cell 1 in Figure A.6.5.1.7.1-1Delete the wording “During time durations T1, T2 and T3, the UE shall transmit uplink signal at least in all subframes configured for CSI transmission on Cell 1” to align with other RLM OOS test requirements |
| [**R4-2212522**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212522.zip) | MediaTek Inc. | CRInstruction to release measurement gap is included in the RRC message to add PSCell. |
| [**R4-2212529**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212529.zip) | MediaTek Inc. | CRRemove redundant sentence in R17 to align with R15/R16 requirement. |
| [**R4-2212928**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212928.zip) | Huawei, HiSilicon | CR1. Unimplemented changes in agreed CR R4-2204844 are resubmitted.2. Notes is added to test configuration tables of CA test cases to indicate that PCC/SCC can choose its test configuration independently. |
| [**R4-2212931**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212931.zip) | Huawei, HiSilicon | CR1. Cell re-selection TCs
	1. Editorial changes.
	2. Es/Iot is changed to Es/Iot at BB to align with other FR2 TCs. Value of Es/Iot at BB is re-calculated.
	3. Note 5 is added.
	4. Io in Table A.7.1.1.2.2-3 is corrected.
	5. SS-RSRP in Table A.7.1.1.2.2-3 is corrected.
2. TCI state switching TCs
	1. replace TCI.State.0 with TCI.State.2
	2. replace TCI.State.1 with TCI.State.3
	3. update TRS configuration to align with TCI configuration.
 |

## Open issues summary

Note: Only issues proposed in discussion papers are listed in this section. For other issues proposed via CR, please provide comments to the CR directly in section 1.3.1 and 1.3.2.

### Sub-topic 1-1: Applicability of FR1+FR2 test

#### Issue 1-1-1: Applicability of the test considering FR1+FR2 testability

* Proposals
	+ Option 1 (Apple)
		- add A.5.7.1.3 and A.7.7.1.3 in A.3.13A to allow UE not to pass the tests

|  |  |
| --- | --- |
| A.5.7.1.3 | EN-DC inter-frequency measurement accuracy with FR1 serving cell and FR2 target cell |
| A.7.7.1.3 | SA inter-frequency measurement accuracy with FR1 serving cell and FR2 target cell |

* + Option 2 (Apple)
		- update the criteria for selecting FR1/LTE+FR2 test with OTA testability problem approved in RAN4#100e

|  |
| --- |
| 4.1 Criteria for selecting FR1/LTE+FR2 test with OTA testability problem* Except for accuracy test, FR1/LTE+FR2 test has OTA testability problem if at least one of the following criteria is met:
	+ Tests where any requirement is tested for FR1/LTE,
	+ Tests where UE receives any DL message (e.g. RRC/DCI/MAC-CE configuration message/command etc) on FR1/LTE between the starting point and ending point of the test, and
	+ Tests where UE transmits any UL signal (e.g. measurement report, ACK/NACK, CSI etc) b on FR1/LTE between the starting point and ending point of the test.
 |

* Recommended WF
	+ Discuss the options

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| --- | --- |
| **Company** | **Comments**  |
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### Sub-topic 1-2: Margin in relative accuracy for FR2 inter-frequency RSRP tests

Moderator’s Note: the following additional margins for the relative accuracy have been discussed in companies’ contributions

* D: margin due to mis-alignment between fine beam and rough beam
* Ginter: margin due to different antenna gain on different bands
* E: margin due to difference between Y’ and Z’
	+ Y’: actual gain difference between fine and rough beam at peak direction
	+ Z’: actual gain difference between fine and rough beam at spherical coverage direction

In RAN4#103-e, the agreements are as follow.

|  |
| --- |
| **Issue 1-1-1: whether to add Ginter when two cells are in same band*** Add Ginter = [3] dB also when two cells are in same band, for both upper bound and lower bound

**Issue 1-1-2: whether to add E to the upper bound*** FFS whether to add E to the upper bound
	+ Option 1: Yes, E=[3]dB
	+ Option 2: No

**Issue 1-1-3: whether to modify the test procedure to compensate the relaxation margins*** RAN4 not modify the test procedure to compensate the relaxation margins for Rel-15

