**3GPP TSG-RAN WG4 Meeting # 95-e DRAFT R4-2009045**

**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.

# 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

## 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. |
| Huawei: it is proposed to revise it for the purpose of the final editorial cleanup during this meeting. |
| R4-2007566 | Huawei: Still some text issues, as commented last meeting, e.g. shift all the TRP equations from 6.1 to section 6.3. In 6.1 we have only very high level overview of the requirements – details are in the following sections 6.2, 6.3. Revision is proposed.  Some wording issues in 6.2.1 (EIS sentence under equations).  6.3.1: further clarification on the coordinate system reference may be needed. |
| 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). |
| R&S  Adding the definitions of EIRP/EIS in the General section for Directional measurements helps provide the theoretical background for those 2 metrics that are essential to many of the measurements, referred many times along the document but not defined anywhere else. Actual requirements are in fact defined as EIRP/EIS, and thus referred to an isotropic antenna,  The fact that EIRP is actually a far-field parameter is implied by the methodologies or measurement systems that are listed for the corresponding requirements, but maybe some wording can be added in this section to clarify that.  Regarding the treatment of “near-field measurements” for TRP, it is already said at the beginning of clause 6.3.1 that “Due to energy conservation, TRP is independent of choice of test distance and shape of the used closed measurement surface.”, but we agree that more clarification should be added to ensure that measurements are not performed in the reactive near field. |
| 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 | Huawei:  - Not related to the proposed modifications: last meeting, the relation among the figure 6.3.3-2 and table 6.3.3-1 was initiated, but not concluded. It would be good to clarify this issues as the Angular misalignment column concept and the values of the max absolute error in table 6.3.3.-1 does not seem to correspond to the shape on figure 6.3.3-2. We can trace back for the source text for some more clarification of this content.  One particular concern is whether the table’s heading shall be renamed from “angular misalignment” to “sampling grid step size” (or the values of 3dB should correspond to HPBW/2 misalignment). Anyway, further clarification from other companies are welcome.  - Typo: broadside 🡪 boresight. |
| 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 | Huawei: OK |

## Summary for 1st round

### Open issues

All open issues are related to the text corrections and TP revisions in 1.4.2.

### CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2008137 | Revised to R4-2008853 (editorials, cross-references, FFS removal, alignment of the directions to be tested with the related TS) |
| R4-2007566 | Revised to R4-2008854 (further text corrections based on the comments) |
| R4-2007568 | Revised to R4-2008855 (further text corrections based on the comments, readability improvements and section consistency improvements) |
| R4-2008005 | Approved |

