**3GPP TSG-RAN WG4 Meeting # 97-e draft R4-2017293**

**Electronic Meeting, 2-13 Nov., 2020**

**Agenda item:** 7.15.1&7.15.2

**Source:** Moderator (CMCC)

**Title:** Email discussion summary for [97e][223] NR\_HST\_RRM

**Document for:** Information

# Introduction

This email discussion focuses on RRM for Rel-16 NR HST, and in particular the agenda items are:

7.15.1 RRM core requirements maintenance

7.15.2 RRM perf. requirements

7.15.2.1 General

7.15.2.2 Test cases

The targets of email discussion for 1st round and 2nd round are:

* 1st round: discuss the open issues and strive to minimize the open issues, and provide comments on the CRs.
* 2nd round: according to 1st round discussion, discuss left open issues for 2nd round, and strive to minimize the open issues. Strive to agree on CRs

# Topic #1: RRM core requirements

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2014691**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014691.zip) | CMCC | 38.133 CR on CSSFintra for measurement period for intra-frequency measurements in connected mode for Rel-16 NR HST |
| [**R4-2014964**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014964.zip) | vivo,Huawei, HiSilicon | CR on IDLE state cell re-selection requirements for HST in 38.133 |
| [**R4-2014981**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014981.zip) | vivo, Huawei, HiSilicon | CR on IDLE state cell re-selection requirements for HST in 36.133 |
| [**R4-2015156**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015156.zip) | Ericsson | Correction to high speed idle mode core requirement |
| [**R4-2015492**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015492.zip) | Huawei, HiSilicon | Correction on SSB based L1-RSRP Reporting for HST |
| [**R4-2015804**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015804.zip) | ETSI MCC | Correction of CR0972 implementation |
| [**R4-2016207**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016207.zip) | Nokia, Nokia Shanghai Bell | CR to TS 38.133: Corrections to Tables 9.5.4.1-1 and 9.5.4.2-1.  |
| [**R4-2014220**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014220.zip) | Apple | Observation 1: scaling factor CSSF is missing in high speed measurement period requirement.Proposal 1: introduce CSSF in high speed measurement period requirement. |
| [**R4-2014221**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014221.zip) | Apple | CR for HST intra-frequency measurement requirements |

## Open issues summary

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

Companies are encouraged to provide comments to the CRs.

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 1-1: Sub topic 1-2:….Others: |

