3GPP TSG-RAN WG4 Meeting # 97-e Dtaft R4-2017604

Electronic Meeting, 2-13 Nov., 2020

**Agenda item:** 4.3, 4.6, 7.4.6, 7.4.7

**Source:** Moderator (ZTE Corporation)

**Title:** Email discussion summary for [97e] [304] NR\_EMC

**Document for:** Information

# Introduction

For the RAN4 [96e] [304] NR\_EMC, the main topics are about NR UE EMC, NR BS EMC and IAB EMC including agenda items 4.3, 4.6, 7.4.6 and 7.4.7.

According to the contributions in this meeting, no contributions under agenda 4.3 are available. Therefore, the discussions will separate into three parts:

Topic #1: Agenda item 4.6: NR BS EMC

Topic #2: Agenda item 7.4.6: IAB EMC Core requirement

Topic #3: Agenda item7.4.7: IAB EMC Test/Performance requirement

*Briefly introduce background, the scope of this email discussion 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: NR BS EMC

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2015100**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015100.zip) | Ericsson | Title: CR to TS 37.113 on Voltage dips and interruptions, Release 15  ***Reason for changes:*** Specification of the Voltage dips and interruptions (Test method and levels) requirement is not aligned with IEC 61000‑4‑11, nor with the NR BS EMC specification. Performance criteria is updated to reflect considerations on the test levels.  ***Summary of change:*** Corrects the Voltage dips and interruptions requirements to align with IEC specification. It also includes and update to the performance criteria according to the test levels. |
| [**R4-2015101**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015101.zip) | Ericsson | Mirror CR for [R4-2015100](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015100.zip).  Moderator note: The Tdoc is available. |
| [**R4-2015102**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015102.zip) | Ericsson | Title: CR to TS 38.113 on Voltage dips and interruptions, Release 15  ***Reason for changes:*** Performance criteria is updated to reflect considerations on the test levels  ***Summary of change:*** Corrects the performance criteria according to the test levels defined by IEC |
| [**R4-2015103**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015103.zip) | Ericsson | Mirror CR for [R4-201510](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015100.zip)2.  Moderator note: The Tdoc is available. |
| [**R4-2015104**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015104.zip) | Ericsson | Title: CR to TS 38.113 on Performance criteria for transient phenomena, Release 15  ***Reason for changes:*** Performance criteria for transient phenomena is updated to reflect alignment both with TS 37.113 MSR EMC (which includes also NR) standard and ETSI considerations.  ***Summary of change:*** updates the performance criteria for transient phenomena to reflect alignment both with TS 37.113 MSR EMC (which includes also NR) standard and ETSI considerations. |
| [**R4-2015105**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015105.zip) | Ericsson | Mirror CR for [R4-201510](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015100.zip)4.  Moderator note: The Tdoc is available. |
| [**R4-2015568**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015568.zip) | Ericsson Inc. | Title: CR to TS 38.113 correcting Exclusion Bands Title, Release 15  ***Reason for changes:*** Correction to include missing title in section 4.4 (Exclusion Bands).  ***Summary of change:*** Corrects a missing title in section 4.4 (Exclusion Bands) |
| [**R4-2015569**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015569.zip) | Ericsson Inc. | Mirror CR for [R4-2015](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015100.zip)568.  Moderator note: The Tdoc is available. |
| [**R4-2015958**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015958.zip) | Huawei | Title: CR to TS 38.113: correction of the scope and other technical improvements, Rel-15  ***Reason for changes:*** Multiple technical improvements were incorporated into TS 38.113, e.g. clarifiaction to the scope and redundant text, clarification on the test methodology for RF electromagnetic field, and more.  ***Summary of change:***   1. Redundant text is simplified. 2. Unused refernece to the internal TR removed.   4.1: refernce to the proper manufacturer declaration corrected.  4.2: reference to the NR-ARFCN in the BS core spec added.  7.1: clarification note added for the referred IEC specifications, to avoid ambiguity on the alternative requirements.  8.2.1.4: text belonging to the Note edited accordingly.  9.2.2: clarification added on the (so far assumed to be the default) test methodology (as the alternative one is mentioned in the following statement)    Other editorial corrections. |
| R4-2015959 | Huawei | Mirror CR for [R4-2015](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015100.zip)958. |

## Open issues summary

**Issue 1-1: Does Performance criteria need to be updated to reflect considerations on the test levels? (R4-2015100 for TS37.113, R4-2015102 for TS38.113, R4-2015106 for TS38.175 )**