## Discussion on 2nd round (if applicable)

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2008853 | Huawei: due to the size of the TR and the meetings timeline, the editorial cleanup is proposed to be considered “for Information” for this meeting.  Then, all the identified corrections are to be included into the e-mail approval process for the updated TR implementing TPs from this meeting. |
| R4-2008854 | Huawei: The main issues is that some of the first round comments were not incorporated (both Huawei and Nokia). |
| Ericsson: All the comments were address in the e-mail summary and explained fully where comments were not incorporated. For example the equation for TRP in section 6.1 is very strange to put into 6.3 and keep the original equation. This is not correct since the equation in 6.1 as it currently stands is far field application only. As we and R&S have explained many times, this equation we have updated with is the more general equation of TRP which includes both EMC, near field, and far field test methods.  Blocking this progress after 2 meetings and extensive technical background and explanations from both Ericsson and R&S is now very disappointing we are going this way. |
| Nokia: Based on the latest versions, there are still many unaddressed comments and proposed changes that need further discussions before reaching an agreement. |
| Huawei: I strongly disagree with your statement below on the “progress blocking” – as rapporteur of this WI I have zero interest in blocking the progress, especially that we need to finalize Rel-15 TR this meeting.  You have received number of comment this meeting (1st round) and previous meeting in order to modify TP. I you want to insist to stick to your original text then this is not helping to achieve consensus.  You have also received multiple suggestions on the potential resolutions, from both Nokia and Huawei. In multiple places Nokia and Huawei comments were aligned. There are number of comments already resolved and only few issues still remaining. It is up to you if you want to give it a change or not.  Finally, for my proposal to postpone to the next meeting: it was related to particular modification (not the whole TP) where you asked Nokia to “provide contribution” - considering timeline of this meeting I thought that such approach may be challenging. Therefore focus on the agreeable aspects was proposed.  The 2nd round is concluded but there is still some time to fix the TP. Again – it is up to you.  (the same comment applies to the R4-2008855) |
| Ericsson: As we have explained the technical reasoning why this text is there to help improve the TR. However, as this seems not to be understood by companies I have removed all changes and kept the original TR text which seems are not agreeable.  If Nokia feel that there are missing parts (such as image of power flux) we can continue to work on this part next meeting but as Huawei commented “I don’t see this as critical part – maybe we can come back to this next meeting with a single contribution from Ericsson and Nokia?” this may be the only solution for this meeting. I hope this is a good understanding. |
|  | Huawei: As you moved the TRP equation based on the Pd integration down to the 6.1 (as we and Nokia were suggesting), then we do not need the old TRP question in 6.1: correction was suggested. Other than that I am fine. Still there are comments from Nokia so I will not interfer on those. It would be good to hear from Nokia. |
| Nokia: R4-2008854 has addressed part of the comments but there are still unresolved. As there is a plan to come back at the next meeting, the preference is to continue working on this version offline to do a proper/complete job, ensuring clarity and consistency. Nokia will provide input to the CR and iwork with Ericsson offline.  Other suggestions for going forward are welcome. |
| MVG: MVG would like to be in the loop for further offline discussions on that topic. |
| Ericsson: It would be great to agree this version to provide us with a baseline to continue to work further on this. As the lion’s portion of concerns have already been worked thoroughly on these weeks we would like suggest to approve this version with the understanding to continue working offline before August. |
|  | Huawei: Initially I was suggesting to potentially do some TP splitting, but your (Nokia) proposal also sounds like a good plan as well and I do support it.  As we are close to the 2nd round summary uploaded deadline the proposal is as follows:  - R4-2008854 will be proposed to be noted in the summary,  Let’s work on those two topics before the next meeting : please keep MVG in the loop, as requested. Those Ericsson TPs can be used as the baseline for further improvements. |
| R4-2008855 | Huawei: Further comments and suggestions were provided to Revised R4-2007568: I think we may need to have more offline discussion before the next meeting on some of the proposals. At least for some of the modifications, companies’ views are not aligned at this stage.  Huawei: the [] approach is not really preferred here. The original text existed in the TR for a long time and now we are just trying to improve it (for the 2nd meeting). If there is no consensus – let’s leave those controversial corrections out of the TP. |
| Nokia: Based on the latest versions, there are still many unaddressed comments and proposed changes that need further discussions before reaching an agreement. |
| Huawei: as no further feedback, I consider that we need to Note this one at this stage. |

## Summary on 2nd round (if applicable)

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
| R4-2008853 | To be noted (editorial corrections to be shared For Information this meeting). |
| R4-2008854 | To be noted  Ericsson, Nokia, Huawei, MVG (and any other interested companies) to work on this offline before the next meeting. TP in R4-2008854 can be used as baseline for further improvements. |
| R4-2008855 | To be noted  Ericsson, Nokia, Huawei (and any other interested companies) to work on this offline before the next meeting. TP in R4-2008855 can be used as baseline for further improvements. |

# 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

## Companies views’ collection for 1st round

### Open issues

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2007914 |  |
| 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? |
| Huawei:  The answer is that the index numbers are approximately incremental, i.e. we get A1-1, A2-2, A3-3. If you just use a numerical UID 1, 2 ,3 then in some cases this would line up with the annex ID but as some of the entries point of the test equipment annex (e.g. C1-1) then the incrementing UID would get out of sync with the roughly incrementing annex ID - this can be hard to follow, hence I made the UID more closely resemble the annex ID.  For example if I just use a incrementing numerical UID we get the following situation:   |  |  |  | | --- | --- | --- | | **UID** | **Uncertainty source** | **Details in Annex** | | **Stage 2: DUT measurement** | | | | 1 | Positioning misalignment between the AAS BS and the reference antenna | A1-1 | | 2 | Pointing misalignment between the AAS BS and the receiving antenna | A1-2 | | 3 | Quality of quiet zone | A1-3 | | 4 | Polarization mismatch between the AAS BS and the receiving antenna | A1-4a | | 5 | Mutual coupling between the AAS BS and the receiving antenna | A1-5 | | 6 | Phase curvature | A1-6 | | 7 | RF power measurement equipment (e.g. spectrum analyzer, power meter) | C1-1 | | 8 | Impedance mismatch in the receiving chain | A1-7 | | 9 | Random uncertainty | A1-8 |   The yellow entries sort of follow the UID, but the red entries do not.  This is not strictly wrong, but I think it could be confusing. The UID is just a unique pointer, it can be anything, I just thought the method I used was less confusing.  As we discuss this topic: another approach would be to use the annex ID as the UID – then we get the simplest solution without additional set of artificial identifiers (which are not used in the spec for cross-references, anyway). An example would look like this:   |  |  |  | | --- | --- | --- | | **UID / identifier of the annex** | **Uncertainty source** |  | | **Stage 2: DUT measurement** | | | | A1-1 | Positioning misalignment between the AAS BS and the reference antenna |  | | A1-2 | Pointing misalignment between the AAS BS and the receiving antenna |  | | A1-3 | Quality of quiet zone |  | | A1-4a | Polarization mismatch between the AAS BS and the receiving antenna |  | | A1-5 | Mutual coupling between the AAS BS and the receiving antenna |  | | A1-6 | Phase curvature |  | | C1-1 | RF power measurement equipment (e.g. spectrum analyzer, power meter) |  | | A1-7 | Impedance mismatch in the receiving chain |  | | A1-8 | Random uncertainty |  |   I think this would be the cleanest approach. |