### 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** |
| CRs related to the inter-RAT layer of higher priority when Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ |
| [**R4-2014964**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014964.zip)**(vivo, Huawei, HiSilicon)** | MTK: We may need to align the table caption between 14964 and 15084.[vivo] It would be very difficult to revise this inter-RAT CR so as to align table caption between intra-frequency and inter-RAT. Firstly, there are requirements for higher priority layers in inter-RAT requirements which are not in intra-frequency requirements. In last meeting it was agreed not to enhance requirements for higher priority layers when the serving cell quality are above the thresholds, which means such indication would only applies when cell quality are below thresholds. If these are clarified in the table caption, it would lead to very long table caption.Moreover, for inter-RAT, it is necessary to indicate that the requirements apply for the **carrier** that need to meet HST requirements. Such indication includes two indications, one in SIB2 and the other in SIB5. It would lead to very long table caption for inter-RAT if these two indications are listed. |
| QC: UE to meet high speed or non-high speed requirement is clear in current version, as high speed flag indication is included in the N layer definition, we don’t see the need for further clarification. But Table 4.2.2.5-2 change is fine for us.[vivo] As stated in the cover page, this CR is to capture agreements in the last meeting’s WF. In our understanding it was not clear until last meeting, on whether the requirements to higher priority layers are enhanced or not in HST scenario. Based on current description in spec, we see Tmeasure is not enhanced but Tevaluate is enhanced when the serving cell quality are above the thresholds.Secondly, it would be necessary to include RAN2 signaling in TS 38.133 to clearly state what is the meaning of “indicated to meet high speed requirements”.Thirdly, it would be necessary to clearly state whether Tevaluate is enhanced in HST scenario when the serving cell quality are above the thresholds, since this has impact on the test case. Our understanding is that Tevaluate is not enhanced according to the agreements in last meeting and we don’t think it is good to re-open discussion for this. |
| CMCC：In general, we are OK with this CR.  |
| Apple: OK with the CR. |
| NokiaIt is not sure whether the text for non-HST requirements is needed because there is an applicability of requirements captured in the agreed WF (R4-2008627).The rest of the proposed changes is OK.[vivo]For the non-HST requirements part, it is to clarify that non-HST requirements would apply no matter there is related indication or not, for the case that Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQThis is to capture the agreements in last meeting that higher priority layer measurement requirement is not enhanced for HST scenario when above the thresholds.Nov 4, 2020: Thanks for the comments.In response to Huawei’s comments, the intention is clear. The same comments as for R4-2015494 but it is provided here for convenience. Just a question for clarification. There are other legacy RRM requirements which are applicable to HST scenarios but are not enhanced. An example is the SSB and CSI-RS based RLM requirements. For these requirements, they do not need to be explicitly pointed out as a result of the applicability rule captured in the WF (R4-2008627). It is somewhat confusing because certain legacy requirements are explicitly pointed out and the others are not (but still applicable to HST). Perhaps, you could elaborate on this. |
| CATT: OK with the CR R4-2014964 and R4-2014981 |
| [**R4-2014981**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014981.zip)**(vivo, Huawei, HiSilicon)** | QC: Same comment as R4-2014964[vivo] As stated in the cover page, this CR is to capture agreements in the last meeting’s WF. In our understanding it was not clear until last meeting, on whether the requirements to higher priority layers are enhanced or not in HST scenario. Based on current description in spec, we see Tmeasure is not enhanced but Tevaluate is enhanced when the serving cell quality are above the thresholds.Secondly, it would be necessary to include RAN2 signaling in TS 38.133 to clearly state what is the meaning of “indicated to meet high speed requirements”.Thirdly, it would be necessary to clearly state whether Tevaluate is enhanced in HST scenario when the serving cell quality are above the thresholds, since this has impact on the test case. Our understanding is that Tevaluate is not enhanced according to the agreements in last meeting and we don’t think it is good to re-open discussion for this. |
| CMCC：In general, we are OK with this CR. |
| Apple: OK with the CR |
| NokiaThe same comment as for R4-2014964.[vivo]For the non-HST requirements part, it is to clarify that non-HST requirements would apply no matter there is related indication or not, for the case that Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQThis is to capture the agreements in last meeting that higher priority layer measurement requirement is not enhanced for HST scenario when above the thresholds. |
| CRs related to CSSFintra for measurement period for intra-frequency measurements in connected mode |
| [**R4-2014691**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014691.zip) **(CMCC)** | Huawei: the change is ok |
| Apple: OK with the CR. |
| NokiaThe CR is OK. Should “RRM enhancement for high speed” in the table caption be updated with highSpeedMeasFlag-r16 if it is agreed? |
| CATT: It covers R4-2014221. OK with the change.  |
| [**R4-2014221**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014221.zip) **(Apple)** | Huawei: The change is ok, and Table 9.2.6.3-3 needs to be fixed as well. |
| MTK: can be merged to 14691. |
| CMCC: both Table 9.2.5.2-5 and Table 9.2.6.3-3 need to be fixed. Can be merged to R4-2014691. |
| Apple: we are fine to merge into14691. |
| CRs related to the correction of the title and table number for Table 4.2.2.3-1 and Table 4.2.2.3-2 (agreed CR R4-2010078 in RAN4 #96 was not correctly implemented to the spec) |
| [**R4-2015804**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015804.zip) **(ETSI MCC)** | Huawei: the change is ok. |
| CMCC: the change is OK |
| vivo:If RAN4 agrees to address MTK’s comment in aligning table captions, it would better to revise this CR. |
| Apple: OK with the CR |
| Nokia:The CR is OK. |
| CATT: OK with the CR. |
| CRs related to L1-RSRP |
| [**R4-2016207**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016207.zip) **(Nokia, Nokia Shanghai Bell)** | Huawei: the change is ok. |
| CMCC: the change is OK |
| Apple: OK with the CR |
| CATT: It covers R4-2015492. OK with the change.  |
| [**R4-2015492**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015492.zip) **(Huawei, HiSilicon)** | Huawei: can be merged to R4-2016207. |
| CMCC: both SSB based L1-RSRP and CSI-RS based L1-RSRP need to be fixed. Can be merged to R4-2016207. |
| Apple: can be merged into 16207. |
| NokiaThe CR can be merged with R4-2016207, which includes corrections for both SSB and CSI-RS based L1-RSRP reporting. |