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

**Issue 1-2: If Yes is selected in the above, are the corrections on the Performance criteria section in R4-2015100/R4-2015102/R4-2015106 agreeable?**

* Proposals
  + Option 1: Yes
  + Option 2: No, wordings improvement are needed
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Issue 1-1: if the referred specification was updated, the RAN4 spec to be updated: Option 1.  Issue 1-2: Option 2. We have some comments to the implementation itself. If the criteria was modified, then we may need to have versioned reference to the IEC spec. We are still checking internally, in which version of the IEC spec the modification was introduced. |
| ZTE | 1-1: Option 1: Yes, it’s ok to make the voltage dips and interruptions test level of 37.113 consistent with that of 38.113.  1-2: Option 2. |
| Ericsson | 1-1: Option 1: Yes.  1-2: Option 2: We can improve the wording of the proposed modifications |
| Nokia, Nokia Shanghai Bell | Issue 1-1: Further discussions are necessary to understand the rationale behind the proposed update.  Issue 1-2: This depends on the outcome of Issue 1-1. |

### 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** |
| R4-2015100/5101 | Huawei: see issue 1-1 and 1-2.  If the criteria was modified, then we may need to have versioned reference to the IEC spec. We are still checking internally, in which version of the IEC spec the modification was introduced. |
| ZTE: wordings improvement are needed. One additional comment: DO NOT UPLOAD THE REL-16 CAT A CR BEFORE THE CORRESPONDING REL-15 CAT A CR AGREED. |
| Ericsson: For 37.113 the first part of the proposed CR targets the modification of the voltage dips and test levels that are included in IEC 61000‑4‑11. See table below:    The current 37.113 does not reflect the test levels indicated by IEC and already implemented in NR BS EMC spec.  On the other hand, we are proposing a change in the performance criteria section considering the following, according to IEC 61000-4-11 from 2020:  - **It is the responsibility of the product committees to establish which phenomena among the ones considered in this document are relevant and to decide on the applicability of the test.**   * The levels and durations shall be given in the product specification. A test level of 0 % corresponds to a total supply voltage interruption. * When setting performance criteria for disturbances of a half-period duration for products with a mains transformer, product committees should pay particular attention to effects which can result from inrush currents.   In this regard, the performance criteria shall specify the levels used during test. This is the first target of including 0% and 70% levels in the text. ETSI 301 489-1 v2.2.3 also includes such specification.  The tests should consider both voltage dips and voltage interruptions, which is also addressed and clarified in our CR.  The other modification is the addition of the text “when the voltage is restored to nominal”, at the en of the criterion on unintentional responses. What this line specifies is that the test concludes when the voltage is back to the original value of operation. |
| Nokia: These CRs depend on the outcome of Issue 1-1. |
| Ericsson: Rationale behind the proposed change for 37.113 has been provided. Hope this input is enough to approve the CR. |
| R4-2015102/5103 | Huawei: same comments as to 5100. |
| ZTE: Same as above. |
| Ericsson: Same as above |
| Nokia: The same comment as R4-2015100/5101. |
| R4-2015104/5105 | Huawei: motivation for this change is unclear – we would like to know more background. As of now, such modification is not clear and not agreeable.  For the CR itself – table shall be Voided, instead of deletion.  ZTE: Simplification is feasible. The key point of the transient performance criterion is that the communication link is not interrupted. It is no need to pay attention to the throughput.  However, the tables are deleted but the table numbers are existed in the sentence. |
| Ericsson: The motivation is the simplification in the criteria as also mentioned by ZTE. As mentioned also in ETSI standard 301 489 -1 the main point of transient phenomena performance criteria is that “*The application of the transient phenomena shall not result in a change of the mode of operation (e.g. unintended transmission) or the loss of critical stored data*”. In that sense, it is important to guarantee the communication link is not interrupted. Throughput performance indicators represents an unnecessary complex addition to the requirement for NR.  In addition, 37.113, which covers NR as part of the MSR technologies, does not include throughput requirements. |
| Huawei: with the above clarification, we would like to further check this internally during second round. Another aspects is the alignment with other EMC specifications. |
| Nokia: Table 6.2-1 and table 6.2-2 are still referred in the text even though they are supposed to be deleted. |
| R4-2015568/5569 | Huawei: this modification was included in Huawei CR in R4-2015958. As such, CR in R4-2015568 is considered as editorial one, which shall not be treated, as per Chair guidance.  Related Cat A CR shall not be submitted before the meeting, as noted by the Moderator.  ZTE: It should be merged into 2015958. |
| Ericsson: OK with addressing this adjustment using Huawei’s CR. |
| Nokia: The CR provides minor editorial comments so it can be merged with other CRs. |
| R4-2015958/5959 | ZTE: CR seems ok. |
| Ericsson: CR seems OK |
| Huawei: to respect MCC rules, we may need to revise it just to remove all the comments added to the CR for clarification purposes. |
| Nokia: These CRs seem OK. |

