**3GPP TSG-RAN WG4 Meeting # 100-e R4-210XXXX**

**Electronic Meeting, 16th – 27th Aug 2021**

**Agenda item: 6.1.1.3, 6.1.1.4**

**Source:** Moderator (ZTE)

**Title:** Email discussion summary for [99-e][304] NR\_unlic\_BS\_Conformance

**Document for:** Information

# Introduction

The e-mail discussion covers Rel-16 NR-U BS core requirement maintenance and the remaining issues for NR-U conformance testing.

All contributions submitted are divided into the following Topics:

1. NR-U BS core requirement maintenance
2. NR-U BS non-contiguous operation
3. MU values for NR-U BS type 1-H

# Topic #1: NR-U BS core requirement maintenance

## Companies’ contributions summary

(Cat A CRs are not listed)

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2113940 | ZTE | 1. Update the NOTE 2 in Table 7.2.2-2a and Table 7.2.2-2b,Table 7.2.2-3a,Table 7.2.2-3b as following to aligned with dynamic range part:   This requirement shall be met for each interleaved application of a single instance of the reference measurement channel mapped to disjoint frequency ranges with a width corresponding to the number of resource blocks of the reference measurement channel each, except for one instance that might overlap one other instance to cover the full BS channel bandwidth.   1. In Table 7.3.2-2b and Table 7.3.2-2c NOTE, FRC consecutive is placed by interlaced. 2. Add one more sentence in Table 7.3.2-3b and Table 7.3.2-3c NOTE. |

## Companies views’ collection for 1st round

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2113940 | Nokia:  Not OK with update 1 - we have 2 separate notes, as one is them is for 60kHz SCS, where there is not interlacing, and one for interlaced for 15/30kHz. There should be only update from "and" to "to" in FRC G-FR1-A1-12 and G-FR1-A1-19.  OK with update 2.  Additional editorial that should be including in the revision: 'NOTE' to 'Note' should be updated in table (below table ‘NOTE’ with capitals is correct. |
| ZTE: for 60khz, we specified with Note 1 and for 15/30kHz, it should be interlaced, there are no ambiguity, in addition, this update is also aligned with dynamic range requirement for NR-U.  For other editorial changes,we are fine with update. |
|  |
| R4-2113941  (Cat A CR) | 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”* |
| R4-2113940 | *Revised to* |
| R4-2113941  (Cat A CR) | *Return to* |

## Discussion on 2nd round (if applicable)

# Topic #2: NR-U BS non-contiguous operation

The topic 2 mainly focus on the conformance testing for NR-U non-contiguous operation.

## Companies’ contributions summary

(Cat A CRs are not listed)

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2113491 | Nokia, Nokia Shanghai Bell | ***Observation: New test configuration is needed only for NR-U BS that declare support of 60 MHz and/or 80 MHz channel bandwidth.***  ***Proposal: It is proposed to introduce new test configuration NRTC6 for non-contiguous NR-U operation.*** |
| R4-2113492 | Nokia, Nokia Shanghai Bell | Draft CR to TS 38.141-1 – Test configuration for non-contiguous transmission testing for band n46 and n96 |
| R4-2113494 | Nokia, Nokia Shanghai Bell | Draft CR to TS 38.141-2 – Test configuration for non-contiguous transmission testing for band n46 and n96 |
| R4-2113938 | ZTE | **Proposal 1:** propose to NRTC6 in this contribution for NR-U non-contiguous operation    Figure 2. Diagram for NR TC 6 for n46 and n96 |

## 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:*

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

**Issue 2-1-1: whether new test configuration for NR-U non-contiguous operation is needed**

* Proposals
  + Option 1: Yes (Nokia, ZTE)
  + Option 2: No
* Recommended WF

**Issue 2-1-2: test configuration for NR-U non-contiguous operation**

* Proposals
  + Option 1: Option 1 as proposed in R4-2113491
  + Option 2: Option 2 as proposed in R4-2113938
* Recommended WF

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| ZTE | Sub topic 2-1-1:  Yes  Sub topic 2-1-2:  We support the option 2 since option 1 to place 20MHz carrier at the RF edges is the same as NR TC1.  In addition, this new TC configuration is not needed for 38.141-2 since in 38.141-2, there are only EIRP/EIS testing, new TC configuration is for UEM testing. |
| Nokia | Sub topic 2-1-1:  Yes  Sub-topic 2-1-2:  We support option 1. Option 1 is to place two carriers (2x20MHz) on the lower edge and two carriers (2x20MHz) on the upper edge. Option 2 has a larger guardband at the BS RF bandwidth edge as a 40MHz carrier has a larger minimum guardband than a 20MHz carrier.  Agree with ZTE that no need for NRTC6 for 38.141-2. |
| Huawei | Sub topic 2-1-1:  Yes  Sub-topic 2-1-2:  The tested channel bandwidth should be 60 MHz or 80 MHz channel bandwidth with non-transmitted sub-bands as much as possible. |
| Qualcomm | Sub-topic 2-1-1:  Yes  Sub-topic 2.1.2:  We support option 1. |
| Nokia | Reply to Huawei comments on 2-1-2:  *“The tested channel bandwidth should be 60 MHz or 80 MHz channel bandwidth with non-transmitted sub-bands as much as possible”*  We have question for clarification. Does it mean that Huawei support Nokia proposal? As we discussed during last RAN4 meetings in R4-2106308 and R4-2110134 proposed solution for scenario with 60 MHz or 80 MHz channel bandwidth with non-transmitted is the most demanding. |
| ZTE | To Nokia:  Could you tell me what’s difference between NR TC6 and NR TC1, I cannot see much difference between them. |

