**3GPP TSG-RAN WG4 Meeting # 99-e R4-210XXXX**

**Electronic Meeting, 19th – 27th May, 2021**

**Agenda item:** 4.1.9, 4.2.4

**Source:** Moderator (ZTE)

**Title:** Email discussion summary for [99-e][318] Demod\_R15\_Maintenance

**Document for:** Information

# Introduction

*Briefly introduce background, the scope of this email discussion (e.g. list of treated agenda items) 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: Rel-15 NR demodulation performance

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2108889**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108889.zip) | ANRITSU LTD | Moderator’s remarks:  (1) Propose to change the description on how to calculate Noc for FR2:  - The current method is to first calculate a baseline as reference, i.e., n260, 50MHz channel bandwidth, resulting in -155 dBm, and then apply the REFSENS difference between the target and the baseline  - Proposal is to combine the above two steps into one step, as is done for FR1  (2) More minor changes:  - None-rounded value of ∆thermal from 6dB to 5.87dB  - Final Noc value is rounded to 0.1dB instead of 0.5dB. |
| R4-2108890 | ANRITSU LTD | Mirror CR |
| R4-2108891 | ANRITSU LTD | Mirror CR |
| [**R4-2110741**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110741.zip) | Ericsson | Moderator’s remarks:  (1) Proponent re-iterates it is a generic issue (Adjusting AWGN level impacts input baseband SNR but not invalidates conformance tests), not only for Rel-17 FR2, but also for Rel-15, FR1 and FR2.  (2) Propose the same change (Note X) at least from Rel-16 FR2, and discuss further for Rel-15 FR2  (3) Align similar change for FR1 (offset level up to 16dB instead of 15dB) as well from the same release as the FR2 change. |
| [**R4-2111468**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111468.zip) | Intel Corporation | Editorial changes for TS 38.101-4 Rel-15 |
| R4-2111469 | Intel Corporation | Mirror CR |
| R4-2111470 | Intel Corporation | Mirror CR |
| [**R4-2110489**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110489.zip) | Huawei, HiSilicon | 1. Change the TDD slot configuration specifed in table 8.4.2.2-1 from “FR1.120-2” to ”FR2.120-2” 2. Added the description in RMC that the number of consecutive PDSCH symbols is 0 for the firsr slot of every 20ms. 3. Recalculated the tbSize for CQI index 1 in table A.4-1, table A.4-2 and table A.4-3 |
| R4-2110490 | Huawei, HiSilicon | Mirror CR |
| R4-2110491 | Huawei, HiSilicon | Mirror CR |
| [**R4-2110492**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110492.zip) | Huawei, HiSilicon | ***Observation 1: Overhead of UCI is ignored for the calculation of channel bits and total number of REs for FRCs of UCI multiplexing on PUSCH requirements***  ***Proposal 1: Preparer new CRs to create the new FRCs for UCI multiplexing on PUSCH with recalculation of channel bits and total number of REs considering overhead of UCI.***  ***Observation 2: Overhead of PTRS is ignored for the calculation of channel bits and total number of REs for FRCs of FR2 PUSCH requirements with PTRS***  ***Proposal 2: Prepare the new CRs to add the channel bits and number of REs to FRCs for PUSCH requirements with PTRS considering the overhead of PTRS*** |
| [**R4-2109331**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109331.zip) | Apple | Updated the aperiodic report slot offset for RI reporting test in FR2. |
| R4-2109332 | Apple | Mirror CR |
| R4-2109333 | Apple | Mirror CR |
| R4-2109186 | Intel | CR for the TS 38.101-4 with the following changes:   * Add clarifcation note for tests with multiple UE features/capabilities * Update frequency allocation of CSI-RS and ZP-CSI-RS. Update number of binary channel bits for FRC with BWP size not multiple of 4. * Editorial corrections   + Rename “NZP CSI-RS for beam management” to “NZP CSI-RS for beam refinement” to align with naming for PDSCH and CSI requirements   + Add “Frequency occupation configuration” for “NZP CSI-RS for beam refinement” |
| R4-2109187 | Intel | Mirror CR |
| R4-2109188 | Intel | Mirror CR |
| [**R4-2108846**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108846.zip) | Anritsu corporation | Moderator’s remarks:  Propose to define explicitly HARQ feedback timing in DCI format 1\_0 for PDCCH demodulation tests |
| R4-2108847 | Anritsu corporation | Mirror CR |
| R4-2108848 | Anritsu corporation | Mirror CR |
| [**R4-2110202**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110202.zip) | Keysight Technologies UK Ltd | Correcting wrong FRC numbering and SNR values in TS 38.141-1 (Rel-15) |
| [**R4-2110205**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110205.zip) | Keysight Technologies UK Ltd | Correcting PUCCH format 1 demodulation test AWGN level table in TS38.141-2 (Rel-15), and adding FR2 120kHz SCS setting. |
| [**R4-2110206**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110206.zip) | Keysight Technologies UK Ltd | Correcting number of Tx for test in Table 8.3.4.5-1 TS 38.141-1 (Rel-16) |
| [**R4-2110207**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110207.zip) | Keysight Technologies UK Ltd | Correcting PUCCH format 1 demodulation test AWGN level table in TS38.141-2 (Rel-16), and adding FR2 120kHz SCS setting. |
| R4-2110208 | Keysight Technologies UK Ltd | Mirror CR to R4-2110206 |
| R4-2110209 | Keysight Technologies UK Ltd | Mirror CR to R4-2110207 |
| [**R4-2110210**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110210.zip) | Keysight Technologies UK Ltd | Moderator’s remarks:  Summary for all proposed CRs (R4-210202/05/06/07) |
| [**R4-2110596**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110596.zip) | Nokia, Nokia Shanghai Bell | Moderator’s remarks:  Proposing to add a note on AWGN power levels. Similar to those in R4-21010741. |
| [**R4-2110630**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110630.zip) | Ericsson | Moderator’s remarks:  Correcting subscript of the variable name for PMI test metric. |
| R4-2110631 | Ericsson | Mirror CR |
| R4-2110632 | Ericsson | Mirror CR |