## 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** | *Several CR were discussed.*  *Tentative agreements:*   1. *Performance criteria needs to be updated to reflect considerations on the test levels to keep consistent with IEC 61000‑4‑11* *for TS37.113, TS38.113 and TS38.175. However, wording needs to be improved.*   *Candidate options:*  *Recommendations for 2nd round:*   1. *Companies focus on the wording for the revised CR 2015100/5102.* 2. *Companies further check the motivation/wording of the CR R4-2015104* |

*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** |
| R4-2015100  (Cat F CR.) | *To be revised* |
| R4-2015101  (Mirror CR for 5100) | *To be revised*  *(Moderator notes: Please don’t upload the Rel-16 Cat A CR before the corresponding Rel-15 Cat F CR agreed.)* |
| R4-2015102  (Cat F CR.) | *To be revised* |
| R4-2015103  (Mirror CR for 5103) | *To be revised*  *(Moderator notes: Please don’t upload the Rel-16 Cat A CR before the corresponding Rel-15 Cat F CR agreed.)* |
| R4-2015104  (Cat F CR.) | *To be revised* |
| R4-2015105  (Mirror CR for 5104) | *To be revised*  *(Moderator notes: Please don’t upload the Rel-16 Cat A CR before the corresponding Rel-15 Cat F CR agreed.)* |
| R4-2015568  (Cat F CR.) | *To be noted* |
| R4-2015569  (Mirror CR for 5568) | *To be noted* |
| R4-2015958  (Cat F CR. ) | *To be revised* |

## Discussion on 2nd round (if applicable)

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2017435/7436  (from R4-2015100/5101) | *Huawei: additional corrections were proposed. CatA CR shall NOT be submitted/drafted/uploaded until related Cat F CR is Agreed.*  ZTE: Please accept the revision mark in the CR cover before upload the final Tdoc in the inbox  Ericsson: Thanks Huawei for your input. Changes have been implemented in CAT F CR. File uploaded |
| R4-2017437/7438  (from R4-2015102/5103) | *Huawei: align with the modifications in* R4-2017435 (add the other section with levels etc.).  ZTE: Please accept the revision mark in the CR cover before upload the final Tdoc in the inbox  Ericsson: Thanks Huawei for your input. Changes have been implemented in CAT F CR. File uploaded |
| R4-2017439/7440  (from R4-2015104/5105) | *Huawei: internal check is still ongoing. At the moment we still need more time for verification of this change. If we delete all the existing details on the setting up the link, it is unclear how testing people will perceive it. The referred 37.113 still includes details on require thp, etc for NR BS performance criteria for continuous phenomena for BS.*  *Ericsson: A new version of the CR has been uploaded, in this case we have added a text to guide testing procedure with details about the channel bandwidth, bearer, subcarrier, etc.*  *Huawei: it is still unclear why the approach in 37.113 differs. We would prefer to clarify this and apply the same approach among EMC specs. We suggest to postpone this to next meeting and coordinate offline before next RAN4 meeting.* |
| R4-2017441/5959  (from R4-2015958) | *Ericsson: OK*  *ZTE : OK* |