## 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** | **Issue 1-1: aligning table caption** This issue related to the CRs draft which was raised by companies during the email discussion. To make the spec more clear and to be differentiated from future HST enhancement (e.g. Rel-17 HST WI), Moderator suggest to align the table caption in the way to include RAN2 IE name, e.g. “…for UE configured with *highSpeedMeasFlag-r16*” **Tentative agreement:** table caption is aligned in the way to include RAN2 IE name, e.g. “…for UE configured with *highSpeedMeasFlag-r16*”*Recommendations for 2nd round:**CRs need to be updated to align the table caption* |

*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**  |
| [**R4-2014964**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014964.zip)**(vivo, Huawei, HiSilicon)** | *To be revised.* |
| [**R4-2014981**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014981.zip)**(vivo, Huawei, HiSilicon)** | *To be revised.* |
| [**R4-2014691**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014691.zip) **(CMCC)** | *To be revised.* *According to the comments from companies, the content on the CSSFintra is agreeable, just the wording “RRM enhancement for high speed” in the table caption need to be updated with highSpeedMeasFlag-r16.* |
| [**R4-2014221**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014221.zip) **(Apple)** | *Merged into R4-2014691.*  |
| [**R4-2015804**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015804.zip) **(ETSI MCC)** | *agreeable* |
| [**R4-2016207**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016207.zip) **(Nokia, Nokia Shanghai Bell)** | *agreeable* |
| [**R4-2015492**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015492.zip) **(Huawei, HiSilicon)** | *Merged into R4-2016207.*  |
| [**R4-2015156**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015156.zip) **(Ericsson)** | *not pursued* |

## Discussion on 2nd round (if applicable)

### CRs/TPs comments collection

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| --- | --- |
| **CR/TP number** | **Comments collection**  |
| CRs related to the inter-RAT layer of higher priority when Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ |
| **R4-2017240**(revised from R4-2014964)(vivo, Huawei, HiSilicon) |  |
| **R4-2017241**(revised from [R4-2014981](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014981.zip))(vivo, Huawei, HiSilicon) |  |
| CRs related to CSSFintra for measurement period for intra-frequency measurements in connected mode |
| **R4-2017242**(revised from [R4-2014691](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014691.zip))(CMCC) |  |

## 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: RRM performance part

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2014695**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014695.zip) | CMCC | CR on release independent for Rel.16 NR HST RRM requirements |
| [**R4-2014697**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014697.zip) | CMCC | CR on release independent for Rel.16 NR HST RRM requirements |
| [**R4-2015494**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015494.zip) | Huawei, HiSilicon | Accuracy requirements for NR high speed |
| [**R4-2014533**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014533.zip) | vivo | CR on test case for EUTRAN-NR cell re-selection in HST |
| [**R4-2014630**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014630.zip) | Qualcomm, Inc. | **Proposal 1: Parameters and configuration in RRM tests for Pcell idle and connected mode with 500km/h train speed are as listed in Table 2‑1.**

