**3GPP TSG-RAN WG4 Meeting # 95-e DRAFT R4-2008700**

**Electronic Meeting, 25 May – 5 June, 2020**

**Agenda item:** 6.19

**Source:** Moderator (Huawei)

**Title:** Email discussion summary for [95e][311] OTA\_BS\_testing

**Document for:** Information

# Introduction

This is the email discussion summary for [95e][311] OTA\_BS\_testing on OTA BS testing WI, with the following topics covered:

* Topic 1: TPs to TR 37.941
* Topic 2: Conformance testing framework
* Topic 3: MU / TT values: derivation and tables
* Topic 4: CRs to legacy TR/TS

Conclusion of the first round should conclude if the submitted TPs and CRs can be agreed or need to be revised.

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

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

# Topic #1: TPs to TR 37.941

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2008137 | Huawei | TP to TR 37.941: editorial cleanup  It is expected that this TP may be revised during the meeting to incorporate more corrections. |
| R4-2007566 | Ericsson, Rohde & Schwarz | TP to TR 37.941: Improvement of technical background information in Clause 6  Continuation of the discussion from the previous meeting with additional improvements: improvements to the spatial definitions and requirements classification description. |
| R4-2007568 | Ericsson | TP to TR 37.941: Improvement of the Clause 6.3.3  Continuation of the discussion from the previous meeting with additional improvements to the “Angular alignment in TRP measurements” clause. |
| R4-2008005 | ROHDE & SCHWARZ | TP to TR 37.941 on editorial corrections for PWS references  PWS terminology corrections. |

## Open issues summary

### Sub-topic 1-1

### Sub-topic 1-2

## Companies views’ collection for 1st round

### Open issues

### CRs/TPs comments collection

|  |  |  |
| --- | --- | --- |
| **CR/TP number** | **Comments collection** | |
| R4-2008137 | Nokia:  - Clause 6.4.2.2.2 is referred to in 5 clauses, but this clause does not exist.  - Can remove 'FFS' in last statement in 16.4 and third paragraph in Annex E. | |
| *Company B* | |
|  | |
| R4-2007566 | *Company A* | |
|  | |
| Nokia, Nokia Shanghai Bell | The term “power flux” should be clarified using a diagram.  The directional requirements are defined with respect to an isotropic antenna. However, an isotropic antenna is an ideal source that radiates in all directions. What is the purpose of such definitions and their relevance to directional requirements?  EIRP is a far-field parameter as stated in Equation (6) in [2]. This is not obvious from the EIRP equation and can be interpreted as a near-field parameter as well.  Why taking limit r -> ∞? This is not realistic in practice. is the minimum far-field distance, which is commonly used in technical references.  Adding “near-field measurements” can be misleading, referring to the following equation:  From the above equation, is a far-field parameter according to Equation (4) in [2]. In [2], it says “This relation holds also in most of the radiating near-field”. This means, the above equation is not valid for all cases but with some exceptions. What are these exceptions? A suggestion is to distinguish this type of near-field measurement from traditional near-field measurements (which require near-field to far-field transformation). |
|  | Ericsson | In order to define true EIRP it is certainly at r = infinity, but in reality/practice you get small errors if r >= 2D^2/lambda. In other words, r = infinity is the accurate mathematical expression, but realistically this cannot be achieved. The approximation is derived from the r = infinity expression and the intention is to provide this background information to the reader for completeness.  Regarding “This relation holds also in most of the radiating near-field” can be changed to add more background on near field itself. Since the near field contains a reactive and radiative region the boundary is not always so clear. The background for this text was to indicate that the measurement is far enough away from the EUT to capture the radiative near field rather than reactive near field.    We have also done studies to understand how far away from the EUT the measurement can be taken in order to not incur TRP errors. |
| R4-2007568 | *Company A* | |
| *Company B* | |
| Nokia, Nokia Shanghai Bell | Interpolation has not been discussed before. So, it is a topic for further discussion. Contributions addressing peak and direction finding are encouraged.  Concerning the misleading text on the application and reference angular steps in orthogonal cuts with pattern multiplication method, the text explicitly refers to Step 2 in clauses 6.3.2.2.2 and 6.3.2.3.2, where Step 2 is specified as follows.   1. Align the BS to allow for proper pattern multiplication. Measure EIRP on two orthogonal cuts with steps smaller or equal to the reference steps according to step 1.   According to Step 2, it gives the option of selecting steps that are smaller than the reference steps. However, Step 2 does not provide further details on how to choose such smaller steps. The text is meant to provide such missing information, which can be used to select smaller steps. It is not about measurement errors of orthogonal cuts with pattern multiplication. Perhaps, the wording can be improved to avoid the misunderstanding. |
| Ericsson | Regarding the comment “It is not about measurement errors of orthogonal cuts with pattern multiplication”, then perhaps Nokia can help us to understand why the Figure and Table captions have this in the title “measurement errors”?  Our intension of this TP was to add some clarity and simplicity to the existing text based of course on our understanding of this section.  Regarding selecting angular steps: e.g. if the reference step is calculated as 1.0346 degrees you would probably use 1.00 degrees in the measurement. There are practicalities that play in and they easily get convoluted if we try to describe them. Moreover, for any step lower than the reference step, the result will be the same.  In general, this section is difficult to follow; is it only E/// view on this? It would be good to understand if any other companies have the same reflection upon reading this section. |
| R4-2008005 | *Company A* | |
| *Company B* | |
|  | |

