**3GPP TSG-RAN WG4 Meeting #94-e R4-20xxxxx**

**Electronic Meeting, Feb.24th – Mar.6th 2020**

**Agenda item:** 6.6,6.9

**Source:** Moderator(ZTE)

**Title:** Email discussion summary for RAN4#94e\_#78\_NR\_NewRAT\_EMC

**Document for:** Information

# Introduction

For the RAN4#94e\_#78\_NR\_NewRAT\_EMC, the main topics are about BS and UE EMC including agenda item 6.6, 6.9 and 8.5.6. The discussion will separate into two parts:

Topic #1: NR EMC for agenda item 6.9

Topic #2: IAB EMC for agenda item 8.5.6.

*List of candidate target of email discussion for 1st round and 2nd round*

* 1st round: TBA
* 2nd round: TBA

# Topic #1: NR EMC

For agenda item 6.9:

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2001252 | ZTE | To add TX exclusion band for NR BS type 1-O.  The exclusion band is ΔfOBUE |
| R4-2001717 | ZTE | To add TX exclusion band for OTA AAS BS.  The exclusion band is ΔfOBUE |
| R4-2001905 | Ericsson | Reduction of test configuration for MSR bs |
| R4-2001906 | Ericsson | Add reverberation chamber for RX immunity test. |
| R4-2001832 | Huawei | **Proposal 1**: agree on the introduction of the direct field strength measurement test method for the EMC Radiated Emissions requirements of the BS type 1-C and BS type 1-H in TS 38.113. |
| R4-2001833 | Huawei | Correspond CR for the Discussion above.  New limit and test method for the field strength metric |

## Open issues summary

### TX exclusion band:

The TX exclusion band has been agreed for BS type 1-O and OTA AAS BS in RAN4#93 meeting, however, the value is not decided yet.

**Issue 1-1: TX exclusion band value**

* Proposals
  + Use ΔfOBUE as TX exclusion band
  + Option 2: TBA
* Recommended WF
  + TBA

### Reduction of test configuration for MSR BS

A set of EMC test configuration reduction proposal based on test result covering has been provided.

**Issue 2-1: How to treat the test result covering issue**

* Proposals
  + NB-IoT cover GSM
  + LTE cover WCDMA
  + NR cover LTE/WCDMA
* Recommended WF
  + More technical reason analysis is needed before the reduction

### Field strength measurement for radiated emission

Despite current EIRP radiated emission measurement, a measurement based on CISPR 32 is provided:

**Issue 3-1: New metric for radiated emission**

* Proposals
  + Add as one optional test method
  + new test method is provided
* Recommended WF

## Companies views’ collection for 1st round

### Open issues

|  |  |  |
| --- | --- | --- |
| **Company** | **Comments** | |
| XXX | Sub topic 1-1:  Sub topic 1-2:  ….  Others: | |
| YYY | | Sub topic 1-1:  Sub topic 1-2:  ….  Others: | |
| ZZZ | | Sub topic 1-1:  Sub topic 1-2:  ….  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** | |
| R4-2001252 | | Company A |
| Company B |
|  |
| R4-2001717 | | Company A |
| Company B |
|  |
| R4-2001906 | | Company A |
| Company B |
|  |
| R4-2001833 | | 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:* |

*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** | |
| R4-2001252 | |  |
| R4-2001717 | |  |
| R4-2001906 | |  |
| R4-2001833 | |  |

## 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: IAB EMC

The IAB EMC has been discussed in this topic and to answer the questions from last meeting. Set of core requirements has been discussed.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2001253 | ZTE | Proposal 1: Radiated emission requirement for IAB with different enclosure, the requirements are the same and they are applied per enclosure.  Proposal 2: For TDM IAB-node with only one enclosure, reuse current radiated emission requirement of BS in TS 38.113.  Proposal 3: For FDM and SDM IAB-node with only one enclosure, radiated emission should be tested in 3 cases based on declaration.  Proposal 4: Similar principle of BS EMC spec for the type 1-O and 2-O BS will be applied to the type 1-O and 2-O TDM IAB-node for radiated emission requirement.  Proposal 5: For IAB with different enclosure, the conducted emission limit of Class A and Class B applies based on different usage environment.  Proposal 6: Reuse base station requirement for harmonic current emission and voltage fluctuation and flicker to an IAB-node. |
| R4-2001254 | ZTE | Observation 1: EMC immunity requirement is defined per enclosure/port and its location environment.  Observation 2: The immunity test which are based on IEC 61000 series will be similar for DU and MT, however, the test level can be different.  Observation 3: The immunity test based on ports can be finalized as tests and requirements are defined specifically on ports but with different levels for different environment.  Observation 4: For different enclosure case, the radiated immunity test can be performed for each enclosure as UE requiremaent for MT and BS requirement for DU.  Observation 5: The easiest way to define radiated immunity test for one enclosure case is test each function separately, but this method cannot test the real case of IAB function. |
| R4-2001255 | ZTE | TP to TR on IAB EMC emission requirements |
| R4-2001256 | ZTE | TP to TR on IAB EMC immunity requirements |
| R4-2001257 | ZTE | TP to TR on explain the difference for structure of IAB EMC and RF requirement |

## Open issues summary

The IAB EMC discussion follows the WF R4-1916077 from RAN4#93, main issues listed in the WF has been discussed.

### Sub-topic 2-1 IAB emission requirement

The emission requirement has been separated into radiated emission and other emission requirement. For radiated emission, detail discussion based on enclosure and multiplex mode has been provided.

**Issue 2-1: IAB radiated emission requirement**

* Proposals
  + Different enclosure: requirement applies per enclosure
  + One enclosure:
    - TDM IAB node reuse base station requirement
    - FDM and SDM IAB node need 3 test cases
  + 1-O and 2-O IAB: follow BS principle as radiated spurious emission will cover radiated emission
* Recommended WF
  + TBA

**Issue 2-2: IAB conducted emission requirement**

* Proposals
  + Class A and Class B limits to be defined for indoor and outdoor use
* Recommended WF
  + TBA

**Issue 2-3: Harmonic and current requirement**

* Proposals
  + Reuse bases station requirement
* Recommended WF
  + TBA

### Sub-topic IAB immunity requirement

For immunity requirement, it is divided into radiated immunity requirement and other immunity requirement:

**Issue 2-1: Radiated immunity requirement**

* Proposals
  + Different enclosure: UE requirement apply to MT and BS requirement apply to DU
  + One enclosure: Test each function separately. However, more discussion is needed.
* Recommended WF
  + TBA

**Issue 2-2: Other immunity test**

* Proposals
  + Different enclosure:
    - test methods are similar
    - Test levels can be different based on use environment
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

|  |  |  |
| --- | --- | --- |
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| YYY | | Sub topic 1-1:  Sub topic 1-2:  ….  Others: |
| ZZZ | | Sub topic 1-1:  Sub topic 1-2:  ….  Others: |

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| Company B |
|  |
| R4-2001256 | | Company A |
| Company B |
|  |
| R4-2001257 | | Company A |
| Company B |
|  |

## Summary for 1st round

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

*Suggestion 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 provided recommendation on CRs/TPs Status update suggestion*

|  |  |  |
| --- | --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** | |
| R4-2001255 | |  |
| R4-2001256 | |  |
| R4-2001257 | |  |

## Discussion on 2nd round (if applicable)

## Summary on 2nd round (if applicable)

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