**3GPP TSG-RAN WG4 Meeting # 98-e R4-2103754**

**Electronic Meeting, 25 Jan – 5 Feb., 2021**

**Agenda item:** 6.4.4, 7.15.2, 7.18.2, 7.19.6

**Source:** Moderator (ZTE Corporation)

**Title:** Email discussion summary for [98e][315] Demod\_R16\_Maintenance

**Document for:** Information

# Introduction

*Briefly introduce background, the scope of this email discussion and provide some guidelines for email discussion if necessary.*

*List of candidate target of email discussion for 1st round and 2nd round*

* 1st round: TBA
* 2nd round: TBA

# Topic #1: Maintenance for NR support for HST

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals/Observations/Description** |
| [R4-2100168](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100168.zip) | Qualcomm Incorporated | CR to TS 38.101-4 fixing incorrect PDSCH demodulation requirements according to simulation results in R4-2017647 |
| [R4-2100380](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100380.zip) | CATT | Simulation results collection for BS demodulation requirements |
| [R4-2100381](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100381.zip) | CATT | CR to TS 38.141-2: Remove [] for SNR values for UL TA |
| [R4-2100558](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100558.zip) | Nokia, Nokia Shanghai Bell | CR to TS 38.104: Remove [] for SNR values for PUSCH |
| [R4-2100848](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100848.zip) | CMCC | CR to TS 38.101-4: Remove the square brackets on the HST-SFN requirements for TDD |
| [R4-2100854](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100854.zip) | CMCC | CR to TS 38.307 (Rel-15): Add release independence support of HST UE demodulation requirements according to the agreements in R4-2017543 |
| [R4-2100855](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100855.zip) | CMCC | CR to TS 38.307 (Rel-16): Add release independence support of HST UE demodulation requirements according to the agreements in R4-2017544 |
| [R4-2100922](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100922.zip) | Samsung | Updated simulation results for NR HST PUSCH |
| [R4-2100925](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100925.zip) | Samsung | CR to TS 38.141-1: updating UL timing adjustment conducted performance requirement and [] removed as well. |
| [R4-2100993](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100993.zip) | Ericsson | CR to TS 38.141-2 (R16) Remove brackets of SNR values for HST PUSCH |
| [R4-2100994](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100994.zip) | Ericsson | CR to TS 38.141-2 (R17) Remove brackets of SNR values for HST PUSCH |
| [R4-2101042](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101042.zip) | NTT DOCOMO, INC. | CR to TS 38.141-2 Remove brackets of SNR values for the performance requirements of PUSCH for HST (for 1Tx1Rx and minimum CBW) and Multi-path fading channel models under high Doppler values. |
| [R4-2101300](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101300.zip) | Huawei, HiSilicon, Ericsson, Intel Corporation | CR to TS 38.101-4 Clarification notes on TRS and CSI-RS transmission for HST DPS requirements  (Moderator’s observation: SNR values still with []) |
| [R4-2101319](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101319.zip) | Huawei, HiSilicon | CR for 38.104: Remove [] for performance requirements of NR HST PRACH under fading channel |
| [R4-2101320](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101320.zip) | Huawei, HiSilicon | CR for 38.141-1 Remove [] for comformance testing of NR HST PRACH under fading channel |
| [R4-2101321](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101321.zip) | Huawei, HiSilicon | CR for 38.141-2 Remove [] for comformance testing of NR HST PRACH under fading channel |
| [R4-2101438](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101438.zip) | Ericsson | Update simulation results for HST-DPS |
| [R4-2101849](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101849.zip) | ZTE Wistron Telecom AB | CR to TS 38.104 Update on UL timing adjustment performance 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.*

### Sub-topic 1-1

*Sub-topic description: Maintenance for UE demodulation requirements*

*Open issues and candidate options before e-meeting:*

**Issue 1-1: Should UE demodulation performance requirements for supporting HST be finalized in this meeting? i.e., all square brackets for SNR values for UE demodulation performance requirements should be removed in TS 38.101-4.**

* Proposals
  + Option 1: Yes
  + Option 2: No
    - Option 2a: Open to RAN4#98bis-e
    - Option 2b: Open to RAN4#99-e