## 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 Core requirement

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2015026**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015026.zip) | ZTE Corporation | Title: CR to TS 38.175: IAB definition  ***Reason for changes:*** There are no definitions for IAB type  ***Summary of change:*** Add IAB type definitions |
| [**R4-2015027**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015027.zip) | ZTE Corporation | Title: CR to TS 38.175: Radiated emission, IAB  ***Reason for changes:*** The radiated eimssion IAB requirements need to be added  ***Summary of change:*** Add radiated eimssion IAB requirements |
| [**R4-2015106**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015106.zip) | Ericsson | Performance criteria is updated to reflect considerations on the test levels  move to topic #1. |
| [**R4-2015107**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015107.zip) | Ericsson | **Observation 1***: 3GPP RAN4 seems to agree on reusing NR BS principles when defining most of the IAB EMC specification requirements. In that sense, 3GPP RAN4 might agree on reusing the values already defined in TS 38.174 [3] to define the exclusion band size for RI testing when not all the sides of the IAB node are exposed****.***  **Observation 2:** *The protection of the EUT should be part of the considerations when defining EMC RI requirements. In that sense, IAB node should be also protected as NR BS with the definition of spatial exclusion.*  **Observation 3:** *NR BS EMC specification has considered both scenarios (with and without spatial exclusion) when defining the size of exclusion bands. When not possible to implement the exclusion zone (spatial exclusion), the size of the exclusion band should be wider than* ΔfOOB *to guarantee the protection of the IAB node during RI testing.*  Based on these considerations, we propose:  ***Proposal 1: To reuse the Exclusion Band Size values defined for NR BS exclusion bands (receiver and transmitter) in the IAB EMC specification.***  ***Proposal 2: To include two alternatives (with and without spatial exclusion) for the definition of the receiver exclusion bands for RI testing of IAB nodes.***  ***Proposal 3: To agree on the companion CR to TS 38.175 [5] on exclusion bands.*** |
| [**R4-2015108**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015108.zip) | Ericsson | CR based on 15107 |
| [**R4-2015109**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015109.zip) | Ericsson | **Observation 1:** *3GPP has agreed that for IAB type 1-O and type 2-O, the radiated emission is covered by radiated spurious emission requirement in TS 38.174 [5].*  **Observation 2:** *3GPP has agreed on the definition of spurious emission for IAB node. Reusing the limits defined in the IAB RF spec in the IAB EMC specification is a reasonable approach. Same principle applied for NR BS EMC specification.*  Based on these elements we propose:  ***Proposal 1: To define the IAB EMC Radiated Emissions requirements for IAB type 1-H reusing the ones already set in the IAB RF specifications.***  ***Proposal 2: : To agree on the companion CR to TS 38.175 [6] on IAB EMC emission requirements.*** |
| [**R4-2015110**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015110.zip) | Ericsson | CR based on 15109 |
| [**R4-2015111**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015111.zip) | Ericsson | ***Observation 1****: Considering the statement of IEC in [1], it is possible (when technically justified) to test the EUT by exposing fewer faces to the generating antenna.*  ***Observation 2:*** *Protection of the EUT should be part of the considerations when defining EMC RI requirements. In that sense, IAB node should be also protected as NR BS with the definition of spatial exclusion.*  ***Observation 3:*** *The implementation of spatial exclusion should be considered to protect the antenna array elements irrespective of the IAB node implementation.*  ***Observation 4:*** *Excluding sides of the IAB node during the RI test does not imply a relaxation on the testing or the requirements, since there are additional mechanisms to guarantee the performance of the EUT fits within regulatory requirements while protecting other services.*  Based on these elements we propose:  ***Proposal 1: To include the spatial exclusion concept under the Radiated Immunity considerations for EMC IAB specification TS 38.175.***  ***Proposal 2: To agree on the companion CR to TS 38.175 [4] adding spatial exclusion to Radiated Immunity testing.*** |
| [**R4-2015112**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015112.zip) | Ericsson | CR based on 15111. |

## 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:*

In last RAN4 meeting, whether or not need the exclusion zone (spatial exclusion) for IAB have been discussed. Consequently, the spatial exclusion related texts are keep in [].

Also, due to the parallel discussion between IAB RF and IAB EMC, so some of the RF requirements for IAB EMC are keep in [].

**Issue 2-1: How to define IAB receiver exclusion band?**

* Proposals
  + Tentative agreements: Reuse the Exclusion Band Size values defined for NR BS exclusion bands (receiver and transmitter) , and remove [] from the current values.
* Recommended WF
  + TBA

**Issue 2-2: Whether or not include exclusion zone (spatial exclusion) for the definition of the receiver exclusion bands for RI testing of IAB nodes?**

* Proposals
  + Option 1: Yes, two alternatives: with and without exclusion zone (spatial exclusion)(R4-2015107/5108/5111/5112)
  + Option 2: No, one alternative: without exclusion zone (spatial exclusion)
  + Option 3: Others
* Recommended WF
  + TBA