|  |  |  |
| --- | --- | --- |
| Test to be added | Relevant configurations/requirements | Proposed values |
| Intra-frequency Pcell idle mode test | Newly detectable reselection delay | 3s/2s |
| Propagation condition | AWGN/AWGN 1944 (15kHz SCS) and 3333 (30kHz SCS) Hz |
| Intra-frequency Pcell connected mode test (NR-SA and EN-DC) | Event triggered reporting delay | 5.12s |
| Propagation condition | AWGN/AWGN 1944 (15kHz SCS) and 3333 (30kHz SCS) Hz |
| Inter-RAT NR to E-UTRA idle mode test | Reselection delay | 2s |
| Propagation condition | AWGN/AWGN 1944 Hz |
| Inter-RAT E-UTRA to NR idle mode test | Reselection delay | 2s |
| Propagation condition | AWGN/AWGN 1944 Hz |
| Inter-RAT NR to E-UTRA connected mode test | Event triggered reporting delay | 4.8s |
| Propagation condition | AWGN/AWGN 1944 Hz |
| Inter-RAT E-UTRA to NR connected mode test | Event triggered reporting delay | 4.8s |
| Propagation condition | AWGN/AWGN 1944 (15kHz SCS) and 3333 (30kHz SCS) Hz |

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| [**R4-2014631**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014631.zip) | Qualcomm, Inc. | CR-NR HST RRM test cases |
| [**R4-2014692**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014692.zip) | CMCC | Draft CR on NR-NR intra-frequency reselection for FR1 for high speed scenario |
| [**R4-2015147**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015147.zip) | Ericsson | Test cases for NR -NR cell identification in connected mode for high speed |
| [**R4-2015493**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015493.zip) | Huawei, HiSilicon | Test cases for inter-RAT cell identification in connected mode for HST |
| [**R4-2016215**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016215.zip) | Nokia, Nokia Shanghai Bell | CR to TS 38.133: Test cases for L1-RSRP measurement for beam reporting for NR HST |

## Open issues summary

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

Companies are encouraged to provide comments to the CRs.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| *Background:**the agreed test cases and responsible company are listed as following:*

|  |  |  |  |
| --- | --- | --- | --- |
| *Test scenario* | *Test cases*  | *Test parameters* | *Responsible company* |
| *1. NR SA* | *NR-NR intra-frequency reselection for FR1*  | * *DRX cycle: 320ms*
* *SMTC period: 20ms*
 | *CMCC* |
| *2a. ENDC**2b. NR SA* | *NR-NR intra-frequency event triggered reporting tests without gap under DRX without SSB index reading for FR1 intra-frequency case* | * *DRX cycle: 640ms*
* *SMTC period: 20ms*
 | *Ericsson* |
| *4. NR SA* | *NR-EUTRA inter-RAT cell re-selection* | * *DRX cycle: 320ms*
* *SMTC period: 20ms*
 | *Qualcomm* |
| *5. NR SA* | *NR-EUTRA inter-RAT event triggered reporting test under DRX in FR1* | * *DRX cycle: 320ms*
* *SMTC period: 20ms*
* *MGRP: 40ms*
* *MGL: 6ms*
 | *Huawei* |
| *6. E-UTRAN* | *EUTRA-NR inter-RAT cell re-selection* | * *DRX cycle: 320ms*
* *SMTC period: 20ms*
 | *vivo* |
| *7. E-UTRAN*  | *EUTRA-NR inter-RAT event triggered reporting for FR1 with SSB time index detection when DRX is used* | * *DRX cycle: 320ms*
* *SMTC period: 20ms*
* *MGRP: 40ms*
* *MGL: 6ms*
 | *Huawei* |
| *8a. ENDC**8b. NR SA* | *SSB based L1-RSRP measurement when DRX is used* | * *DRX cycle: 320ms*
* *SMTC period: 20ms*
 | *Nokia, Nokia Shanghai Bell* |

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## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 2-1: Sub topic 2-2:….Others: |