**Issue 1-1-4: margin for the lower bound when two cells are in same band*** For intra-band case, at lower bound, add margin D ([5.5]dB) + Ginter ([3]dB)
 |

#### Issue 1-2-1: Whether to add E to the upper bound

* Proposals
	+ Option 1 (Apple)
		- add additional margins E=[3]dB to the upper bound for FR2 inter-frequency relative RSRP accuracy test requirements
* Recommended WF
	+ Check if option 1 is agreeable

|  |  |
| --- | --- |
| **Company** | **Comments**  |
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## Comments to the CRs

Cat-A draftCRs are not listed for comments.

### CRs for the Core part

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2211836 (Apple) | Draft CR on scheduling restriction for FR2 R15 |
|  |
| R4-2211855 (Apple) | Draft CR on scheduling restrictions for L3 measurements in FR1 (Rel-15) |
|  |
| R4-2211913 (Apple) | Maintenance CR on scheduling restriction on L1-RSRP measurement (R17) |
|  |
| R4-2212253 (ZTE) | [draft CR] R15 Maintenance for 38133 Core |
| Moderator: Cat-F CR for R16 due to difference between R15 and R16 specs. |
| R4-2212922 (Huawei) | Correction to NR SCell interruption requirements 36.133\_r15 |
|  |
| R4-2212925 (Huawei) | Correction to NR SCell interruption requirements 38.133\_r15 |
|  |
| R4-2213934 (Ericsson) | Clarification on fine timing requirements for known and unknown cell in HO in FR1 |
|  |
| R4-2213935 (Ericsson) | SCell activation maintenance in Rel-15 |
|  |

### CRs for the Perf part

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2211541 (Anritsu) | Draft CR to FR2 NSA CSI-RS based L1-RSRP measurement |
|  |
| R4-2211544 (Anritsu) | Correction on the FR2 inter-frequency relative RSRP accuracy |
|  |
| R4-2211608 (R&S) | Draft CR to TS 38.133: Corrections to NR RRM test cases (Rel 15) |
| Anritsu: OK |
| R4-2211669 (CATT) | Correction to FR2 cell re-selection test case |
|  |
| R4-2211888 (Apple) | draftCR on applicabiltiy for test Cases involving E-UTRA/FR1 and FR2 carriers (R15) |
|  |
| R4-2212251 (ZTE) | [draft CR] R16 Maintenance for 38133 test cases |
|  |
| R4-2212288 (CMCC) | draftCR for test configuration and requirement correction of CSI-RS based RLM OOS test in NR SA |
| Anritsu: Change mark cannot be seen at the replaced figure A.6.5.1.7.1-1.  |
| R4-2212522 (MTK) | Draft CR on TC for known PSCell addition in R15 |
| R&S: Releasing the Meas Gap should not make PScell unknown. In fact, Meas Gap release will avoid extra Measurement Reports, so therefore it is beneficial to do it. Thus, we see the change as unnecessary.  |
| R4-2212529 (MTK) | Draft CR on TC for typo in SCell activation in R17 |
|  |
| R4-2212928 (Huawei) | Correction to Rel-15 FR1 test cases\_r15 |
| Huawei: We noticed that there is typo in proposed changes. The highlighted part should be “NR 30 kHz SSB SCS, ≥40 MHz bandwidth, TDD duplex mode” We provide a revised version in :https://www.3gpp.org/ftp/tsg\_ran/WG4\_Radio/TSGR4\_104-e/Inbox/Drafts/%5B104-e%5D%5B201%5D%20Maintenance\_R15\_R16\_RRM/Documents/1%20CR%20for%20R15%20core/R4-2212928%20Correction%20to%20Rel-15%20FR1%20test%20cases\_r15\_revised.docx |
| R&S: In our view, changes of the test configuration have following issues (example Table A.4.5.2.3.1-1):* + 1. The current and the new defined tables are not equivalent w.r.t. duplex mode. In the current one, PSCell and SCell have same duplex mode, in the new some of config are changed to mixed (example Config 3). If we want to increase the test coverage for mixed duplex mode, we prefer to add missing configs, rather than changing current ones.
		2. The NR SCell settings for Config 4-6 are not defined and missing in the new tables.
 |
| R4-2212931 (Huawei) | Correction to Rel-15 FR2 test cases\_r15 |
|  |