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2113492 | Company A |
| Company B |
|  |
| R4-2113494 | Company A |
| Company B |
|  |
| R4-2113942 | Company A |
| Company B |
| R4-2113944 | 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 2-1-1: whether new test configuration for NR-U non-contiguous operation is needed**  Agreement: Yes  **Issue 2-1-2: test configuration for NR-U non-contiguous operation**  NRTC6 is not needed for TS 38.141-2  Further discuss in 2nd round for NRTC6.  *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”* |
| R4-2113491 | *Noted* |
| R4-2113492 | *Return to , it should be formal CR instead of draft CR* |
| R4-2113493  (Cat A) | *Return to , it should be formal CR instead of draft CR* |
| R4-2113494 | *Noted* |
| R4-2113495  (Cat A) | *withdraw* |
| R4-2113938 | *Noted* |
| R4-2113942 | *Revised to* |
| R4-2113943  (Cat A) | *Return to* |
| R4-2113944 | *Revised to* |
| R4-2113945  (Cat A) | *Return to* |

## 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: MU values for NR-U BS type 1-H

## Companies’ contributions summary

(Cat A CRs are not listed)

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2113939 | ZTE | Discussion on MU for EIRP/EIS in TS 38.141-2 |

## 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:*

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

**Issue 3-1-1:** MU values for NR-U BS type 1-H

* Proposals
  + Option 1:

| 6.2 Radiated transmit power | Normal condition:  ±1.1 dB, f ≤ 3 GHz  ±1.3 dB, 3 GHz < f ≤ 6 GHz  ±1.8 dB for bands n46 and n96  Extreme condition:  ±2.5 dB, f ≤ 3 GHz  ±2.6 dB, 3 GHz < f ≤ 6 GHz  ~~[±2.6 dB for bands n46 and n96]~~ |
| --- | --- |
| 7.2 OTA sensitivity | ±1.3 dB, f ≤ 3.0 GHz  ±1.4 dB, 3.0 GHz < f ≤ 4.2 GHz  ±1.6 dB, 4.2 GHz < f ≤ 6.0 GHz  ±1.9 dB for bands n46 and n96 |

* + Option 2: FFS
* Recommended WF

## Companies views’ collection for 1st round

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2113944 | Nokia:  Proposal 1 is reasonable to use similar to conducted specification additional margin for NR-U bands. |
| Huawei: ok to P1 |
| Keysight: proposed number (option1) is fine with us  Ericsson: if revised please correct also the band number in table 6.2.5-1, next to the first modification. It is written n76 instead of n96.  ZTE: it’s fine for us to correct typos pointed out by Ericsson. |
| YYY | 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:*  Option 1 for MU values for NR-U BS type 1-H  *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”* |
| R4-2113939 | *approved* |

## 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** |
| R4-2113940 | Maintenance CR to TS 38.104: NR-U BS RF requirements | ZTE | Revised |  |
| R4-2113941  (Cat A CR) | Maintenance CR to TS 38.104: NR-U BS RF requirements | ZTE | Return to |  |
| R4-2113491 | NR-U non-contiguous transmission testing for wideband operation | Nokia | Noted |  |
| R4-2113492 | Draft CR to TS 38.141-1 – Test configuration for non-contiguous transmission testing for band n46 and n96 | Nokia | *Return to* | *it should be formal CR instead of draft CR* |
| R4-2113493  (Cat A) | Draft CR to TS 38.141-1 – Test configuration for non-contiguous transmission testing for band n46 and n96 | Nokia | *Return to* | *it should be formal CR instead of draft CR* |
| R4-2113494 | Draft CR to TS 38.141-2 – Test configuration for non-contiguous transmission testing for band n46 and n96 | Nokia | *Noted* |  |
| R4-2113495  (Cat A) | Draft CR to TS 38.141-2 – Test configuration for non-contiguous transmission testing for band n46 and n96 | Nokia | *Withdraw* |  |
| R4-2113938 | Discussion on NR-U Non-contiguous spectrum operation | ZTE | *Noted* |  |
| R4-2113942 | Maintenance CR to TS 38.141-1: NR-U BS conformance testing requirements | ZTE | *Revised to* |  |
| R4-2113943  (Cat A) | Maintenance CR to TS 38.141-1: NR-U BS conformance testing requirements | ZTE | *Return to* |  |
| R4-2113944 | Maintenance CR to TS 38.141-2: NR-U BS conformance testing requirements | ZTE | *Revised to* |  |
| R4-2113945  (Cat A) | Maintenance CR to TS 38.141-2: NR-U BS conformance testing requirements | ZTE | *Return to* |  |
| R4-2113939 | Discussion on MU for EIRP/EIS in TS 38.141-2 | ZTE | *Approved* |  |

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