### 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** |
| CRs related to release independent for Rel-16 HST RRM requirements |
| [**R4-2014695**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014695.zip)**(CMCC)** | Huawei: The content is OK. We are not sure if this should be a CR or draft CR. |
| Company B |
|  |
| [**R4-2014697**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014697.zip)**(CMCC)** | Huawei: The content is OK. We are not sure if this should be a CR or draft CR. |
| Company B |
|  |
| CRs related to measurement accuracy |
| [**R4-2015494**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015494.zip)**(Huawei, HiSilicon)** | CMCC: we are OK with this CR |
| NokiaThe CR might not be needed because there is an applicability of requirements captured in the agreed WF (R4-2008627) when no enhancements for HST are specified.[Huawei]: there are two reasons to keep the CR:1. to explicitly point out the legacy accuracy requirements are reused to HST scenarios. Then the agreement in WF R4-2008627 is captured in spec.
2. to distinguish cases: R16 HST RRM enhancements are applied on FR1 intra-frequency SSB based measurement. There are no enhancement on FR1 inter-frequency SSB measurement, FR2 intra-frequency and inter-frequency SSB measurement. And there are no enhancement on CSI-RS based measurement. Thus for the measurement accuracy, it shall be explicitly point out that the legacy accuracy of FR1 intra-frequency SSB based measurement (including RSRP, RSRQ and SINR) is applicable for HST scenario. Other accuracy requirements (e.g., inter-f, CSI-RS, FR2, etc.) are not applicable for HST scenario.

Nov 4, 2020: Thanks for the comments.In response to Huawei’s comments, the intention is clear. Just a question for clarification. There are other legacy RRM requirements which are applicable to HST scenarios but are not enhanced. An example is the SSB and CSI-RS based RLM requirements. For these requirements, they do not need to be explicitly pointed out as a result of the applicability rule captured in the WF (R4-2008627). It is somewhat confusing because certain legacy requirements are explicitly pointed out and the others are not (but still applicable to HST). Perhaps, you could elaborate on this.  |
|  |
| CRs related to test cases |
| [**R4-2014533**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014533.zip)**(vivo)**EUTRAN-NR cell re-selection | Huawei: 1. when Srxlev > SnonIntraSearchP, test of reselection to high priority NR layer under high speed scenario may be not needed (since it is already agreed that there is no enhancement for high priority layer); when Srxlev ≤ SnonIntraSearchP, there is enhancement for high priority and high speed indicated layer. We shall carefully check which condition is satisfied.2. Propagation condition for LTE cell is AWGN 1944.[vivo]1. Agrees to remove test case to high priority NR layers when Srxlev > SnonIntraSearchP. When Srxlev ≤ SnonIntraSearchP, we are inclined to adopt the same methodology in Qualcomm’s NR-EUTRAN CR. Hope such revision may also address Huawei’s concern.

Thanks for the comments. Updated. |
| MTK: We need to align the section title. Either “…for UE configured with *highSpeedMeasFlag-r16*” or “…when RRM enhancement for high speedis configured”, or “…in high speed …”, or “…when indicated to meet high speed requirements”In Table A.8.2.1.2.1-4 and other tables, Snonintrasearch should be SnonintrasearchP[vivo]Agree that we should align the section title. As discussed in the core part maintenance, we suggest to use the term “indicated to meet high speed requirements” but also open to discuss if any change to this term is needed.Second comment is adopted. |
| QC:High priority cell test: No HST enhancement for cell detection and search for high priority cells when S condition is satisfied, and high priority search when S condition is satisfied is not useful in HST, we don’t agree to introduce test case for high priority cells.Low priority cell test: in test requirement, all the actions are taken in T1. Therefore, T2 and T3 are not needed. T2 can be kept if following legacy NR-EUTRAN low priority test, but cell shouldn’t be powered off.[vivo]Comments adopted.Besides, if Qualcomm agrees that higher priority cell do not need any test cases due to no performance enhancement, it is better to clarify in spec. |
| CMCC: In Table A.8.2.1.3.1-3, Propagation Condition is AWGN1944Hz for 15KHz SCS, AWGN3334 Hz for 30KHz SCS[vivo]Adopted. And the same issue AWGN3334 for Qualcomm’s CR 2014631. |
| [**R4-2014631**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014631.zip)**(Qualcomm)**NR-EUTRA cell reselection | MTK: same comment in 14533 |
| vivo:1. In the first paragraph in clause A.6.1.2.3.2, a typo is found:

“The test consists of ~~three~~two successive time periods, with time duration of T1 and T2 respectively. Both NR cell 1 and E-UTRAN cell 2 are already identified by the UE prior to the start of the test.” |
| Note: Same issue for existing clause A.6.1.2.2.2, which should be editorial.1. In Table A.6.1.2.3.2-2, the first row should be Cell 1.