## 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: Whether or not to update Noc derivation for FR2*

*The current method is to first calculate a baseline as reference, i.e., n260, 50MHz channel bandwidth:*

*Noc = REFSENSPC3, n260, 50MHz -10Log10(SCSREFSENS x PRBREFSENS x 12) – SNRREFSENS + ∆thermal*

*resulting in -155 dBm with the parameters defined, and then apply the REFSENS difference between the target and the baseline:*

*Noc(PC\_X, Band\_Y) = -155 dBm/Hz + REFSENSPC\_X, Band\_Y, 50MHz – REFSENSPC3, n260, 50MHz*

*The final equation actually can be rewritten if merging the above two steps into one as following:*

*Noc(PC\_X, Band\_Y) = REFSENSPC3, n260, 50MHz -10Log10(SCSREFSENS x PRBREFSENS x 12) – SNRREFSENS + ∆thermal*

*+ REFSENSPC\_X, Band\_Y, 50MHz – REFSENSPC3, n260, 50MHz*

*= REFSENSPC\_X, Band\_Y, 50MHz - 10Log10(SCSREFSENS x PRBREFSENS x 12) – SNRREFSENS + ∆thermal which is actually the main proposal in R4-2108889.*

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

**Issue 1-1-1: Whether or not to change the description of deriving Noc for FR2 from a two-step method to one-step method similar as in FR1?**

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

**Issue 1-1-2: Whether or not to change ∆thermal from 6dB to 5.87dB? Note that in Noc derivation for FR1, ∆thermal is set to 16dB for a 0.1dB noise rise.**

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

**Issue 1-1-3: Whether or not to round the final Noc value to 0.1dB instead of 0.5dB?**

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

### Sub-topic 1-2

*Sub-topic description*

*In BS demodulation tests, adjusting AWGN level may impact input baseband SNR more significantly, but it will not invalidate conformance tests since the input baseband SNR is always lower than that TE output SNR. This is a generic issue.*

*The following Note X for FR2 was agreed to Rel-17:*

**Note X: The AWGN power level contains an AWGN offset of 15dB. If needed for test purposes, the AWGN level can be reduced by any value in the range 0dB to 15dB. Changing the AWGN level does not impact the validity of the test, as it reduces the effective base band SNR level.**

