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

Electronic Meeting, 19 May – 27 May 2021

**Agenda item:** 7.1.4, 8.2.5, 8.28.5

**Source:** Moderator (Ericsson)

**Title:** Email discussion summary for [99-e][326] NR\_R17\_SpectrumWI\_Demod

**Document for:** Information

# Introduction

This email discussion thread discusses the UE/BS demodulation requirements associated with spectrum:

* Introduction of FR2 FWA UE with maximum TRP of 23dBm for n257 and n258 (AI 7.1.4)
* Introduction of NR 47GHz band (AI 8.2.5.1/8.2.5.2)
* Introduction of channel bandwidths 35MHz and 45MHz for NR (AI 8.28.5)

# Topic #1: FR2 FWA UE with maximum TRP of 23dBm for n257 and n258 (AI 7.1.4)

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2110639 | Ericsson | CR: Removal of [] from Noc power level for n257/n258 PC5 |

## Open issues summary

Collect comments for CR to finalize the performance part.

## Companies views’ collection for 1st round

### Open issues

Provide the comments for the CR in 1.3.2.

### 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** |
| R4-2110639  CR  (Ericsson) | 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 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: UE NR 47 GHz band (AI 8.2.5.1)

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2109218 | Intel Corporation | **Proposal 1:** Consider 1 dB additional margin for TS 38.101-4 Table 7.2.2.2.1-4 Test 2-6 and TS 38.101-4 Table 7.2.2.2.1-5 Test 3-1 to extend applicable carrier frequency range for 47GHz bands.  **Proposal 2:** Consider 1.5 dB additional margin for TS 38.101-4 Table 7.2.2.2.1-3 Test 1-4 to extend applicable carrier frequency range for 47GHz bands. |
| R4-2110551 | Huawei, HiSilicon | **Observation 1:** There is obviously performance degradation considering “Example 2, UE” phase noise model at 47GHz comparing to “Example 2, UE” phase noise model at 29GHz or no phase noise model.  **Observation 2:** Except impact of the phase noise, at least 1dB is remained for other impairment factors.  **Proposal 1:** Add extra 1dB for the 16QAM rank 2 case with Enhanced Receiver Type 1 case and the 64QAM rank 2 case.  **Proposal 2:** Do not test 256QAM at 47GHz. |
| R4-2110645 | Ericsson | **Observation 1:** The existing DL 64QAM CR=0.43 Rank 2 test for FR2 is applicable for n262.  **Observation 2:** The existing DL 256QAM CR=0.67 Rank 1 test for FR2 is not applicable for n262.  **Proposal:** The existing FR2 UE performance requirements in TS38.101-4 are applicable to the FR2 operating bands defined in with FDL\_high not exceeding 48200 MHz, except the test case of 256QAM Rank 1 (TS38.101-4 Table 7.2.2.2.1-3 Test 1-4). |
| R4-2110765 | Qualcomm Incorporated | **Observation 1:** The SNR degradation in demodulation performance between 47GHz (band n262), 39 GHz, 29 GHz for tests 1-3 and 2-6 in 38.101-4 is marginal and smaller than 0.5dB when using UE Phase Noise model from TR 38.803, Example 2.  **Proposal 1:** For FR2 UE Demodulation performance, extend the existing UE performance requirements in 38.101-4 up to 48.2GHz (including n262) up to and including 64QAM (MCS 18) Rank 2. |
| R4-2110646 | Ericsson | draft CR: TS 38.101-4: n262 demodulation requirements |

## Open issues summary

### Sub-topic 2-1: Applicability of FR2 UE demodulation requirements to 47GHz band (n262).

**Issue 2-1: Applicability of 64QAM Rank 2 (TS38.101-1 Table 7.2.2.2.1-4 Test 2-6) for 47GHz band**

* Proposals
  + Option 1: Applicable with additional 1dB margin
  + Option 2: Applicable without additional margin
* Recommended WF
  + Collect companies view

**Issue 2-2: Applicability of 16QAM Rank 1 with Enhanced Receiver Type 1 (TS38.101-4 Table 7.2.2.2.1-5 Test 3-1) for 47GHz band**

* Proposals
  + Option 1: Applicable with additional 1dB margin
* Recommended WF
  + Collect companies view if option 1 is agreeable or not.