1. It is better to add the note to AWGN 1944 Hz “The AWGN 1944 Hz condition is a non fading propagation channel with one tap. Doppler shift is a constant 1944 Hz.”
 |
| [**R4-2014692**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014692.zip)**(CMCC)**NR-NR intra-frequency cell reselection | MTK: We need to align the section title. Either “…for UE configured with *highSpeedMeasFlag-r16*” or “…when RRM enhancement for high speedis configured”, or “…in high speed …”, or “…when indicated to meet high speed requirements”In Table A.8.2.1.2.1-4 and other tables, Sintrasearch should be SintrasearchP |
| Company B |
|  |
| [**R4-2015147**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015147.zip)**(Ericsson)**NR -NR cell identification in connected mode | Huawei: 1.test case shall be a draft CR. 2. Propagation condition for cell2 is AWGN, target cell (cell3) is AWGN 1944/3334.  |
| MTK: We need to align the section title. Either “…for UE configured with *highSpeedMeasFlag-r16*” or “…when RRM enhancement for high speedis configured”, or “…in high speed …”, or “…when indicated to meet high speed requirements”Either serving cell(s) or the neighboring cell needs to apply AWGN 1944/3334. If all cells have the same frequency offset, then UE will not see relative frequency offset between cells. |
| CMCC: for EN-DC event triggered reporting tests in high speed under DRX, Table A.4.X.2-1 need to be updated as following:

|  |  |
| --- | --- |
| Config | Description |
| 1 | LTE FDD, NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode |
| 2 | LTE FDD, NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 3 | LTE FDD, NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode |
| 4 | LTE TDD, NR 15 kHz SSB SCS, 10 MHz bandwidth, FDD duplex mode |
| 5 | LTE TDD, NR 15 kHz SSB SCS, 10 MHz bandwidth, TDD duplex mode |
| 6 | LTE TDD, NR 30 kHz SSB SCS, 40 MHz bandwidth, TDD duplex mode |
| Note 1: The UE is only required to be tested in one of the supported test configurationsNote 2: Target NR Cell 3 has the same SCS, BW and duplex mode as NR serving Cell 2 |

In Table A.6.Y.2-3, for Cell 1, the Propagation Condition is AWGN |
| [**R4-2015493**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015493.zip)**(Huawei, HiSilicon)**NR-E-UTRAN event-triggered reporting + E-UTRAN- NR Inter-RAT event triggered reporting | MTK: same comment in 15147 |
| QC: NR-EUTRA: RSRP configuration doesn’t align to this test procedure description: *“In the measurement control information from the PCell it is indicated to the UE that event-triggered reporting with Event B2 (PCell becomes worse than threshold1 and inter RAT neighbour becomes better than threshold2) is to be used”, “In the test, the UE shall send one Event B2 triggered measurement report for Cell 2 to the PCell, with a measurement reporting delay less than 4.8s from the start of period T2”*, serving has constant RSRP and neighbor has -inf RSRPEUTRA-NR: RSRP configuration doesn’t align to this test procedure description:“it is indicated to the UE that event-triggered reporting with Event B2 (PCell becomes worse than threshold1 and inter RAT neighbour becomes better than threshold2) [16] is used”, “The UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than 4.8s from the beginning of time period T2.”, both serving and neighboring cell go from -inf to -87 from T1 to T2. |
| CMCC: Propagation condition need to be updated as following:Table A.6.6.3.3.1-3，Propagation condition is AWGN,Table A.8.4.2.9.1-3, Propagation condition is AWGN,Table A.8.4.2.9.1-4, Propagation condition is AWGN 1944 and AWGN3334, |
| [**R4-2016215**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016215.zip)**(Nokia, Nokia Shanghai Bell)**L1-RSRP | MTK: We need to align the section title. Either “…for UE configured with *highSpeedMeasFlag-r16*” or “…when RRM enhancement for high speedis configured”, or “…in high speed …”, or “…when indicated to meet high speed requirements” |
| QC: (1) Why use DRX.8 instead of DRX.6 used in other test cases (2) We would like to understand how the requirement of 1920ms in “*No later than [1920ms] plus 80 slots from the beginning of time period T2*” is derived |
| NokiaIn response to QC’s comments:1. DRX.8 is obtained from the corresponding non-HST test cases. For both EN-DC and NR SSB based L1-RSRP measurement in non-HST, DRX.3 is used. For HST, DRX = 320 ms, this corresponds to DRX.8. For the other test cases, it is DRX.6 (i.e., DRX cycle = 320 ms) because this is obtained from DRX.2 in the corresponding non-HST test cases.