*The discussion is on whether the same note applies to an earlier Release, and for FR1 as well with a different upper limit.*

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

**Issue 1-2-1: Whether or not to introduce Note X for FR2 to Rel-16?**

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

**Issue 1-2-2: Whether or not to introduce Note X for FR2 to Rel-15?**

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

**Issue 1-2-3: Whether or not to introduce a note similar to Note X with a different upper limit 16dB for FR1 to the same release as the FR2 change?**

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

--------------GTW Note----------

Agreement:

Issue 1-2-1: Opton 1 (Rel-16)

Issue 1-2-3: Option 1 (Rel-16)

**Issue 1-2-2: Whether or not to introduce Note X for FR2 to Rel-15?**

**FFS whether note X needed to be applied for Rel-15 (FR1 and FR2)**

Huawei: Since Rel-15 already into the market, we didn’t see really the need.

E///: This has no impact on test in Rel-15, just for backward compatibility and consistent with the specifications.

Nokia: Similar view as E///. We prefer to keep the consistent.Huawei: we didn’t observe the techincial issue on Rel-15 test.

E///: OTA Link budget for FR2 only, achievd power issue for FR1 and FR2.

### Sub-topic 1-3

*Sub-topic description*

*The overhead of UCI and PT-RS for channel bits calculation for FRC of PUSCH requirements are not considered.*

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

**Issue 1-3-1: How to consider the overhead of UCI for channel bits calculation for FRC of UCI multiplexed on PUSCH requirements?**

* Proposals
  + Option 1: Ignore it and keep the FRC as it is now in the specification
  + Option 2: Consider the overhead of UCI for channel bits calculation and update the corresponding FRCs
* Recommended WF
  + TBA

**Issue 1-3-2: How to consider the overhead of PT-RS for channel bits calculation for FRC of FR2 PUSCH requirements with PT-RS configured?**

* Proposals
  + Option 1: Ignore it and keep the FRC as it is now in the specification
  + Option 2: Consider the overhead of PT-RS for channel bits calculation and update the corresponding FRCs
* Recommended WF
  + TBA

### Sub-topic 1-4

*Sub-topic description*

*HARQ feedback timing in DCI format 1\_0 for PDCCH demodulation tests is not explicitly defined in the current specs.*

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

**Issue 1-4-1: Should HARQ feedback timing in DCI format 1\_0 for PDCCH demodulation tests be explicitly defined?**

* Proposals
  + Option 1: Yes, and definition as proposed in R4-2108846.
  + Option 2: Not needed, and keep as it is now.
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

Sub topic 1-1

**Issue 1-1-1: Whether or not to change the description of deriving Noc for FR2 from a two-step method to one-step method similar as in FR1?**

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

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support the option 1. Based on our understanding, the FR2 bands specified in TS 38.101-2 are independent of each other, so it will be misleading if Noc calculation for all FR2 bands are based on n260. |
| Qualcomm | Ok with Option 1. |

**Issue 1-1-2: Whether or not to change ∆thermal from 6dB to 5.87dB? Note that in Noc derivation for FR1, ∆thermal is set to 16dB for a 0.1dB noise rise.**

* Proposals
  + Option 1: Yes
  + Option 2: No

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | We prefer Option 1 that is consistent with the calculation result as per the formula in the CR. |
| Qualcomm | Ok with Option 1. |

**Issue 1-1-3: Whether or not to round the final Noc value to 0.1dB instead of 0.5dB?**

* Proposals
  + Option 1: Yes
  + Option 2: No

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Ok with Option 1, based on our calculation, the Noc is -155.47dBm that is closer to -155.5dBm. We are OK to round it to 0.1dB to be more accurate. |
| Qualcomm | Ok with Option 1. |