## 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:* |

*Recommendations on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title**  | **Assigned Company,****WF or LS lead** |
| #1 |  |  |

### CRs/TPs

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

|  |  |
| --- | --- |
| **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)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

# Topic #2: Rel-16 NR RRM maintenance

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc** | **Company** | **Proposals / Observations** |
| [**R4-2212938**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212938.zip) | Huawei, HiSilicon | CRThe terminology "V2X SCH\_RP(SCH Es/Iot)" in NR SL requirements are changed to " S-SSB\_RP(S-SSB Es/Iot)". |
| [**R4-2212940**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212940.zip) | Huawei, HiSilicon | CR1. A.9.1.2.2:
	* Unit of Io is changed to dBm/18MHz (50RB) and dBm/40MHz (100 RB).
	* syncTxThreshOoC is changed to -100dBm/SCS
2. A.9.1.3.1:
	* Io is added to Table A.9.1.3.1.1-2, Wording of note 2 in Table A.9.1.3.1.1-2 is updated accordingly.
3. A.9.1.3.2:
	* Io is added to Table A.9.1.3.2.1-2, Wording of note 2 in Table A.9.1.3.2.1-2 is updated accordingly.
	* Editorial changes
4. A.9.1.4.1:
	* Io is added to Table A.9.1.4.1.1-2.
	* SL-RSSI is removed from Table A.9.1.4.1.1-2. Wording of note 2 in Table A.9.1.4.1.1-2 is updated accordingly.
5. A.9.1.4.2:
	* Io is added to Table A.9.1.4.2.1-2. Wording of note 2 in Table A.9.1.4.2.1-2 is updated accordingly.
6. A.9.1.4.3:
	* Io is added to Table A.9.1.4.3.1-2/3. Wording of note 2 in Table A.9.1.4.2.1-2/3 is updated accordingly.
	* Noc, Es/Noc, SL-Thres-RSRP are updated. Derived values are updated accordingly.
7. A.9.1.5:
	* Unit of Io is changed to dBm/18MHz (50RB) and dBm/40MHz (100 RB).
	* PSSCH-RSRP is removed. Note is updated accordingly.
 |
| [**R4-2213472**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213472.zip) | Huawei, HiSilicon | CRTo modify the test requirements to allow ACK/NACK missing during V2X slidelink communication configuration. |
| [**R4-2213504**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213504.zip) | Huawei, HiSilicon | CRAddcomponent NPCC\_CSIRS for PCC CSSF to the table for CSSF outside MG for NR SA, for FR2 inter-band CA case. |
| [**R4-2212085**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212085.zip) | MediaTek inc. | CRCorrect the measurement gap offset. * For pattern #0 which has 40ms MGRP, the offset is revised to 39ms.
* For pattern #4 which has 20ms MGRP, the offset is revised to 19ms.
 |
| [**R4-2212256**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212256.zip) | ZTE Corporation | CRSpecify the delay is related to “the completion of active spatial relation switch” rather than “the completion of active spatial relation”. |
| [**R4-2213467**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213467.zip) | Huawei, HiSilicon | ***Observation 1: The existing PL-RS switching delay requirements are applied when UE is not required to perform beam sweeping on the target PL-RS.******Observation 2: In NR, there is no TCI state configuration for a SSB resource, which implies that there is no reference signal to provide QCL information of SSB.******Observation 3: When a SSB resource indicated as PL-RS is also configured for L1-RSRP measurements, UE needs to perform beam sweeping on the SSB resource for both PL-RS measurements and L1-RSRP measurements.******Proposal 1: When the target PL-RS is SSB and used for L1-RSRP measurements in FR2, either one of the following two options can be considered to define the PL-RS switching delay.**** ***Option 1 (Preferred):***
	+ ***To clarify that longer PL-RS switching delay is expected, which can be captured in the note.***
* ***Option 2:***
	+ ***To define the PL-RS switching delay as 5\*TL1-RSRP\_SSB, where TL1-RSRP\_SSB is SSB based L1-RSRP measurement period with the assumption of M=1.***
 |
| [**R4-2213468**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213468.zip) | Huawei, HiSilicon | CR1. To clarify that longer application time is expected if in FR2 the target PL-RS is a SSB on which UE performs L1-RSRP measurements.
 |
| [**R4-2213470**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213470.zip) | Huawei, HiSilicon | CRThere are some issues in the L1-SINR measurement requirements and test cases, and BFD test cases.1. The relative measurement tolerance are still within brackets in 10.1.28
2. In test configuration tables of A.5.7.6.\*, the L1-RSRP period shall be L1-SINR period
3. The Io level in A.5.7.6.2 is incorrect
