**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 missingWe 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. |
| Nokia, Nokia Shanghai Bell | 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. (Reasoning see below.)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 1. (Reasoning see below.)In the last meeting (97e) the technical content of R16 HST demod was declared to be complete. During the online session, all companies agreed to bring the final CRs until the next meeting (98e).The simulation summary template has been stable for some time and even the new results provided in this meeting only change very few cases by up to 0.2dB; the large majority are not changing.We can accept to still update the simulation results in this meeting, for cases that are still in square brackets after the last meeting.However, to keep in line with prior online discussions, the square brackets should be removed this meeting. The values have been reasonably stable since RAN4#96. Though, the initial workplan [R4-1910051] can no longer serve as guidance, we would prefer to not drag out the topic for longer than is necessary.Values without square brackets can still be changed, if they are shown to be grossly erroneous. |
| Qualcomm | Issue 1-1: Option 2a since there are still new results in this meeting. |
| Ericsson | **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. **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?**Agree with Option 1 since all updated cases are with brackets. **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.**We can accept Option 2a. |
| Intel | **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.**We can finalize requirements this meeting if companies are not planning to update results further. Only one company submitted results for DPS Tx scheme, and we can take them into account and remove square brackets. Support Option 1.**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.**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.**If companies are not planning to update results next meeting, we can finalize requirements this meeting and remove square brackets taken into account updated results. |
| CMCC | **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.**We slightly prefer option 1. However, considering the final CR was agreed in last meeting and there is company to provide updated simulation results, we are also fine with option 2a to allow company to have check. And for the CRs for removing square brackets, it is suggested to endorse them in this 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?**Since there is company to provide updated simulation results, we are OK with 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.**We slightly prefer option 1. And we share similar observation with Nokia that the simulation summary template has been stable for some time. However, considering there is company to provide updated simulation results, we are also fine with option 2a to allow company to have check. And for the CRs for removing square brackets, it is suggested to endorse them in this meeting. |

### 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 | Qualcomm: Take agreement from Issue 1-1 into account. |
| Company B |
|  |
| R4-2101300 |  ~~Huawei: Mirror CR (Rel-17) is missed to be reserved so a new Tdoc number is need to be allocated.~~ |
| Company B |
|  |
| R4-2100854/855 | Company A |
| Company B |
| Intel: R4-2100854: Table C2-1 which should list applicable requirements is missed in Rel-15 38.307.R4-2100855: DPS requirements are missed in table of listed requirements (C2-1). |
| CMCC: response to intel: for R4-2100854, no need to add Table C2-1 in the Rel-15 CR. The reason we do not have Table C.2-1in Rel-15 CR is that this table is only listed in the release when the feature was introduced, as shown in the highlighted part in yellow in the following figure. This approach is adopted since LTE spec.For R4-2100855, thanks Intel for the careful check, we will update the CR to capture DPS requirements. |
| R4-2100381 | Nokia: Take agreement on issue 1-2-2 into account, once available. |
| Company B |
|  |
| [R4-2100558](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100168.zip) | Nokia: Take agreement on issue 1-2-2 into account, once available. |
| Company B |
|  |
| R4-2100925 |  CATT:In Table 8.2.5.4.2-2, C\_SRS , B\_SRS should be revised to CSRS, BSRS respectively. |
| Nokia: Take agreement on issue 1-2-2 into account, once available. |
|  |
| R4-2100993/994 | Nokia: Take agreement on issue 1-2-2 into account, once available. |
| Ericsson: Need to align values with finalized summary sheet. |
|  |
| R4-2101042 | Nokia: Take agreement on issue 1-2-2 into account, once available. |
| Ericsson: Need to align values with finalized summary sheet. |
|  |
| R4-2101319 | Nokia: Take agreement on issue 1-2-2 into account, once available. |
| Ericsson: Need to align values with finalized summary sheet. |
|  |
| R4-2101320/21 | Nokia: Take agreement on issue 1-2-2 into account, once available. |
| Ericsson: Need to align values with finalized summary sheet. |
|  |
| R4-2101849 | Nokia: Take agreement on issue 1-2-2 into account, once available. |
| Ericsson: We think square brackets for the requirements can be removed in this meeting.  |
|  |