**Issue 2-3: How to defined IAB radiated emission requirements?**

* Proposals
  + Tentative agreements: Reuse the ones already set in the IAB RF specifications. (R4-2015109/5110/R4-2015027)
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Issue 2-1: ok to remove [].  Issue 2-2: Option 1 is preferred. Still, we need to work more on the test aspects of the spatial exclusion for IAB and its radio interfaces. This is seen as FFS.  Issue 2-3: refer to NR BS spec, where the Field strength method measurement method was also considered. |
| ZTE | **Issue 2-1:** : It’s ok to remove [].  **Issue 2-2:** : Option 1. It’s necessary to consider exclusion zone (spatial exclusion) for RI testing. In addition, we have a question for clarification, in case of IAB-DU and IAB-MT are sited together, is it need to consider two exclusion zones, one is for IAB-DU and the other one is for IAB-MT?  .**Issue 2-3: TS** 38.174 has finished the discussion of ΔfOBUE. We can reuse those for radiated emission. The limits for IAB should be same as NR BS. |
| Ericsson | Issue 2-1: Option 1  Issue 2-2: Option 1. The general approach would be to protect antenna arrays linked to DU/MT. MT and DU shall be protecte, and the way to implement this can be discussed.  Isseu 2-3: Option 1. We have proposed a CR where the field strength method is considered. |
| Nokia, Nokia Shanghai Bell | Issue 2-1:  The proposal to reuse the Exclusion Band Size values defined for NR BS exclusion bands is OK.  Issue 2-2:  Option 1 is OK.  Issue 2-3:  Should reuse requirements specified for IAB RF as in the case of NR BS. |
| ZTE | According to the Chairman’s guidance of ‘RAN4 Meeting Efficiency Improvements.pptx v1.6’, where:  *-Maximum one discussion paper per agenda item (AI) per company/organization.*  *- Current CR approach is still used with CR cap*  *-Maximum one Draft CR or CR (but not both) or TP (in the case that a TS/TR is not yet under change control) per specification per AI per company/organization. Such cap does not apply to Mirror CRs.*  Therefore R4-2015106/5108 are not in line with the above rules. |
| Ericsson | If there is an agreement, an alternative could be to merge R4-2015112 and R4-2015108 in one CR as proposed by Huawei, and move forward with R4-2015106 (again if there is agreement) |

### 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** |
| R4-2015026 | Huawei: reassure that those definitions are aligned with the RF spec – the latest version of TS 38.174 does not include such definitions. |
| ZTE: To huawei, in our understanding, the TS38.174 are still under improving due to the lack of time in last meeting, which means there are lots of maintainance work to do for IAB RF spec. Also we think the added definition in 5026 are needed for both IAB RF spec and IAB EMC spec due to it have been used in the texts. |
| Ericsson: The definition proposed by ZTE are the ones included in the TR. |
| Huawei: lets aim to approve it, unless someone spots any other issue. |
| R4-2015027 | Huawei: there is similar Ericsson CR in R4-2015110.  hanging text in 8.2.1.  Wording correction needed in 8.2.1: no need for double reference to RF spec (in other EMC specs it was done due to the fact that core and conformance were in separate specs).  8.2.1.2: referring to the TS 38.113, we also have the Field strength method measurement method. We would suggest to also introduce it here. Comments from other companies are welcome.  8.2.1.3: we would suggest to merge OBUE tables as those basically contain the same information. |
| ZTE: We can merge Ericsson CR R4-2015110. A revision CR is needed. |
| Ericsson: We support the idea of including the field strength method measurement for this case. A similar contribution has been presented by Ericsson. |
|  |
| R4-2015106 | Huawei: see issue 1-1 and 1-2.  It was also observed that section 9.6.3 does not refer to IEC spec, so it is not clear that the actual requirement is IEC derived.  Furthermore: the ”X” criteria shall be replaced by proper subclauses/placeholders, if possible. |
| ZTE: wordings improvement are needed. |
| Ericsson:The values used in the performance criteria come from IEC. How to interpret the values and define performance criteria is up to the standardization organizations. However, the reasoning behind the proposed text is explained in issued 1-1 and 1-2 |
| Huawei: we do understand that this is IEC based, but this is not spelled out. So we shall avoid the impression that this was RAN4-created. We suggest to revise it and in the meantime check consistency with other specs. |
| R4-2015108 | Huawei: appropriate modifications in clause 9.2.2 are missing.  To be merged with R4-2015112. |
| ZTE: Agree with huawei’s comments. |
| Ericsson: Agree with merging CRs |
|  |
| R4-2015110 | Huawei: there is similar ZTE CR in R4-2015027.  Due to the fact that this one includes the Field strength method, this one is preferred as the baseline for revision.  Wording correction needed in 8.2.1: no need for double reference to RF spec (in other EMC specs it was done due to the fact that core and conformance were in separate specs). Some new abbreviations missing.  Hanging text in 8.2.1 |
| ZTE: It is proposed to merged into R4-2015027. |
| Ericsson: We propose to work the revision taking this CR as starting point. Agree with adjusting terms considering IAB abbreviations. |
|  |
| R4-2015112 | Huawei: agree as such, but the figure is not seen as applicable to IAB node. We need to work more (for the next meeting?) on the way to depict it properly. This is also related to the ongoing RF conformance work. Revision needed.  To be merged with R4-2015108. |
| ZTE:A question for clarification, in case of IAB-DU and IAB-MT are sited together, is it need to consider two exclusion zones, one is for IAB-DU and the other one is for IAB-MT? |
| Ericsson. We could work in the figure for the next meeting. The point here is to describe the need for protecting antenna array(s) of the interferer potential damage. If there is a DU antenna array and a MT antenna array there should be a exclusion zone per each one. |
| Huawei: it seems that the ongoing RF testing discussion may clarify the final approach. So we support the idea to defer the figure itself to the next meeting, and add necessary modifications to the text so it is still consistent without the figure itself.  Ericsson: Agree with Huaweis proposal. |