4. The SSB\_RP in A.6.5.5.6 is incorrect
 |
| [**R4-2211668**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211668.zip) | CATT | CRIn RAN4#103-e meeting, draft CR of R4-2210975 is endorsed. The Cat-A draft CR is R4-2208163. But there is a typo of the number in Cat-A R4-2208163 of EN-DC HST FR1 L1-RSRP test case. |
| [**R4-2213041**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213041.zip) | vivo | CR* Delete the case in which UE needs not to acquire the index of the SSB in measurement time in conditional handover requirement.
	+ For intra-frenquency measurement, delete Tidentify\_intra\_without\_index in measurment time in conditional handover requirement
	+ For inter-frenquency measurement, delete Tidentify\_inter\_without\_index in measurment time in conditional handover requirement
 |
| [**R4-2213043**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213043.zip) | vivo | CR* Delete the case in which UE needs not to acquire the index of the SSB in measurement time in conditional PSCell change requirement.
	+ For intra-frenquency measurement, delete Tidentify\_intra\_without\_index in measurment time in conditional PSCell change requirement
	+ For inter-frenquency measurement, delete Tidentify\_inter\_without\_index in measurment time in conditional PSCell change requirement
 |
| [**R4-2212942**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212942.zip) | Huawei, HiSilicon | CR1. CSI reporting configuration is added in DAPS HO test cases.
2. Test parameter tables are re-organized to improve readiability.
3. Test configuration 2 and 3 are removed from test parameters tables in 6.3.1.8/6.3.1.0
4. Unit of io in Table A.7.3.1.4.2-4 and A.7.3.1.5.2-4 is changed.
5. Editorial changes.
 |
| [**R4-2211715**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211715.zip) | CATT | CRClarify the starting point of PRS measurement period requirements for deferred MT-LR. |
| [**R4-2213046**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213046.zip) | vivo | CR* Specified UE havaviour due to UE autonomous timing adjustment.
* Editorial changes.
 |
| [**R4-2213497**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213497.zip) | Huawei, HiSilicon | **Proposal: For the event of periodic location in deferred MT-LR, requirements are defined assuming UE starts measurement after T, and update the start point of measurement period as follows.*** **the time**$ T\_{RSTD,Total}$**starts from the first MG instance aligned with a DL PRS resource(s) in the assistance data after the associated event(s) occurs.**
 |
| [**R4-2213498**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213498.zip) | Huawei, HiSilicon | CR1. Clarify the start point of PRS measurement period for deferred MT-LR with periodic locationm event. |
| [**R4-2211611**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211611.zip) | Rohde & Schwarz | CRChange 1: In Table 10.1.23.2-1 removed square brackets and the undefined parameter $∆$ (Note 7 related to $∆$ voided) Change 2: In test cases A.6.6.12, A.6.7.13.1, added SSB\_RP values and corrected several typos.  |
| [**R4-2211716**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211716.zip) | CATT | CR1. Remove the notation for group delay margin in RSTD and UE Rx-Tx time difference measurement accuracy requirements. 2. Separate the simulation accuracy and group delay margin3. Remove the brackets. |
| [**R4-2211717**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211717.zip) | CATT | CR1. Add EPREs of other channels (PSS/SSS/PBCH/PDCCH/PUSCH) which are the same as PRS symbols.
2. Correct the PRS power configurations and Io for some test cases.
3. Change PRS-RSRP to PRP to align the notation with section B.2.14.
4. For some FR2 test cases, change the OCNG pattern to align with the AOA setup and allocate the resources to the whole bandwidth.
5. Other corrections.
 |
| [**R4-2212195**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212195.zip) | Qualcomm Incorporated | CRCorrect the UE Rx-Tx group delay calibration margins. |
| [**R4-2213500**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213500.zip) | Huawei, HiSilicon | CR1. Separate the group calibration margin from the BB estimation error, and capture them in separate tables. 2. Remove [] in the RSTD accuracy requirements. |
| [**R4-2213932**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213932.zip) | vivo | CR• Removed unncessary core requirements.• Revised accuracy requirements. |
| [**R4-2211932**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211932.zip) | CMCC | CRThe following text in 9.3.9.1 is removed.