**Issue 2-3: Applicability of 256QAM Rank 1 (TS38.101-4 Table 7.2.2.2.1-3 Test 1-4) for 47GHz band**

* Proposals
  + Option 1: Applicable with additional 1.5dB margin
  + Option 2: This test is not applicable for 47GHz band
* Recommended WF
  + Collect companies view

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 2-1:  Sub topic 2-2:  Sub topic 2-3:  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** |
| R4-2110646  Draft CR  (Ericsson) | 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”.*

# Topic #3: BS NR 47 GHz band (AI 8.2.5.2)

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2110592 | Nokia, Nokia Shanghai Bell | CR for 38.141-2: Add AWGN Offset note to FR2 demod noise level |

## Open issues summary

Collect comments for CR to finalize the conformance test part.

## Companies views’ collection for 1st round

### Open issues

Companies are encouraged to provide the comments on CRs in 3.3.2.

### 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** |
| R4-2110592  CR  (Nokia, Nokia Shanghai Bell) | 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”.*

# Topic #4: Channel bandwidths 35MHz and 45MHz for NR (AI 8.28.5)

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2109219 | Intel Corporation | Simulation results |
| R4-2110547 | Huawei, HiSilicon | **Proposal 1:** Select subband size 32 for both 35MHz and 45MHz bandwidth requirements. |
| R4-2110644 | Ericsson | Simulation results |
| R4-2111167 | Qualcomm Incorporated | Simulation results |
| R4-2110548 | Huawei, HiSilicon | Summary of simulation results for 35MHz and 45MHz channel bandwidth for FR1 FDD |
| R4-2110549 | Huawei, HiSilicon | CR on UE demodulation and CSI reporting for 35MHz and 45MHz channel bandwidth for FR1 FDD (Rel-16) |
| R4-2110550 | Huawei, HiSilicon | CR on UE demodulation and CSI reporting for 35MHz and 45MHz channel bandwidth for FR1 FDD (Rel-17) |

## Open issues summary

### Sub-topic 4-1: Subband size for CA CQI test used for CBW 35MHz and 45MHz

**Issue 4-1: Subband size for CA CQI tests**

* Proposals
  + Option 1: Set subband size 32 for both 35MHz and 45MHz bandwidth requirements.
* Recommended WF
  + Agree with Option 1.

### Sub-topic 4-2: Collection of simulation results with 35/45MHz for FR1 FDD

**Issue 4-2: Summary of simulation results**

* Proposals:
  + Companies are encouraged to collect the simulation results in R4-2110548 to discuss the requirements in the second round.

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 4-1:  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** |
| R4-2110549  CR  (Huawei, HiSilicon) | Moderator: This is Rel-17 WI. This CR should be withdrawn. Need to check chair/secretary if R4-2110550 is used instead (but Category need to be changed to Cat-B). |
| Company A |
| Company B |
| R4-2110550 Cat-A CR  (Huawei, HiSilicon) |  |
|  |
|  |

## 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 |  |
| R4-2110639 | Removal of [] from Noc power level for n257/n258 PC5 | Ericsson |  |  |
| R4-2110646 | draft CR: TS 38.101-4: n262 demodulation requirements | Ericsson |  |  |
| R4-2110592 | CR for 38.141-2: Add AWGN Offset note to FR2 demod noise level | Nokia, Nokia Shanghai Bell |  |  |
| R4-2110549 | CR on UE demodulation and CSI repopting for 35MHz and 45MHz channel bandwidth for FR1 FDD (Rel-16) | Huawei, HiSilicon |  |  |
| R4-2110550 | CR on UE demodulation and CSI repopting for 35MHz and 45MHz channel bandwidth for FR1 FDD (Rel-17) | Huawei, HiSilicon |  |  |

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