Sub topic 1-2

**Issue 1-2-1: Whether or not to introduce Note X for FR2 to Rel-16?**

* Proposals
  + Option 1: Yes
  + Option 2: No

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | The issue was raised in Rel-17 n262 WI and agreed to introduce from at least from Release 17, but we are also OK to introduce it from Release 16, i.e. option 2. |
| Ericsson | For the reasons we discussed in our contribution, we support option 1. |
| Nokia, Nokia Shanghai Bell | Option 1 is our proposal; we maintain our support.  Please find detailed justification and in our contribution **[R4-2110596](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110596.zip)**. |

**Issue 1-2-2: Whether or not to introduce Note X for FR2 to Rel-15?**

* Proposals
  + Option 1: Yes
  + Option 2: No

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support option 2. It is enough to introduce this for Rel-16 and Rel-17. |
| Ericsson | Since this is a modification to test setup and is backwardly compatible, we think a change to rel-15 is reasonable to enhance consistency (Option 1). We are OK though if other companies prefer no rel-15 change. |
| Nokia, Nokia Shanghai Bell | Option 1 is our proposal; we maintain our support.  Please find detailed justification and in our contribution **[R4-2110596](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110596.zip)**. |

**Issue 1-2-3: Whether or not to introduce a note similar to Note X with a different upper limit 16dB for FR1 to the same release as the FR2 change?**

* Proposals
  + Option 1: Yes
  + Option 2: No

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | OK with option 1. |
| Ericsson | For the reasons we discuss in our paper, we support option 1. Regarding the release, we propose it should be introduce in the same release as agreed for the FR2 note. |
| Nokia, Nokia Shanghai Bell | Option 1 is our proposal; we maintain our support.  Please find detailed justification and in our contribution **[R4-2110596](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110596.zip)**.  Having the notes for FR1 read “15dB” will be actively misleading to readers of the spec, even though it will not be technically wrong. |

Sub topic 1-3

**Issue 1-3-1: How to consider the overhead of UCI for channel bits calculation for FRC of UCI multiplexed on PUSCH requirements?**

* Proposals
  + Option 1: Ignore it and keep the FRC as it is now in the specification
  + Option 2: Consider the overhead of UCI for channel bits calculation and update the corresponding FRCs

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support Option 2. For UCI multiplexing on PUSCH requirements, the same FRC as PUSCH requirements are used without consideration of UCI overhead, but UCI overhead affects the parameters of "Total number of bits per slot" and Total symbols per slot". From our understanding, the values for these two parameters defined in the current FRC are only applicable for PUSCH and resource reserved for UCI should be excluded. |
| Ericsson | We can accept Option 2 to make the specification more precise. But how to update the specification should be further discussed. |
| Nokia, Nokia Shanghai Bell | In our understanding, the “channel bits” in this case are supposed to mean the “data bits” plus the “UCI bits”, since those bits “all are transmitted over the channel”.  As such we don’t think that the UCI bits should be subtracted from this number. Hence option 1 is our current preference.  Or did we misunderstand what the contribution containing this proposal means by “data is rate matched with UCI” and “overhead of UCI”? |

**Issue 1-3-2: How to consider the overhead of PT-RS for channel bits calculation for FRC of FR2 PUSCH requirements with PT-RS configured?**

* Proposals
  + Option 1: Ignore it and keep the FRC as it is now in the specification
  + Option 2: Consider the overhead of PT-RS for channel bits calculation and update the corresponding FRCs
    - For example:

|  |  |
| --- | --- |
| Reference channel | G-FR2-A4-1 |
| Subcarrier spacing [kHz] | 60 |
| Allocated resource blocks | 66 |
| CP-OFDM Symbols per slot (Note 1) | 9 |
| Modulation | 16QAM |
| Code rate (Note 2) | 658/1024 |
| Payload size (bits) | 18432 |
| Transport block CRC (bits) | 24 |
| Code block CRC size (bits) | 24 |
| Number of code blocks - C | 3 |
| Code block size including CRC (bits) (Note 2) | 6176 |
| ~~Total number of bits per slot~~ | ~~28512~~ |
| Total number of bits per slot with PTRS |  |
| Total number of bits per slot without PTRS |  |
| ~~Total symbols per slot~~ | ~~7128~~ |
| Total symbols per slot with PTRS |  |
| Total symbols per slot without PTRS |  |