|  |
| --- |
| MSSB\_index\_inter: For a UE supporting power class 1 or 5, MSSB\_index\_inter = 40 samples. For a vehicle mounted UE supporting power class 2, Mpss/sss\_sync\_inter = 24 samples. For a UE supporting power class 3, MSSB\_index\_inter = 24 samples. For a UE supporting power class 4, Mmeas\_period\_inter = 24 samples. |

 |
| [**R4-2213502**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213502.zip) | Huawei, HiSilicon | CR1. Remove the following applicability condition for requirements for inter-frequency measurement without gap:

*the timing of SSBs across serving cell and inter-frequency neighbor cells are aligned* |
| [**R4-2213879**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213879.zip) | ZTE Corporation | CRCorrect the which was wrongly written into . |
| [**R4-2212162**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212162.zip) | Qualcomm Ltd. | CRCorrect startPosition in A.3.24 from 0 to 5 for 15kHz SCS configuration. Change periodicityAndOffset-p to align with special slots. |
| [**R4-2211839**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211839.zip) | Apple | CRAdd inter-RAT NR RSSI/CO measurement without MG for the case when RSSI measurement bandwidth is fully within the active DL BWP of UE’s NR serving CC. The intra-frequency NR RSSI/CO measurement requirement from TS38.133 section 9.2A.7.1/2 can be reused. |
| [**R4-2212944**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212944.zip) | Huawei, HiSilicon | CRAccording to the discussion in Rel-15 maintenance on SCell activation, the threshold to differentiate cases for known SCell activation is modified from measurement cycle to measurement period. The corresponding part shall be updated for NR-U accordingly. |
| [**R4-2212396**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212396.zip) | MediaTek inc. | CRFor the cases that FR1 PCell without CCA is in FDD, update the time offset between Scells (Cell 2 and Cell 3) with CCA in TDD band to be 3 ms. |
| [**R4-2212525**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212525.zip) | MediaTek Inc. | CRInstruction to release measurement gap is included in the RRC message to add PSCell. |
| [**R4-2212946**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212946.zip) | Huawei, HiSilicon | CRChange the measurement cycle in test case for SCell activation in NR-U from 320 ms to 640 ms. |
| [**R4-2211601**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211601.zip) | Qualcomm, Inc. | CRCorrect Es/Iot to follow Es/Noc according to the syncOffsetIndicators configuration of SyncRef UE 1 and SyncRef UE 2. |
| [**R4-2212934**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212934.zip) | Huawei, HiSilicon | CR1. Notes is added to test configuration tables of CA test cases to indicate that PCC/SCC can choose its test configuration independently.
2. The term “Tevaluate, NR” in TC 8.2.1.2 test prequirements is changed to “Tevaluate, NR\_HST”
 |
| [**R4-2212936**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212936.zip) | Huawei, HiSilicon | CR1. A.7.1.1.3 & A.7.1.1.4
	1. Editorial changes.
	2. BW and allocated RB configurations are added in test parameter tables
	3. Es/Iot is changed to Es/Iot at BB.
	4. Note 5 is added.
	5. Io given in Table A.7.1.1.3.2-3/A.7.1.1.4.2-3 are corrected.
2. A.7.1.1.5 & A.7.1.1.6
	1. Editorial changes.
	2. BW and allocated RB configurations are added in test parameter tables
	3. Es/Iot is changed to Es/Iot at BB.
	4. Note 5 is added
	5. Io given in Table A.7.1.1.3.2-3/A.7.1.1.4.2-3 are corrected.
	6. Brackets in test parameter tables are removed.
 |
| **R4-2211587** | STMicroelectronics | CRThe default configuration parameters for test 1 have been updated such that the SRS periodicity becomes 10msec. |