### Sub-topic 1-2

*Sub-topic description: Maintenance for BS demodulation requirements*

*Open issues and candidate options before e-meeting:*

**Issue 1-2-1: Since there are still updated simulation results submitted to this meeting, should the corresponding requirements be allowed to be updated accordingly?**

* Proposals
  + Option 1: Yes
  + Option 2: No
* Recommended WF
  + TBA

**Issue 1-2-2: Should BS demodulation performance requirements for supporting HST be finalized in this meeting? i.e., all square brackets for SNR values for BS demodulation performance requirements should be removed in TS 38.104, TS 38.141-1, TS 38.141-2.**

* Proposals
  + Option 1: Yes
  + Option 2: No
    - Option 2a: Open to RAN4#98bis-e
    - Option 2b: Open to RAN4#99-e
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| CATT | **Issue 1-2-1: Since there are still updated simulation results submitted to this meeting, should the corresponding requirements be allowed to be updated accordingly?**  Support Option 1. The simulation results for PUSCH from Samsung are captured in updated [R4-2100380](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100380.zip). The SNR values for 38.104 and 38.14 in the excel file are updated as follows:  1) No.19 row of PUSCH 350kmph sheet.  2) No.22 row of PUSCH 500kmph sheet.  **Issue 1-2-2: Should BS demodulation performance requirements for supporting HST be finalized in this meeting? i.e., all square brackets for SNR values for BS demodulation performance requirements should be removed in TS 38.104, TS 38.141-1, TS 38.141-2.**  Both option 1 and option 2 are OK with us. |
| Samsung | Issue 1-1:  We are fine option 2a as deadline to provide results and remove [] at RAN4#99-e meeting if companies have no plan to provide or update their results.  Considering some companies update the results, so, it should allow companies to check whether theirs results can align with other companies.  Regarding the CR with remove [], normally, when we introduce performance requirements (SNR requirements) into specification first time, a [] will be used on SNR requirement After one or two meeting later, a CR can be used to clean up all the [] on the performance requirements under this WI. The reserved [] just allow companies to further check, in case some practical technical issues identified later, So, we suggest to keep [] in the RAN4#98-e meeting. For RAN4#99-e meeting, if companies have not plan to update their results, [] can be removed, considering the new version of spec will be released after June RAN-P meeting.  Issue 1-2-1:  We prefer option 1. We have updated our results with some cases after we check our simulator. Based on the simulation results summary in the last meeting [R4-2100380](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100380.zip), the span for some case are still large.  Meanwhile, during the last meeting, some parameters for requirements, such as UL TA, with additional BWs, companies may bring the new results based on the agreed simulation assumption. To allow companies to check whether their results can align with others, also, some results are missing  We suggest the results with [] open to RAN4#98b-e, and allow companies to check whether they have a plan to provide or update their results in the future meetings.  Issue 1-2-2:  We are fine option 2a as deadline to provide results and we are fine to remove [] at RAN4#99 meeting, if companies have no plan to provide or update the results.  Regarding the CR with remove [], normally, when we introduce performance requirements (SNR requirements) into specification first time, a [] will be used on SNR requirement After one or two meeting later, a CR can be used to clean up all the [] on the performance requirements under this WI. The reserved [] just allow companies to further check, in case some practical technical issues identified later, So, we suggest to keep [] in the RAN4#98-e meeting. For RAN4#99-e meeting, if companies have not plan to update their results, [] can be removed, considering the new version of spec will be released after June RAN-P meeting. |
| Huawei | **Issue 1-1: Should UE demodulation performance requirements for supporting HST be finalized in this meeting? i.e., all square brackets for SNR values for UE demodulation performance requirements should be removed in TS 38.101-4.**  Option 2a. Considering that there are still simulation results provided by companies, square brackets should not be removed until next meeting and all CRs for removing square brackets can be endorsed.  **Issue 1-2-1: Since there are still updated simulation results submitted to this meeting, should the corresponding requirements be allowed to be updated accordingly?**  Option 1.  **Issue 1-2-2: Should BS demodulation performance requirements for supporting HST be finalized in this meeting? i.e., all square brackets for SNR values for BS demodulation performance requirements should be removed in TS 38.104, TS 38.141-1, TS 38.141-2.**  Option 2a, same view as Issue 1-1. Considering that there are still simulation results provided by companies, square brackets should not be removed until next meeting and all CRs for removing square brackets can be endorsed. |