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support Option 2. We have same views as Issue 1-3-2, the PTRS overhead should be considered for PUSCH requirements with PTRS. We propose to change the parameter "Total number of bits per slot" to "Total number of bits per slot with PTRS" and "Total number of bits per slot without PTRS" for FRCs which are used for both PUSCH requirements with and without PTRS.  Take G-FR2-A4-1 as an example:   |  |  | | --- | --- | | Reference channel | G-FR2-A4-1 | | Subcarrier spacing [kHz] | 60 | | Allocated resource blocks | 66 | | CP-OFDM Symbols per slot (Note 1) | 9 | | Modulation | 16QAM | | Code rate (Note 2) | 658/1024 | | Payload size (bits) | 18432 | | Transport block CRC (bits) | 24 | | Code block CRC size (bits) | 24 | | Number of code blocks - C | 3 | | Code block size including CRC (bits) (Note 2) | 6176 | | ~~Total number of bits per slot~~ | ~~28512~~ | | Total number of bits per slot with PTRS |  | | Total number of bits per slot without PTRS |  | | ~~Total symbols per slot~~ | ~~7128~~ | | Total symbols per slot with PTRS |  | | Total symbols per slot without PTRS |  | |
| Ericsson | We agree with Option 2. |
| Nokia, Nokia Shanghai Bell | For “data” over PUSCH it was consciously decided to set xOverhead to 0 [R4-1816347].  We don’t see any immediate reason to change this for UCI over PUSCH.  Option 1 is our current preference. |

Sub topic 1-4

**Issue 1-4-1: Should HARQ feedback timing in DCI format 1\_0 for PDCCH demodulation tests be explicitly defined?**

* Proposals
  + Option 1: Yes, and definition as proposed in R4-2108846.
  + Option 2: Not needed, and keep as it is now.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Support Option 2.  From our understanding, it is unnecessary to specify the k1 value for PDCCH requirements since this value is defined for timing between PDSCH and PUCCH which is not related with PDCCH requirements. Furthermore, if k1 has been defined for PDCCH requirements, then k0 should be also considered and too many other test setup parameters not affecting performance need to be defined. They can be left to RAN5.  The reason that k1 has been defined for PDSCH requirements is that we should guarantee k1 should be less than the number of HARQ process. |
| Apple | Support option 1. The missed scheduling grant for PDCCH requirements is based on counting the DTX on HARQ-ACK transmission and hence related to PDSCH scheduling and timing difference between PDSCH and PUCCH. |
| Qualcomm | Ok with Option 1. However, we would prefer to refer to Annex A.1.2 and A.1.3 for K1 values for TDD instead of copying it. |

### CRs/TPs comments collection

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

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| **[R4-2111468](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111468.zip)**  **Editorial changes to TS 38.101-4 Rel-15** | Qualcomm: It should be a CAT-D CR since these are only editorial corrections. Also, we prefer not to change “CSI-RS Interval” to “CSI-RS periodicity” for aperiodic CSI reporting test cases since “periodicity” may give a wrong impression. |
| Company B |
|  |
| **R4-2109186** | Huawei: We agreed that IE *nrofRBs* specified in TS 38.331 should be multiples of 4, but it doesn’t mean the actual frequency occupation of CSI-RS should be multiples of 4. As per TS 38.331, actual CSI-RS bandwidth is equal to BWP if the configured *nrofRBs* larger than BWP size. Meanwhile, the parameter ” frequency occupation” specified in the common test parameters table of PDSCH/CSI requirements indicates the actual CSI bandwidth rather than value for IE “*nrofRB*”. Therefore, it is feasible to set the actual frequency occupation of CSI-RS to BWP size for all the PDSCH and CSI-RS requirements just by configuring *nrofRBs* larger than BWPs. |
| Ericsson: This correction is fine with us. It is also good to add a note like 'CRS-RS occupies 48PRB' to avoid mistakes in the future |
| Apple: We need to further check. |
| Qualcomm: Ok with CSI-RS allocation change. Can you please clarify why slot 83 should have different number of binary channel bits in Table A.3.2.2.5-2? |
| **R4-2110202** | [Nokia]: Agree with correction. |
| Company B |
|  |
| **R4-2110205** | [Nokia]: Agree with correction. Seems there was some CR implementation conflict at one point. |
| Company B |
|  |
| **R4-2110206** | [Nokia]: Agree with correction. |
| Company B |
|  |
| **R4-2110207** | [Nokia]: Agree with correction. |
| Company B |
|  |
| **R4-2110630** | Apple: OK with change. |
| Qualcomm: Ok with the change. However, I have a question. What does follow1, follow2 mean? Can you please clarify? |
|  |
| **R4-2109331** | Qualcomm: Looks ok. Can it be merged with Huawei CR R4-2110489 since it impacts the same table? |
| Company B |
|  |
| R4-2110489 | Ericsson: Regarding the CQI mapping table Table A.4-1, how do you derive TBS value? Both CQI indexes 1 and 2 correspond to MCS 0, so TBS values for both CQI indexes 0 and 1 should be same. |
| Apple: In the FRC tables the update is not necessary as the TBS already correctly indicated no transmission in slot 0 every 40 slots.  Same comment as Ericsson on CSI RMC table updates. |
| Qualcomm: The old values of TBS in CQI mapping tables look ok to us. Can you please elaborate on how the new numbers were derived? |