Table A.3.3.3-1: DRX.3: DRX cycle = 40 ms and time alignment timer (TAT) = Infinity

|  |  |
| --- | --- |
| **Field** | **Value** |
| drx-onDurationTimer | 6 ms |
| drx-InactivityTimer | 1 ms |
| drx-RetransmissionTimerDL | 1 slot |
| drx-RetransmissionTimerUL | 1 slot |
| drx-LongCycleStartOffset | 40 ms |
| shortDRX | disable |
| TimeAlignmentTimer | Infinity |
| Note: This DRX configuration is applicable for NR serving cell. The DRX cycle and time alignment timer parameters are specified in clause 6.3.2 in TS 38.331 [2] |

Table A.3.3.8-1: DRX.8: DRX cycle = 320 ms and time alignment timer (TAT) = Infinity

|  |  |
| --- | --- |
| Field | Value |
| drx-onDurationTimer | 6 ms |
| drx-InactivityTimer | 1 ms |
| drx-RetransmissionTimerDL | 1 slot |
| drx-RetransmissionTimerUL | 1 slot |
| drx-LongCycleStartOffset | 320 ms |
| shortDRX | disable |
| TimeAlignmentTimer | Infinity |
| Note: This DRX configuration is applicable for NR serving cell. The DRX cycle and time alignment timer parameters are specified in clause 6.3.2 in TS 38.331 [2] |

1. 1920 ms is derived adopting the same methodology as the corresponding non-HST test cases. However, there is no proper background information documented. The following is from non-HST:

“No later than 640ms plus 80 slots from the beginning …” It is anticipated that 640 ms was computed for DRX.3 (i.e., DRX cycle = 40 ms) as follows:Time period for PSS/SSS detection (Table 9.2.5.1-1) + TL1-RSRP\_Measurement\_Period\_SSB (Table 9.5.4.1-1) **Table 9.2.5.1-1: Time period for PSS/SSS detection, (Frequency range FR1)**

|  |  |
| --- | --- |
| **DRX cycle** | **TPSS/SSS\_sync\_intra** |
| No DRX | max( 600ms, ceil( 5 x Kp) x SMTC period )Note 1 x CSSFintra |
| DRX cycle≤ 320ms | max( 600ms, ceil(M2 Note 2x 5 x Kp) x max(SMTC period,DRX cycle)) x CSSFintra |
| DRX cycle>320ms | ceil(5 x Kp) x DRX cycle x CSSFintra |
| NOTE 1: If different SMTC periodicities are configured for different cells, the SMTC period in the requirement is the one used by the cell being identifiedNOTE 2: When RRM enhancement for high speed is not configured, M2 = 1.5; When RRM enhancement for high speed is configured, M2 = 1.5 if SMTC periodicity > 40 ms;,otherwise M2=1. |

Table 9.5.4.1-1: Measurement period TL1-RSRP\_Measurement\_Period\_SSB for FR1

|  |  |
| --- | --- |
| Configuration | TL1-RSRP\_Measurement\_Period\_SSB (ms)  |
| non-DRX | max(TReport, ceil(M\*P)\*TSSB) |
| DRX cycle ≤ 320ms | max(TReport, ceil(K \*M\*P)\*max(TDRX,TSSB)) |
| DRX cycle > 320ms | ceil(M\*P)\*TDRX |
| Note 1: TSSB = ssb-periodicityServingCell is the periodicity of the SSB-Index configured for L1-RSRP measurement. TDRX is the DRX cycle length. TReport is configured periodicity for reporting.Note 2: K = 1 when TSSB ≤ 40 ms and *highSpeedMeasFlag-r16* are configured; otherwise K = 1.5. |