### 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** |
| [R4-2100168](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100168.zip) | Company A |
| Company B |
|  |
| R4-2100848 | Company A |
| Company B |
|  |
| R4-2101300 | Company A |
| Company B |
|  |
| R4-2100854/855 | Company A |
| Company B |
|  |
| R4-2100381 | Company A |
| Company B |
|  |
| [R4-2100558](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100168.zip) | Company A |
| Company B |
|  |
| R4-2100925 | CATT:  In Table 8.2.5.4.2-2, C\_SRS , B\_SRS should be revised to CSRS, BSRS respectively. |
| Company B |
|  |
| R4-2100993/994 | Company A |
| Company B |
|  |
| R4-2101042 | Company A |
| Company B |
|  |
| R4-2101319 | Company A |
| Company B |
|  |
| R4-2101320/21 | Company A |
| Company B |
|  |
| R4-2101849 | Company A |
| Company B |
|  |

## 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: Maintenance for 2-step RACH demodulation requirements

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals/Observations/Descriptions** |
| [R4-2100582](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100582.zip) | Nokia, Nokia Shanghai Bell, Ericsson | CR to TS 38.141-1 Corrections on 2-step RACH demodulation requirements:  Correction of references to FRCs.  Correction of FRC codes which were not updated after update in the numbering of annex clause.  Editorial improvements for harmonization of agreed nomenclature.  Other improvements for improved clarity of the specification.  Moderator’s observation: SNR values still with [] |
| [R4-2100584](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100584.zip) | Nokia, Nokia Shanghai Bell | Updated 2-step RACH simulation results |
| [R4-2100924](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100924.zip) | Samsung | Simulation results for BS 2-step RACH requirement:   1. Change CBW to minimum channel bandwidth, i.e., 15kSCS from 10MHz to 5MHz, 30kSCS from 40MHz to 10MHz, 60kHz SCS remains 50MHz, 120kHz SCS from 100MHz to 50MHz 2. Update simulation results accordingly |
| [R4-2100931](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100931.zip) | Samsung | CR on MsgA PUSCH radiated performance requirement for TS 38.141-2:  Add the note for different TDD pattern  Correction the FRC and channel conditional for test requirement  Minor modification with adding the reference  Add the missing clause number  Add the 2-step RA type in title of test requirement  Update the requirement based on the latest simulation summary  Moderator’s observation: SNR values still with [] |
| [R4-2101302](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101302.zip) | Huawei, HiSilicon, Nokia, Nokia Shanghai Bell | CR to TS 38.104 on correction 2-step RACH performance requirements for FR2 in 38.104 (Rel-16):  FRC number correction |
| [R4-2101304](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101304.zip) | Huawei, HiSilicon | CR to TS 38.141-1 on update applicability rule for 2-step RACH in 38.141-1 (Rel-16):  To be consistent with RAN4 agreements that only one SCS needs to be tested if both SCS are supported. |
| [R4-2101306](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101306.zip) | Huawei, HiSilicon | CR to TS 38.141-2 on update applicability rule for 2-step RACH in 38.141-2 (Rel-16): similar change as R4-2101304 (testing only one SCS if both SCSs are supported) |

## 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

*Sub-topic description:*

*For BS demodulation requirements for 2-step RACH, the channel bandwidths were set to 10MHz for SCS 15kHz, 40MHz for SCS 30kHz, 50MHz for SCS 60kHz and 100MHz for SCS 120kHz. However, there is one proposal in this meeting to set to the minimum channel bandwidth for each SCS.*

*Open issues and candidate options before e-meeting:*

**Issue 2-1: In current specs, BS demodulation requirements for 2-step RACH are specified for 2 PRBs allocated within different channel bandwidths for different SCSs. Do you agree to change to the minimum channel bandwidth for each SCS?**