## Summary for 1st round

### Open issues

### CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2008137 | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2007566 |  |
| R4-2007568 |  |
| R4-2008005 |  |

## 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: Conformance testing framework

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2007914 | Huawei | TP to TR 37.941 MU budget procedure update  Based on the discussion last meetings, the conformance testing framework was updated to explain the proposed approach for the “single table vs. two tables” topic for MU derivation tables. |
| R4-2007915 | Huawei | TP to TR 37.941 EIRP MU budget procedure update  Based on the updated conformance framework in R4-2007914, the 9.2 clause (EIRP, Normal conditions) is updated to implement two tables approach as an example. |

## Open issues summary

### Sub-topic 2-1

### Sub-topic 2-2

## Companies views’ collection for 1st round

### Open issues

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2007914 | Company A |
| Company B |
|  |
| R4-2007915 | Ericsson: As this is an example based upon TR 37.482 we are curious to understanding why the UID was not kept and changed to something new? |
| Company B |
|  |

## Summary for 1st round

### Open issues

### CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2007914 | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2007915 |  |

## 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 #3: MU / TT values: derivation and tables

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2007595 | ROHDE & SCHWARZ | TP to 37.941: MU tables for additional Tx test cases for PWS  TP for the missing tables for additional PWS requirements which were introduced last meeting. It also introduces the text proposal for EVM MU value derivation for FR1. |
| R4-2007910 | Huawei | TX directional FR2 MU budget spreadsheet  This is resubmission of the RX FR2 MU calculation tables in R4-2004532. The tables were submitted to RAN4#94bis-e but were not approved the TE companies wished to confirm the TE MU values used.  In particular the value for the IAC in the frequency range 37<f<40GHz is 0.02dB larger than the previously agreed MU value. It was requested to have another meeting cycle to try to resolve this minor issue (it is not intended to change any agreed MU or TT values only resolve eth MU calculation table). |
| R4-2007911 | Huawei | TP to TR 37.941 FR2 TX directional  This TP updates the MU value derivation sections for the FR2 TX directional requirements, it is a resubmission of R4-2005505, which was noted in the last meeting to give more time to assess the TE values.  In particular the value for the CATR EIRP in the frequency range 37<f<40GHz is 0.02dB larger than the previously agreed MU value. It was requested to have another meeting cycle to try to resolve this minor issue (it is not intended to change any agreed MU or TT values only resolve the MU calculation table). |
| R4-2007912 | Huawei | RX directional FR2 MU budget spreadsheet  This is resubmission of the TX FR2 MU calculation tables R4-2004529. The tables were submitted to RAN4#94bis-e but were not approved the TE companies wished to confirm the TE MU values used.  In particular the value for the CATR EIRP in the frequency range 37<f<40GHz is 0.02dB larger than the previously agreed MU value. It was requested to have another meeting cycle to try to resolve this minor issue (it is not intended to change any agreed MU or TT values only resolve the MU calculation table). |
| R4-2007913 | Huawei | TP to TR 37.941 FR2 RX directional  This TP is a resubmission of R4-2004533 which was submitted in the last meeting but more time was requested to study the TE values used in the MU calculations.  In particular the value for the IAC in the frequency range 37<f<40GHz is 0.02dB larger than the previously agreed MU value. It was requested to have another meeting cycle to try to resolve this minor issue (it is not intended to change any agreed MU or TT values only resolve eth MU calculation table). |

## Open issues summary

### Sub-topic 3-1

### Sub-topic 3-2

## Companies views’ collection for 1st round

### Open issues

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2007595 | Nokia:  Section 9.7.5.2.2: testing should be carried out in the OTA conformance reference direction, not the beam peak direction of the OTA peak directions set reference direction. According to 38.141-2, test is carrier out at OTA coverage range reference direction and OTA coverage range maximum direction.  Section 9.7.5.3: Text and table is copy-paste from CATR, including the word “CATR” from there. |
| *Company B* |
|  |
| R4-2007910 | Nokia: Discussion part contains RX contents instead of TX contents. |
| *Company B* |
|  |
| R4-2007911 | *Company A* |
| *Company B* |
|  |
| R4-2007912 | Nokia: Discussion part contains TX contents instead of RX contents. |
| *Company B* |
|  |
| R4-2007913 | *Company A* |
| *Company B* |
|  |