As mentioned, there is no formal methodology provided to compute the delay for the corresponding non-HST cases, we are open to further discuss the final value. This why 1920 ms is in a pair of square brackets.  |

## 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** | **Issue 2-1: aligning section title** This issue related to the draft CRs on test case which was raised by companies during the email discussion. To make the spec more clear and to be differentiated from future HST enhancement (e.g. Rel-17 HST WI), Moderator suggest to align the section title in the way to include RAN2 IE name, e.g. “…for UE configured with *highSpeedMeasFlag-r16*” **Tentative agreement:** section title is aligned in the way to include RAN2 IE name, e.g. “…for UE configured with *highSpeedMeasFlag-r16*”*Recommendations for 2nd round:**CRs need to be updated to align the section title.* |

*Suggestion 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 provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| [**R4-2014695**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014695.zip)**(CMCC)** | *To be revised.* *According to the discussion in 1st round, the content of this CR is agreeable. But Moderator notes that there is discussion on spec structure in TS38.307 in email discussion #[326] NR\_HST\_Demod\_UE. This CR may need to be revised based on the decision on the spec structure in TS38.307 in #[326] NR\_HST\_Demod\_UE to align the spec structure.* |
| [**R4-2014697**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014697.zip)**(CMCC)** | *To be revised.* *According to the discussion in 1st round, the content of this CR is agreeable. But Moderator notes that there is discussion on spec structure in TS38.307 in email discussion #[326] NR\_HST\_Demod\_UE. This CR may need to be revised based on the decision on the spec structure in TS38.307 in #[326] NR\_HST\_Demod\_UE to align the spec structure.* |
| [**R4-2015494**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015494.zip)**(Huawei, HiSilicon)** | *Return to* |
| [**R4-2014533**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014533.zip)**(vivo)**EUTRAN-NR cell re-selection | *To be revised.* |
| [**R4-2014631**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014631.zip)**(Qualcomm)**NR-EUTRA cell reselection | *To be revised.* |
| [**R4-2014692**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014692.zip)**(CMCC)**NR-NR intra-frequency cell reselection | *To be revised.* |
| [**R4-2015147**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015147.zip)**(Ericsson)**NR -NR cell identification in connected mode | *To be revised.* |
| [**R4-2015493**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015493.zip)**(Huawei, HiSilicon)**NR-E-UTRAN event-triggered reporting + E-UTRAN- NR Inter-RAT event triggered reporting | *To be revised.* |
| [**R4-2016215**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016215.zip)**(Nokia, Nokia Shanghai Bell)**L1-RSRP | *To be revised.* |

## Discussion on 2nd round (if applicable)

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| CRs related to release independent for Rel-16 HST RRM requirements |
| **R4-2017243**(Revised from [R4-2014695](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014695.zip))(CMCC) |  |
| **R4-2017244**(Revised from [R4-2014697](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014697.zip))(CMCC) |  |
| CRs related to measurement accuracy |
| [**R4-2015494**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015494.zip)(Huawei, HiSilicon) |  |
| CRs related to test cases |
| **R4-2017246**(Revised from [R4-2014533](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014533.zip))(vivo)EUTRAN-NR cell re-selection |  |
| **R4-2017247**(Revised from [R4-2014631](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014631.zip))(Qualcomm)NR-EUTRA cell reselection |  |
| **R4-2017248**(Revised from [R4-2014692](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2014692.zip))(CMCC)NR-NR intra-frequency cell reselection |  |
| **R4-2017249**(Revised from [R4-2015147](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015147.zip))(Ericsson)NR -NR cell identification in connected mode |  |
| **R4-2017250**(Revised from [R4-2015493](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015493.zip))(Huawei, HiSilicon)NR-E-UTRAN event-triggered reporting + E-UTRAN- NR Inter-RAT event triggered reporting |  |
| **R4-2017251**(Revised from [R4-2016215](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016215.zip))(Nokia, Nokia Shanghai Bell)L1-RSRP |  |

## 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”* |