## 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:**Issue 1-1: Slight majority view: 4 companies go for Option 2a, 2 companies go for Option 1.**Issue 1-2-1: Unanimous agreement on Option 1: 7 companies go for Option 1. There should be one common understanding within the group on whether or not to allow changes on SNR values without square brackets if new simulation inputs from one or more companies.**Issue 1-2-2: A tie between two options: 3 companies go for Option 1, 3 companies go for Option 2a, 1 company are ok with both options.** *Based on the above observations, the following tentative agreements are made for the first-round discussion:Update the requirements according to the simulation results submitted in this meeting*
* *In this round, not enough support to finalize demodulation requirements for NR HST*
* *As a potential step forward, align common understanding on whether or not to allow changes on SNR values without square brackets if new simulation inputs from one or more companies*
	+ *If not, considering there is still potential to update simulation results, all square brackets will be removed in RAN4#99-e, and RAN4#98bis-e is the last meeting for updated simulation results*
	+ *If yes, remove all square brackets in this meeting, and allow SNR value changes based on new simulation inputs in RAN4#98bis-e and RAN4#99 if any*

*Candidate options:**Recommendations for 2nd round:** *Update the impacted requirements impacted according to the simulation results submitted in this meeting*
* *Issue 1-3-1: In your understanding, is it still allowed to change an SNR value without square brackets if new simulation inputs from one or more companies lead to?*
	+ *Option 1: Yes*
	+ *Option 2: No*
* *Settle all open CRs based on the aligned common understanding*
	+ *If Option 1 is reached, remove all square brackets in this meeting, and allow SNR value changes based on new simulation inputs in RAN4#98bis-e and RAN4#99 if any*
	+ *If Option 2 is reached, all square brackets are kept in this meeting , but will be removed in RAN4#99-e*
 |

*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”* |
| R4-2100168 | *Agreeable* |
| R4-2100848 | *To be decided in the 2nd round* |
| R4-2101300 | *Agreeable* |
| R4-2100854 | *Agreeable* |
| R4-2100855 | *To be revised, adding DPS requirements* |
| R4-2100381 | *To be decided in the 2nd round* |
| R4-2100558 | *To be decided in the 2nd round* |
| R4-2100925 | *To be decided in the 2nd round. Editor changes identified: C\_SRS -> CSRS, B\_SRS-> BSRS* |
| R4-2100993 | *To be decided in the 2nd round* |
| R4-2100994 | *To be decided in the 2nd round* |
| R4-2101042 | *To be decided in the 2nd round* |
| R4-2101319 | *To be decided in the 2nd round* |
| R4-2101320 | *To be decided in the 2nd round* |
| R4-2101321 | *To be decided in the 2nd round* |
| R4-2101849 | *To be decided in the 2nd round* |

## 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 patternCorrection the FRC and channel conditional for test requirementMinor modification with adding the referenceAdd the missing clause numberAdd the 2-step RA type in title of test requirementUpdate the requirement based on the latest simulation summaryModerator’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 1bIn 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 |
| Nokia, Nokia Shanghai Bell | Issue 2-1:We are fine with both options and remove the square brackets from the specs. Issue 2-2:We agree with Option 1. Application rule has to be added to reflect that agreement. Issue 2-3:We prefer option 2. We have had a couple of iterations already to update the simulation results, which seem to be stable.  |
| Ericsson | Issue 2-1: This is a minor issue for the test spec, but we agree it is better to specify something than leave it unspecified. Either option is OK and there are arguments either way. Aligning to the core spec could be right, but on the other hand assuming the smallest bandwidth makes the AWGN bandwidth assumption more similar to the actual used bandwidth of 2RB. We are fine with either option.Issue 2-2: Since it seems to be needed in order to implement the previous agreement, we are fine with option 1.Issue 2-3: The WI was already closed. We appreciate that some parameters were changed during the November meeting and that not all companies had time to simulate, and we are OK to update the requirement values according to the results submitted this meeting. After this, we should consider the requirements finalized; i.e. option 2. (Of course, if it is found that there is some significant problem with the requirements then companies can raise it as maintenance as usual though.) |
| Intel | **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?**We are fine with either options on setting AWGN level and ask companies to align CRs to 38.101-1 and 38.101-2**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?**Support 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?**Support Option 2 if companies are not planning to further update their results. |