## Open issues summary

Note: Only issues proposed in discussion papers are listed in this section. For other issues proposed via CR, please provide comments to the CR directly in section 2.3.1 and 2.3.2.

### Sub-topic 2-1: eMIMO

#### Issue 2-1-1: FR2 PL-RS switching delay when the target PL-RS is SSB and used for L1-RSRP measurements

* Proposals
	+ Option 1 (HW)
		- To clarify that longer PL-RS switching delay is expected, which can be captured in the note.
	+ Option 2 (HW)
		- To define the PL-RS switching delay as 5\*TL1-RSRP\_SSB, where TL1-RSRP\_SSB is SSB based L1-RSRP measurement period with the assumption of M=1.
* Recommended WF
	+ Discuss the options

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| **Company** | **Comments**  |
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|  |  |

### Sub-topic 2-2: Positioning

#### Issue 2-2-1: Start of measurement period for deferred MT-LR

* Proposals
	+ Option 1 (HW)
		- For the event of periodic location in deferred MT-LR, update the start point of measurement period as:
			* the time$ T\_{RSTD,Total}$starts from the first MG instance aligned with a DL PRS resource(s) in the assistance data after the associated event(s) occurs.
* Recommended WF
	+ Check if option 1 is agreeable

|  |  |
| --- | --- |
| **Company** | **Comments**  |
| CATT (Qiuge) | Fine with option 1.  |
|  |  |

## Comments to the CRs

Cat-A draftCRs are not listed for comments.

### CRs for V2X

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2212938 (Huawei) | Correction to NR sidelink core requirements\_r16 |
|  |
| R4-2212940 (Huawei) | Correction to NR sidelink test cases\_r16 |
|  |
| R4-2213472 (Huawei) | DraftCR on maintaining interruption test cases for NR V2X R16 |
|  |

### CRs for L3 CSI-RS

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2213504 (Huawei) | CR on CSI-RS measurement requirements R16 |
|  |
| R4-2212085 (MTK) | CR on TS38.133 for TC of CSI-RS inter-freq measurement R16 |
|  |

### CRs for eMIMO

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2212256 (ZTE) | [draft CR] R16 Maintenance for 38133 Core |
|  |
| R4-2213468 (Huawei) | DraftCR on maintaining PL-RS switching delay requirements R16 |
|  |
| R4-2213470 (Huawei) | DraftCR on correction of eMIMO test cases R16 |
|  |

### CRs for HST

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2211668 (CATT) | Draft CR on HST FR1 L1-RSRP test case |
|  |

### CRs for eMobility

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2213041 (vivo) | Draft CR to TS 38.133 Correction to conditional handover requirements(Rel-16) |
|  |
| R4-2213043 (vivo) | Draft CR to TS 38.133 Correction to conditional PSCell change requirements(Rel-16) |
|  |
| R4-2212942 (Huawei) | Correction to DAPS HO test cases\_r16 |
|  |