* Proposals
  + Option 1: No, keep as it is in TS 38.104 now, i.e., 10MHz for SCS 15kHz, 40MHz for SCS 30kHz, 50MHz for SCS 60kHz, 100MHz for SCS 120kHz
  + Option 2: Yes, that is to set channel bandwidth to: 5MHz for SCS 15kHz,10MHz for SCS 30kHz, 50MHz for 60kHz, 50MHz for SCS 120kHz for related AWGN level at the BS input setting.
* Recommended WF
  + TBA

### Sub-topic 2-2

*Sub-topic description:*

*For each frequency range, if a BS supports both SCSs for 2-step RACH, RAN4 agreed to test only one of SCSs. This seems not reflected in the current specs.*

*Open issues and candidate options before e-meeting:*

**Issue 2-2: Does the current RAN4 specs reflect the agreement that a BS supporting both SCSs in one frequency range needs to be tested for only one SCS?**

* Proposals
  + Option 1: No, application rule clauses should be added
  + Option 2: Yes, keep as it is now
* Recommended WF
  + TBA

### Sub-topic 2-3

*Sub-topic description:*

*There are updated simulation results submitted to this meeting.*

*Open issues and candidate options before e-meeting:*

**Issue 2-3: Should this meeting, i.e., RAN4#98e, the last meeting allowing simulation results to be updated for BS demodulation requirements for 2-step RACH?**

* Proposals
  + Option 1: No
    - Option 1a: Open to RAN4#98bis -e
    - Option 1b: Open to RAN4#99-e
  + Option 2: Yes, update corresponding requirements with updated numerical inputs.
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 2-1:  Issue 2-1:  Sub topic 2-2:  Issue 2-2:  Sub topic 2-3:  Issue 2-3: |
| Samsung | Issue 2-1:  In the previous, we have agreed to specify the requirement with 2 PRBs per SCS for 2-step RACH, which there is no mentioned the related the BW. From the modulation performance perspective, there is no different. Our intention is to clarify what is the related BW should be used for AWGN level setting at BS input for BS conformance test.  Therefore, either option 1 and option 2 are fine with us, while it should be clarified to avoid the confusion, given there is no agreement in the previous meeting if my understanding is correct.  Issue 2-2:  We are fine with option 1 to add the application rule, since the current spec indicates that the tests shall apply for each SCS declared to be supported, which means that both two SCS will be tested.  Issue 2-3:  We prefer option 1 with option 1a. we are fine to remove [] during option 1b  In the last meeting, the test parameters for 2-step was agreed, companies will bring the new simulation results based on the agreed simulation assumption.  Regarding the CR with remove [], normally, when we introduce performance requirements (SNR requirements) into specification first time, a [] will be used on SNR requirement After one or two meeting later, a CR can be used to clean up all the [] on the performance requirements under this WI. The reserved [] just allow companies to further check, in case some practical technical issues identified later, So, we suggest to keep [] in the RAN4#98-e meeting. For RAN4#99-e meeting, if companies have not plan to update their results, [] can be removed, considering the new version of spec will be released after June RAN-P meeting. |
| Huawei | **Issue 2-1: In current specs, BS demodulation requirements for 2-step RACH are specified for 2 PRBs allocated within different channel bandwidths for different SCSs. Do you agree to change to the minimum channel bandwidth for each SCS?**  It seems that this issue was not discussed before. In our view, BS only supporting mini-bandwidth should not be limited to not support 2-step RACH. Considering that same PRBs are allocated, same SNR value can be expected between different bandwidth therefore we don’t need to re-simulate.  **Issue 2-2: Does the current RAN4 specs reflect the agreement that a BS supporting both SCSs in one frequency range needs to be tested for only one SCS?**  Option 1.  **Issue 2-3: Should this meeting, i.e., RAN4#98e, the last meeting allowing simulation results to be updated for BS demodulation requirements for 2-step RACH?**  Option 2 |

### 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** |
| [R4-2100582](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100582.zip) | Company A |
| Company B |
|  |
| [R4-2100931](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100931.zip) | Company A |
| Company B |
|  |
| [R4-2101302](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101302.zip) | Company A |
| Company B |
|  |
| [R4-2101304](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101304.zip) | Company A |
| Company B |
|  |
| [R4-2101306](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101306.zip) | Company A |
| Company B |
|  |

## 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:* |

*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** |
| 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”* |