## Summary for 1st round

### Open issues

### CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2007595 | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2007910 |  |
| R4-2007911 |  |
| R4-2007912 |  |
| R4-2007913 |  |

## 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 #4: CRs to legacy TR/TS

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2007451 | Huawei | CR to TR 37.842: internal TR references corrections and content redundancy removal (wrt. TR 37.941 for OTA BS testing), Rel-15  This CR provides corrections to the internal TR references (i.e. TR 37.840) in TR 37.842 and removes content (i.e. multiple sections removed/voided) which was already captured in the TR 37.941. Modifications include scope clarification. |
| R4-2007452 | Huawei | CR to TR 37.843: internal TR references corrections and content redundancy removal (wrt. TR 37.941 for OTA BS testing), Rel-15  This CR provides corrections to the internal TR references (i.e. TR 37.840, TR 37.842) in TR 37.843 842 and removes content (i.e. multiple sections removed/voided) which was already captured in the TR 37.941. Modifications include scope clarification. |
| R4-2007453 | Huawei | CR to TR 38.817-02: internal TR references corrections and content redundancy removal (wrt. TR 37.941 for OTA BS testing), Rel-15  This CR provides corrections to the internal TR references (i.e. TR 37.842 and TR 37.843) in TR 38.817-02 and removes content (i.e. multiple sections removed/voided) which was already captured in the TR 37.941. Modifications include scope clarification. |
| R4-2007454 | Huawei | CR to TS 37.145-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-15  This CR provides correction to the internal TR references (i.e. TR 37.842 and TR 37.843) in TS 37.145-2. |
| R4-2007455 | Huawei | CR to TS 37.145-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-16  Cat. A CR: This CR provides correction to the internal TR references (i.e. TR 37.842 and TR 37.843) in TS 37.145-2. |
| R4-2007456 | Huawei | CR to TS 38.141-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-15  This CR provides correction to the internal TR references (i.e. TR 38.817-02, TR 37.842 and TR 37.843) in TS 38.141-2. |
| R4-2007457 | Huawei | CR to TS 38.141-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-16  Cat. A CR: This CR provides correction to the internal TR references (i.e. TR 38.817-02, TR 37.842 and TR 37.843) in TS 38.141-2. |
| R4-2007458 | Huawei | CR to TS 37.114: internal TR reference corrections, Rel-15  This CR provides correction to the internal TR references (i.e. TR 37.842) in TS 37.114 (AAS BS EMC specification). |

## Open issues summary

### Sub-topic 4-1

### Sub-topic 4-2

## Companies views’ collection for 1st round

### Open issues

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2007451 | Nokia:  In general, the contents in this TR may already be referred to outside of 3GPP, thus a pointer to the new TR 37.941 like ‘Moved to [26]’ should be placed in the ‘shifted’ contents instead of just ‘Void’ them.  In particular, the ‘Note’ in table 5.3.3.2-1 can refer to TR 37.941 or deleted. |
| *Company B* |
|  |
| R4-2007452 | Nokia:  In general, the contents in this TR may already be referred to outside of 3GPP, thus a pointer to the new TR 37.941 like ‘Moved to [36]’ should be placed in the ‘shifted’ contents instead of just ‘Void’ them.  In particular, first statement in 5.1.1 should say 'three groups' as 'co-location requirements' is added to the list below; last statement in 5.2.3.1 can refer to new TR or listed out the '3 methods'. |
| *Company B* |
|  |
| R4-2007453 | Nokia:  In general, the contents in this TR may already be referred to outside of 3GPP, thus a pointer to the new TR 37.941 like ‘Moved to [36]’ should be placed in the ‘shifted’ contents instead of just ‘Void’ them.  In particular, reference to TR 38.803 in 10.3.3.3 and 10.5.3.3 can be kept as this is an 800 series TR. |
| *Company B* |
|  |
| R4-2007454  /  R4-2007455 | *Company A* |
| *Company B* |
|  |
| R4-2007456  /  R4-2007457 | *Company A* |
| *Company B* |
|  |
| R4-2007458 | *Company A* |
| *Company B* |
|  |

## Summary for 1st round

### Open issues

### CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2007451 | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2007452 |  |
| R4-2007453 |  |
| R4-2007454 |  |
| R4-2007455 |  |
| R4-2007456 |  |
| R4-2007457 |  |
| R4-2007458 |  |

## 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”* |