## Summary for 1st round

### Open issues

One issue was identified for the selection of the identifiers of the measurement uncertainty contributors. There are few options:

1. Use numeric identifiers for UID, e.g. 1, 2, 3. The drawback is that the same UID numbers would be used in multiple different tables for different test methods (i.e. no unique identifiers). The additional set of identifiers (UIDs) was not really used in the past in the spec for cross-referencing purposes.
2. Use the existing proposal in R4-2007915 which is a modified version of the annexed number, e.g. A1, A2, A3, A4a. This solution provides unique identifiers. The additional set of identifiers (UIDs) was not really used in the past in the spec for cross-referencing purposes.
3. Use the annex numbers as UID, e.g. A1-1, A1-2, A1-3, A1-4a. This solution provides unique identifiers. Benefit of this approach is that we do not need to introduce a separate set of identifiers just for UID. This approach is currently used in the TR in the MU derivation tables, e.g. Table 9.3.3.3-1.

Further comments to the above options (or any other approach) are welcome.

To be resolved in the TP revision of R4-2007915.

### CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2007914 | Revised to R4-2008856 (align with the conclusion of the UID open issue, as described in 2.4.1) |
| R4-2007915 | Revised to R4-2008857 (refer to open issue in 2.4.1) |

## Discussion on 2nd round (if applicable)

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| R&S | Regarding the open issue, we think Option 3 (annex number as UID) is optimal since it uses one single reference for the same contributor in all tables (MU budget table, MU values and MU description in the annex) and also across different test cases, while options 1 and 2 add some burden by creating different id’s in different places for the same MU contributor. |
| MVG | We are supporting Option 3 below. |
| Huawei | As we got addition feedback from R&S and MVG (i.e. option 3 which is also preferred by Huawei), I was trying to revise 7915 in a way that Ericsson concern would be also clarified by additional Notes. Please let us know your view on such approach.  Another alternative to consider Ericsson concern could be to use UID as 1, 2, 3 from legacy TRs, BUT just for one single test chamber in e.g. for Table 9.2.2.3-1 only (i.e. not for multiple test chambers across 9.2 as in the initial TP) plus some additional clarification notes. In that way a single examples would be captured, and non-unique IDs would not be introduced. |
| Ericsson | I think we are definitely getting closer to agreeing here. The note may be a way to compromise in order to keep the history of the tables as we proceed to void sections. I would like to list the TRs but I can’t recall if we are allowed to reference internal TRs, if not then perhaps just the testability TR.  NOTE: In the legacy technical reports (for gNB TR37.842 and TR37.843, and testability TR38.810) on conformance testing and MU/TT derivation, the UID was using counting numbers across multiple test chambers and requirement’s clauses. It resulted in UID’s not being unique across the TR and not useful for cross-referencing. In this TR an optimized approach was taken with the UID’s being the annex number of the measurement uncertainty source description.  Since the approach in TR 38.810 also does not have the UID used for cross-referencing. |
| Huawei | We are not allowed to refer to 3x.8xx TRs in the TR 37.941 (which is an external TR).  In the revision I will just your proposed without TR numbers and using “BS testability TRs”.  During revision I realized that due to your proposal, we need to slightly modify the Note’s wording. |

Conclusion of the open issue as in 2.4.1: based on teh comments received, the approach based on Option 3 was discussed and implemented into the TP in R4-2008857.