### 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:**Issue 2-1: Unanimous view on both options: 5 companies are ok with both options.**Issue 2-2: Unanimous view on Option 1, i.e., application rule clauses should be added**Issue 2-3: Majority view: 4 companies go for Option 2, 1 company prefers to Option 1.**Based on the above observations, we make the following tentative agreements:** *Since both options for CBW/SCS are acceptable, TS 38.141-1 and TS 38.104 are aligned with this regards, i.e., 10MHz for SCS 15kHz, 40MHz for SCS 30kHz. Update TS 38.141-2 accordingly to be aligned with TS 38.104, which would require least change on specs. Add application rule clauses reflecting RAN4 agreements to test only one SCS for a BS supporting both SCSs for 2-step RACH.*
* *Since all companies in the simulation collection table have submitted their results, no more simulation inputs are expected in the next meeting, therefore,we can finalize BS demodulation requirements for 2-step RACH in this meeting, i.e., this meeting is the last meeting for new simulation updates, and remove all square brackets in CRs*

*Candidate options:**Recommendations for 2nd round:** Update channel bandwidths in TS 38.141-2 aligned with TS 38.104: 10MHz for SCS 15kHz, 40MHz for SCS 30k, 100MHz for SCS 120k.
* Further check on wording to add application rule clauses
* Update requirements according to the finalized simulation results.
 |

*Suggestion on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title**  | **Assigned Company,****WF or LS lead** |
| #1 | CR to Rel-16 TS 38.104 BS demodulation requirements for 2-step RACH (Section 8.2.9.2) | ZTE |
| #2 | CR to Rel-17 TS 38.104 BS demodulation requirements for 2-step RACH (Section 8.2.9.2) | ZTE |
| #3 | CR to Rel-16 TS 38.141-1 BS demodulation requirements for 2-step RACH (Section 8.2.9.5) | Ericsson |
| #4 | CR to Rel-17 TS 38.141-1 BS demodulation requirements for 2-step RACH (Section 8.2.9.5) | Ericsson |
| #5 | CR to Rel-16 TS 38.104 BS demodulation requirements for 2-step RACH (Section 11.2.2.4.2) | Huawei |
| #6 | CR to Rel-17 TS 38.104 BS demodulation requirements for 2-step RACH (Section 11.2.2.4.2) | Huawei |
| #7 | CR to Rel-17 TS 38.141-2 BS demodulation requirements for 2-step RACH Note: Mirror to revised R4-2100931 | Samsung |
| #8 | CR to Rel-17 TS 38.141-1 BS demodulation requirements for 2-step RACHNote: Mirror to revised R4-2100582 | Nokia |
| #9 | Updated simulation results collection on BS demodulation requirements for 2-step RACH | ZTE |

### 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”* |
| [R4-2100582](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100582.zip) | *To be revised. + update SNR values* |
| [R4-2100931](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2100931.zip) | *To be revised. Update channel bandwidths according to the 1st round discussion + update SNR values* |
| [R4-2101302](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101302.zip) | *Agreeable* |
| [R4-2101304](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101304.zip) | *To be revised* |
| [R4-2101306](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98_e/Docs/R4-2101306.zip) | *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”* |