### CRs for POS

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2211715 (CATT) | Draft CR on R16 NR positioning measurement period requirements |
|  |
| R4-2213046 (vivo) | Draft CR to 38.133 correction to NR positioning measurement requirements |
| CATT (Qiuge): The first change seems not needed since it is duplicated with the previous sentence that “The UE Rx-Tx time difference measurement accuracy for all measured DL PRS resourcesshall be fulfilled according to the accuracy requirements specified in clause 10.1.25.” |
| R4-2213498 (Huawei) | CR on PRS meausurement period R16 |
| CATT (Qiuge): overlapped with R4-2211715 |
| R4-2211611 (R&S) | Draft CR to TS 38.133: Corrections to NR RSTD requirements and test cases (Rel 16) |
|  |
| R4-2211716 (CATT) | Draft CR on R16 NR positioning measurement accuracy requirements |
| Anritsu: Overlap with R4-2212195 |
| R4-2211717 (CATT) | Draft CR on R16 NR positioning test cases |
|  |
| R4-2212195 (Qualcomm) | DraftCR - Correction of margins for UE Rx-Tx accuracy requirements |
| Anritsu: Overlap with R4-2211716.CATT (Qiuge): 1) We have another approach as shown R4-2211716. In this paper, the unit of PRS bandwidth for simulation accuracy (defined as number of PRBs in Table 10.1.25.2-1) and for margin (defined as MHz in Table 10.1.25.2-5) are different which may cause confusion. |
| R4-2213500 (Huawei) | CR on accuracy requirements for positioning measurement R16 |
| CATT (Qiuge): 1) Same comments as for R4-2212195 that the unit for PRS bandwidth for X and Z are different. 2) Δ in Table 10.1.23.2-1 to 10.1.23.2-4 should be removed. |
| R4-2213932 (vivo) | Draft CR to TS 38.133: Correction to NR UE Rx-Tx time difference measurement accuracy requirements |
|  |

### CRs for RRM Enhancement

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2211932 (CMCC) | draftCR on inter-frequency measurement without MG |
|  |
| R4-2213502 (Huawei) | CR on inter-frequency measurement without MG R16 |
|  |
| R4-2213879 (ZTE) | Draft CR on Link Recovery Procedures for TS38.133 R16 |
|  |
| R4-2212162 (Qualcomm) | CR: SRS carrier switching configuration correction |
|  |

### CRs for NR-U

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2211839 (Apple) | Draft CR on inter-RAT NR-U RSSI and CO measurement without MG in TS36.133 R16 |
|  |
| R4-2212944 (Huawei) | Draft CR on maintenance on SCell activation in NR-U Rel-16 |
|  |
| R4-2212396 (MTK) | CR on TS38.133 NR-U test cases for time offset between cells with CCA in TDD bands |
| Moderator: Title in the Tdoc list is wrong |
| R4-2212525 (MTK) | Draft CR on TC for known PSCell addition for CCA in R16 |
|  |
| R4-2212946 (Huawei) | Draft CR on test cases of SCell activation in NR-U Rel-16 |
|  |

### CRs for TEI

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2211601 (QC) | CR: Corrections on LTE V2X Resource Selection Test |
|  |
| R4-2212934 (Huawei) | Correction to Rel-16 FR1 test cases\_r16 |
| Huawei: We noticed that there is typo in proposed changes. The highlighted part should be “NR 30 kHz SSB SCS, ≥40 MHz bandwidth, TDD duplex mode” We provide a revised version in :https://www.3gpp.org/ftp/tsg\_ran/WG4\_Radio/TSGR4\_104-e/Inbox/Drafts/%5B104-e%5D%5B201%5D%20Maintenance\_R15\_R16\_RRM/Documents/1%20CR%20for%20R15%20core/R4-2212934%20Correction%20to%20Rel-16%20FR1%20test%20cases\_r16\_revised.docx |
| R4-2212936 (Huawei) | Correction to Rel-16 FR2 test cases\_r16 |
|  |
| R4-2211587 (STMicroelectronics) | Correction of Configuration Parameters for Test 1 in Test Case A.7.1.11 |
| Moderator: CR is reserved as Cat-A. |

## 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:* |

*Recommendations on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title**  | **Assigned Company,****WF or LS lead** |
| #1 |  |  |

### CRs/TPs

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

|  |  |
| --- | --- |
| **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)

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation**  |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

# Recommendations for Tdocs

## 1st round

**New tdocs**

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

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Recommendation**  | **Comments** |
| R4-22xxxxx |  | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

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** | **Revised to** | **Title** | **Source** | **Recommendation**  | **Comments** |
| R4-22xxxxx |  | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| R4-22xxxxx |  | WF on … | YYY | Agreeable, Revised, Noted |  |
| R4-22xxxxx |  | 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