## 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:*   1. *IAB receiver exclusion band: Reuse the Exclusion Band Size values defined for NR BS exclusion bands (receiver and transmitter) , and remove [] from the current values.* 2. *exclusion zone (spatial exclusion) for RI testing: Include two alternatives: i.e. with and without exclusion zone (spatial exclusion) for the definition of the receiver exclusion bands for RI testing of IAB nodes* 3. *IAB radiated emission requirements: Reuse the ones already set in the IAB RF specifications, also consider field strength method.*   *Candidate options:*  *Recommendations for 2nd round:*  *Focus on the CR revisions.* |

*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** |
| *R4-2015026* | *To be agreed.* |
| *R4-2015027* | *To be revised Source: ZTE, Ericsson*  *(Moderator note: 5110 is merged into 5027. )* |
| *R4-2015106* | *To be revised* |
| *R4-2015108* | *To be noted* |
| *R4-2015110* | *To be noted* |
| *R4-2015112* | *To be revised*  *(Moderator note: 5108 and 5112 are merged into one CR.)* |

## Discussion on 2nd round (if applicable)

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2017442  (from R4-2015027) | *Ericsson: Some comment on the proposed draft CR.*   1. *The Tdoc number is wrong according to the session report. In the Draft proposed by ZTE the number is R4-2017446 (which corresponds to an Ericsson CR for IAB EMC performance requirements.)* 2. *We suggest to use IAB node to identify the equipment we refer to.* 3. *When including the field strength alternative, it would be necessary to add both references and symbols.*   *In the max. measurement uncertainty table the values associated to field strength are missing.* |
| Huawei: MU values missing for the direct field.  ZTE: Thanks for carefully checking. We accept all the comments.  To Ericsson, sorry for the mistake. We have corrected the Tdoc number and add the missing references and symbols.  To Huawei, MU is added in max. measurement uncertainty table. Please see the r1version in the folder. |
| R4-2017444  (from R4-2015106) | *Huawei: align with the modifications in* R4-2017435 (add the other section with levels etc.).  ZTE: Looks good.  Ericsson: Thanks Huawei for your input. Changes have been implemented in CAT F CR. File uploaded |
| R4-2017443  (from R4-2015112) | *Huawei:we suggest to be a little conservative this meeting and not to include the text on angular aspects, until we know how the spatial exclusion is actually defined for IAB. [] are proposed to be kept for the related text.*  *Ericsson: OK with keeping the []. We will come with figure proposal.*  *Huawei: we have provided revision to remove the text on spatial aspects. [] to be used for the whole modified part – refer to the Huawei revision shared previously.* |

