**3GPP TSG-RAN WG4 Meeting # 98-bis-e R4-210XXXX**

**Electronic Meeting, 12th – 20th April, 2021**

**Agenda item:** 5.1.4, 5.2.2.1, 6.1.9.1

**Source:** Moderator (Ericsson)

**Title:** Email discussion summary for [100-e][301] BSRF\_Maintenance

**Document for:** Information

# Introduction

The thread covers all BS RF maintenance agenda items. Topics are divided according to the agenda, with one of the Rel-16 topics as a separate topic:

1. BS RF maintenance for NR Rel-15 (5.1.4)
2. BS RF maintenance for LTE Rel-15 (5.2.2.1)
3. BS RF maintenance for NR/LTE Rel-16 (6.1.9.1)
4. Relative calibration approach for OTA measurements

# Topic #1: BS RF maintenance for NR Rel-15 (5.1.4)

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Title** |
| R4-2113314 | Ericsson | CR to TR 38.921: Addition of array antenna model extension in subclause 8.1 |
| R4-2113315 | Ericsson | CR to TR 38.820: Addition of array antenna model extension in subclause 7.2 |
| R4-2113077  R4-2113083 | Huawei, HiSilicon | OTA transmitter intermodulation 38.104 R15  OTA transmitter intermodulation 37.105 R15 |
| R4-2113068 R4-2113069 | Huawei, HiSilicon | Correction on the test configuration for NC operation 37.141 R15/R16 |
| R4-2114400 | Huawei | Draft CR to TS 37.104: addition of the missing note in applicability table for BC2 WA BS OBUE, Rel-16 |

## Companies views’ collection for 1st round

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2113315 | Nokia: no need to update this TR as extended AAS model is agreed for operating within 1710 to 4990 MHz, which is outside the 7 -24 GHz scope of this TR. |
| Huawei: agree with Nokia, no need for the update since it is not within the range 1710 to 4990 MHz |
|  |
| R4-2113314 | Huawei: same comment as above, no need for the update since it is not within the range 1710 to 4990 MHz |
| R4-2113077  R4-2113083 | Nokia: not clear how is the maximum of 40dBm determined. |
| Huawei: for the same topic, it is discussed also in thread 302, we can have the discussion in one thread firstly, e.g. thread 302.  Response to Nokia:  For conducted requirement the 46 dBm TX power is assumed, and for AAS 8 columns are normally assumed in RAN4, hence for the closest column the TX power for two polarizations will be 46-9+3=40 (dBm). We think it is important to define a feasible power level for the test, otherwise the requirements can not be tested in the test chamber. |
|  |

## 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 #1: BS RF maintenance for LTE Rel-15 (5.2.2.1)

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Title** |
| R4-2112294  R4-2112297 | Ericsson | Draft CR to 36.104: Correction In-band blocking for multi-band Base Stations  Draft CR to 36.141: Correction In-band blocking for multi-band Base Stations |

## Companies views’ collection for 1st round

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| XXX | Company A |
| Company B |
|  |
| YYY | Company A |
| Company B |
|  |

## Summary for 1st round

### Open issues

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| **Sub-topic #1** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |

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|  |  |
| --- | --- |
| **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 #1: BS RF maintenance for NR/LTE Rel-16 (6.1.9.1)

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2112269 | Nokia, Nokia Shanghai Bell | Draft CR to TS 38.141-1: Clarification of power boosted NB-IoT RB placement |
| R4-2112290  R4-2112292 | Ericsson | Draft CR to 37.104: MSR band table update  Draft CR to 37.141: MSR band table update |
| R4-2113028 | Keysight Technologies UK Ltd | Draft CR to 37.941: BS OTA test, FR2 Rx OOB test MU value Math correction (14.2.4, 17) |
| R4-2113030 | Keysight Technologies UK Ltd | about BS conformance test FR2 Rx out of band test MU calculation |
| R4-2114398 | Huawei | Draft CR to TR 37.941: correction of the FR2 upper frequency (43.5 GHz), Rel-16 |

## Companies views’ collection for 1st round

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2112290  R4-2112292 | Nokia: prefer option 2, can further make the frequency rang columns narrower by moving ‘MHz’ into the heading and use space instead of tab around ‘-‘. |
| Huawei: prefer option 2 |
| NEC: prefer option 2. |
| R4-2113028  R4-2113030 | Nokia: result according to formula is 3.6499 so it should be rounded to either 3.6 or 3.65 but not 3.64. |
| keysight: For Nokia, reason of showing one decimal point or two are simply because aligning original text. It is correct that actual value is 3.6499 so that number for MU is rounded as 3.6 |
| NEC: For FR1, OTA OOB blocking MU depends on both fwanted and finterferer. Is it true OTA OOB blocking MU does not depend on finterferer for FR2? |
| R4-2114398 | Nokia: should spreadsheet 3 and spreadsheet 4 also be updated from 40GHz to 43.5GHz to align with the main content in the TR? |
| Company B |
|  |

## Summary for 1st round

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|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic #1** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |

### CRs/TPs

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|  |  |
| --- | --- |
| **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 #4: 4. Relative calibration approach for OTA measurements

In RAN4#98e, there was proposal about “Relative calibration approach” and WF agreed is to continue to discuss in future meetings. Two proposals were received at RAN4#100-e.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2112235 | ROHDE & SCHWARZ | Proposal: A relative calibration approach is proposed as an alternate method to the more typical “absolute” approach so labs can optimize their MU assessment in cases where the maximum accepted test system uncertainty could not be reached. |
| R4-2113294 | Keysight Technologies UK Ltd | Conclusion: Relative approach is already in consideration of existing MU Budget table calculation because no duplicated terms related with cabling etc. are listed in both calibration measurement stage and BS (DUT) measurement stage.  Proposal: There is no need to change MU budget for relative approach. |

Proposed CR (for 2nd round, if agreed as WF):

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Title** |
| R4-2112236 | ROHDE & SCHWARZ | Draft CR to TR 37.941: Relative calibration approach |

## Open issues summary

### Sub-topic 4-1

A relative calibration approach is proposed for MU assessment in one paper, but another paper argues it is not necessary.

**Issue 4-1: Introduction of relative calibration approach**

* Proposals
  + Option 1: Introducing relative calibration approach for MU assessment (CR in R4-2112236).
  + Option 2: There is no need to change MU budget for relative approach (No CR).
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

Sub topic 1-1

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Keysight | As we wrote in our document, with using relative approach, which can cancel duplicated entry but can’t totally cancel equipment needed which is power measurement equipment (for EIRP) and signal generator (for EIS). Relative approach indeed already taken in consideration of original budget table. So that it won’t get additional gain. |

## Summary for 1st round

### Open issues

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|  |  |
| --- | --- |
|  | **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:

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2. For the Recommendation column please include one of the following:
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3. Do not include hyper-links in the documents

# Annex

Contact information

|  |  |  |
| --- | --- | --- |
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Note:

1. Please add your contact information in above table once you make comments on this email thread.
2. If multiple delegates from the same company make comments on single email thread, please add you name as suffix after company name when make comments i.e. Company A (XX, XX)