## 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:* |
| **Sub-topic #2** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |
| **Sub-topic #3** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |
| **Sub-topic #4** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |

### CRs/TPs

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

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

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

## Discussion on 2nd round (if applicable)

# Topic #2: Rel-15 LTE demodulation performance

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2108807**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108807.zip) | Ericsson | Corrections for TS 36.101, Rel-14: (1) add missing test points for 5CCs; (2) remove [] for CQI reporting requirements. |
| R4-2108808 | Ericsson | Mirror CR to Rel-15 |
| R4-2108809 | Ericsson | Mirror CR to Rel-16 |
| R4-2108810 | Ericsson | Mirror CR to Rel-17 |
| [**R4-2110493**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110493.zip) | Huawei, HiSilicon | Remove square brackets in the specification (Rel-12). |
| [**R4-2110494**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110494.zip) | Huawei, HiSilicon | Remove square brackets in the specification (Rel-13).  Ericsson: It looks Rel-13 spec did not implement the requirements. If we look Rel-14 spec, Test 2 and Test 3 in Table 8.11.2.2.2-1 set SNR=-12.3dB and SNR=-12.8dB, respectively.  Moevover requirements in Tests 2 and 3 in Table 8.11.2.2.1-1 is wrong; they should be -5.3dB and -8.8dB.  We suggest to revise this CR to follow Rel-14 |
| [**R4-2110495**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110495.zip) | Huawei, HiSilicon | - Removed the remaining square brackets in the specifications (Rel-14)  - Deleted the tests with TBD requirements  - Changed the title of clause 14.9 from “PSCCH/PSSCH decoding capability test ” to “PSCCH decoding capability test”  - Changed the sentence ”The purpose of this test is to verify the maximum number of Sidelink processes supported by the V2X UE.” to “The purpose of this test is to verify the maximum number of received PSCCHs per subframe supported by the V2X UE. ” |
| R4-2110496 | Huawei, HiSilicon | Mirror R4-2110495 to Rel-15 |
| R4-2110497 | Huawei, HiSilicon | Mirror R4-2110495 to Rel-16 |
| R4-2110579 | Huawei, HiSilicon | Mirror R4-2110495 to Rel-17 |

## Open issues summary

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

No technical discussion point, mainly for editorial changes or cleanup on the existing specs.

## Companies views’ collection for 1st round

### Open issues

### 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** |
| [**R4-2108807**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108807.zip) | Company A |
| Company B |
|  |
| [**R4-2110493**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110493.zip) | Company A |
| Company B |
|  |
| [**R4-2110494**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110493.zip) | Company A |
| Company B |
|  |
| [**R4-2110495**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110493.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:* |

### CRs/TPs

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

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

## Discussion on 2nd round (if applicable)

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

# Recommendations for Tdocs

## 1st round

**New tdocs**

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

**Existing tdocs**

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

Notes:

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

## 2nd round

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

Notes:

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