## 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 #3: IAB EMC Test/Performance requirement

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2015028**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015028.zip) | ZTE Corporation | **Proposal 1: The requirements of “4.5 test configurations” should wait for the outcomes of IAB RF test.**  **Proposal 2: For ancillary equipment performance assessment, it is proposed to reused from TS38.113.**  **Proposal 3: The requirements of “6 performance criteria” should wait for all the requirements IAB RF are completed.**  **Proposal 4: For the other sections, such as 4.1, 4.2, 4.3, 5, 8.1, and 9.1 in TS38.175, the work can be started standalone for IAB EMC.** |
| [**R4-2015113**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015113.zip) | Ericsson | **Observation 1:** *Although standardization bodies such as CISPR or IEC have defined the limits and requirements for EMC testing, is up to 3GPP to define the way CISPR/IEC recommendations are going to be implemented in the definition of test limits and performance requirements.*  **Observation 2:** *The definition of IAB EMC performance requirements by 3GPP has to consider the IAB node as a whole (MT and DU) irrespective of its implementation.*  **Observation 3:** *The definition of IAB EMC specification has been based on reusing NR BS EMC specification. Same principle should be applied in the definition of the IAM EMC performance requirements.*  Based on these elements we propose:  ***Proposal 1: To define the IAB EMC performance requirements reusing the ones already set in the NR BS EMC specification.***  ***Proposal 2: : To agree on the companion CR to TS 38.175 [9] on exclusion bands.*** |
| [**R4-2015114**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015114.zip) | Ericsson | CR based on 15113 |

## Open issues summary

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

All the IAB performance/test requirements are open*.* Meanwhile the discussions on the performance and test related requirements for the IAB RF in TS38.174 start in this meeting. Therefore, for IAB EMC test/performance part, it should be discussed one by one.

### Sub-topic 3-1

*Sub-topic description:*

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

**Issue 3-1: How to treat the requirements of test configurations (section 4.5) ?**

* Proposals
  + Tentative agreements: Waiting for the outcomes of IAB RF test. (R4-2015028/5113/114)
* Recommended WF
  + TBA

**Issue 3-2: How to treat the requirements of performance criteria (section 6.1 and 6.2)?**

* Proposals
  + Option 1: Waiting for the outcomes of IAB RF test. (R4-2015028)
  + Option 2: Reuse the ones already set in the NR BS EMC specification. (R4-2015113/114)
* Recommended WF
  + TBA

**Issue 3-3: How to treat ancillary equipment requirement(section 5.4, 6.3 and 6.4)**

* Proposals
  + Tentative agreements: Reuse the ones already set in the NR BS EMC specification (R4-2015028/5113/114)
* Recommended WF
  + TBA

**Issue 3-4: How to treat test configurations for emission (section 8.1) and immunity(section 9.1)**

* Proposals
  + Option 1: Waiting for the outcomes of IAB RF test.
  + Option 2: Reuse the ones already set in the NR BS EMC specification. (R4-2015113/5114/5028)
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Issue 3-1: agree with the proposal to wait for RF conclusion.  Issue 3-2: Option 1  Issue 3-3: it seems that this is the only reasonable approach – reuse the NR BS approach.  Issue 3-4: Option 2: indeed there is no need to refer to RF agreements. |
| ZTE | Issue 3-1: Option 1.  Issue 3-2: Option 1.  Issue 3-3: Option 1.  Issue 3-4: Option 2. The sections 8.1 and 9.1 describe the test configuration during emission and immunity test . The descriptions are mainly related to the EMC standards but not the RF standards. |
| Ericsson | Issue 3-1: Option 1  Issue 3-2: We can wait for RF agreement to set section 6.1 requirements. For section 6.2 (performance criteria for transient phenomena), we suggest to consider our proposal in R4-2015114, considering that the main criteria should be communication link operation. Here we don’t need to go for specific throughput levels (See more comments about R4-2015104/5105 )  Issue 3-3: Option 1  Issue 3-4: Option 2. As mentioned by ZTE, sections 8.1 and 9.1 do not depend on RF discussion. |
| Nokia, Nokia Shanghai Bell | Issue 3-1: The proposal is OK.  Issue 3-2: Option 1  Issue 3-3: Reuse the ones already set in the NR BS EMC specification is OK.  Issue 3-4: Option 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** |
| R4-2015114 | Huawei: some text (e.g. 6.1) is not aligned with the other CR for NR BS which is actually removing the very same tables.  We prefer to follow ZTE approach on following RF discussions and postpone the decisions.  Refer to the open issues above and ZTE proposal for the non-controversial sections. |
| ZTE: For the sections of 4.1, 4.2, 4.3, 5, 6.3, 6.4 and 8.1 and 9.1, it can be reuse the ones already set in the NR BS EMC specification. For the other parts, such as 4.5, 6.1, 6.2, it should be waiting for the outcomes of IAB RF discussion. |
| Ericsson: Based on the evaluation of agreements after this initial round, we propose to adjust this CR to reflect the agreement on the reuse of some sections from NR BS EMC spec. |
| ZTE: According to the Chairman’s guidance of ‘RAN4 Meeting Efficiency Improvements.pptx v1.6’, “Big CR approach adopted for R16 Perf Part that will start in August or later, i.e. work split method.” should be used.  Therefore, we suggest no CR approved in this meeting. We can discuss the possible work spit before next meeting.  Ericsson: Considering that there is some consensus on reusing NR BS specification to complete parts of the IAB EMC specification, we would propose to take this CR to implement the initial agreements of this meeting, and define a work split for those areas open for discussion in the next meeting. We don’t see any particular reason to delay the implementation of potential agreements during this meeting. In fact, this will contribute to save time for the next meetings. |

## 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** | *How to treat IAB EMC performance work was discussed.*  *Tentative agreements:*  *For the sections of 4.1, 4.2, 4.3, 5, 6.3, 6.4 and 8.1 and 9.1,*  *- It can be reuse the ones already set in the NR BS EMC specification.*  *For the sections of 4.5, 6.1 and 6.2*  *- Waiting for the outcomes of IAB RF discussion.*  *Candidate options:*  *CR(Using Ericsson’s CR R4-2015114 as baseline) to capture the non-controversial sections.*  *Recommendations for 2nd round:*  *Check the WF and CR.* |

*Suggestion on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
| #1 | WF on IAB EMC test/performance requirements | ZTE |

### 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** |
| *R4-2015114* | *To be revised* |

## Discussion on 2nd round (if applicable)

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2017446  (from R4-2015114) | Huawei: same comment on the performance criteria as to R4-2017439. Suggest to leave Performance criteria out of this tdoc and first clarify R4-2017439.  ZTE: Same comments with Huawei, i.e. no need to include Performance criteria.  Due to the reference is already included in Draft R4-2017442, so duplicated changes need to be avoided in this Tdoc.  Ericsson: Thanks ZTE for your input. Changes have been implemented in the CR. OK with leaving the section 6.2 for the next meeting.  Huawei: there are changes on changes (newly proposed text is deleted with another ID) – it will confuse MCC. Just approve those deletions. |
| R4-2017445:  WF on IAB EMC test/performance requirements | Ericsson: In general terms, we agree with the WF. We suggest adding section 6.2 to the list of chapters that can be reused from the NR BS EMC. In addition, the WF could mention that there will be a work split among the interested companies to complete the conformance part of the spec. |
| Huawei: suggest to wait with the perf criteria as there is some related modification under discussion in R4-2017439. We suggest to postpone perf criteria till next meeting  ZTE: For section 6.2(perf criteria), we agree with Huawei. Let’s discuss R4-2017439 first since the current NR BS EMC are refer to the NR RF information although R4-2017439 suggest to remove these information. Therefore it is proper to postpone perf criteria till next meeting till next meeting.  For the work split, we share our initial thinkings below and we are open to discuss.    According to what we have discussed in the past days, only a few clauses (4.5, 6.1 and 6.2) are open, the other clauses have already been captured in R4-2017446. In terms of the WID, we have 3 meetings to complete the IAB EMC performance work, also it seems we may not complete IAB EMC performance in the next 2 meetings due to some of them are pending on the progress of the IAB RF test/performance.  In our understanding, ‘work split ’ method should be used in case of all of the issues are solved and implement the requirements into the spec. However, regarding the future work for clauses 4.5, 6.1 and 6.2, it could be foreseen that clauses 6.1 and 6.2 will be completed ahead of 4.5. If it is happened in next meeting, i think it is feasible to complete clause 6.1and 6.2 first, since only two clauses and the texts are quite similar, so it may not proper to split in two CRs(two company).  Therefore we think it is no need to mention the work split in the WF. If the overlapping CR are overlapped from companies in the next meeting, i think we can handle it well.  Moreover, we can still discuss the possible work split in Apr. meeting next year pending on the progress of IAB EMC/RF. |
|  |  |

## 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”* |