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2008856 |  |
| R4-2008857 | See 2.5.1. |

## Summary on 2nd round (if applicable)

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
| R4-2008856 | To be approved |
| R4-2008857 | To be approved |

# 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

## 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. |
| Huawei:  Based on the bug identified by Nokia in section 9.7.5.2.2, the whole TR will be scanned by the Rapporteur and compared with the TS 37.145-2 and TS 38.141-2 for consistency purposes. |
| R&S:  Response to Nokia’s comment on section 9.7.5.2.2:   * The text there is harmonized with the procedure for other methods (i.e. IAC and CATR), while NFTR only refers to the “declared conformance direction”. * If a change is required, it shall be implemented for all methodologies as Huawei mentions.   Response to Nokia’s comment on section 9.7.5.3:   * Yes, the wording was reused from CATR clause just because it applies in the same way to PWS, but it is also common almost in full to IAC and NFTR.   Following the rationale, MU value table assumes the same components as CATR just because PWS is a natural extension of a CATR so the MU factors affecting EVM are the same. It has to be noted that the Uncertainty sources, UID and MU values has been updated to use the corresponding ones to PWS, so the table is not just a copy-paste.  As pointed by Nokia, there is a typo on the wording after the table that still refers to CATR. Thanks for catching that. It has been solved in the draft revision shared on the drafts folder. |
| Nokia response to Huawei:  Would this scan and correction be done in this e-meeting with the clean-up TP?  Nokia response to R&S:  Please remove unchanged clauses from the TP, especially 9.7.5.2.2 that contains the error. |
| Huawei:  @Nokia: Let’s try to do the cleanup (i.e. TS vs TR alignment for the directions to be tested, plus any other identified editorial issues like cross-references) in the clean-up TP, this e-meeting as much as possible. The plan is that I will go through the TR and will keep you informed on the progress. Of course, other companies are more than welcome do to the same (and I would merge all the corrections). In case of significant workload, we can also use the e-mail approval process. Still, there will be probably some other corrections needed in future. |
| R4-2007910 | Nokia: Discussion part contains RX contents instead of TX contents. |
| R4-2007911 |  |
| R4-2007912 | Nokia: Discussion part contains TX contents instead of RX contents. |
| R4-2007913 |  |

## Summary for 1st round

### Open issues

All open issues are related to the text corrections and TP revisions in 3.4.2.

### CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2007595 | Revised to R4-2008858(correction for the direction to be tested is proposed to be captured in the cleanup TP revision of R4-2008137. The CATR typo to be corrected, as already shared in the draft revision) |
| R4-2007910 | Revised to R4-2008859(fix the TX/RX issue among R4-2007910 and R4-2007912) |
| R4-2007911 | Approved |
| R4-2007912 | Revised to R4-2008860 |
| R4-2007913 | Approved |

## Discussion on 2nd round (if applicable)

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2008858 |  |
| R4-2008859 | Nokia: In 8859, it is stated in the introduction that ‘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.’, but according to the table in the calculation, the value is 0.07dB higher indeed. |
| Huawei: Basically the goal of the whole Excel spreadsheet exercise is to use Excel as the baseline for all the MU values validation and verification.  Therefore: As the content of both commented contributions actually copy-pasted the Excel tables, the values indicated below in red as to be considered as copy-paste errors from the older contributions from previous meetings.  1) for 8859 for TX: the value in the introduction shall be changed to 0.07 dB |
| R4-2008860 | Nokia: In 8860, it is stated in the introduction that ‘In particular the value for the IAC in the frequency range 37<f<40GHz is 0.02dB larger than the previously agreed MU value.’, but according to the table in the calculation, the value is 0.06dB higher indeed. |
| Huawei: Basically the goal of the whole Excel spreadsheet exercise is to use Excel as the baseline for all the MU values validation and verification.  Therefore: As the content of both commented contributions actually copy-pasted the Excel tables, the values indicated below in red as to be considered as copy-paste errors from the older contributions from previous meetings.  2) In 8860 for RX: the value in the introduction shall be changed to 0.06 dB |

## 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** |
| R4-2008858 | To be approved |
| R4-2008859 | To be noted |
| R4-2008860 | To be noted |

# 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

## 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. |
| Huawei: the “shifted/voided” issue commented above was addressed by the text proposed to the Scope of the TR. Still for the voided sections (such as EIRP in 10.2.1 and EIS in 10.3.2) having additional pointers to TR 37.941 (instead of sections Voiding) is also ok.  Note correction to be addressed in the revision. |
| 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'. |
| Huawei: similar comment for the “shifted/voided” issue as in 7451.  Other text corrections in 5.1.1 and 5.2.3.1 to be addressed in the revision. |
|  |
| 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. |
| Huawei: similar comment for the “shifted/voided” issue as in 7451.  For the TR 38.803 reference deletion: I think you are not correct here. 800-series TR is an internal one which we shall not refer to. Can you clarify?  Nokia response:  It is stated in clause 6.1.6 of TR 21.801 that:  “In documents intended to be formally issued as publications of the Standards Development Organizations which comprise the Organizational Partners of 3GPP, references shall not be made to internal working documents of 3GPP which are not issued as such formal publications.”  But according to 3GPP:  “Technical Reports are of two classes:  • Those intended to be transposed and issued by the Organizational Partners as their own publications; and  • Those not intended for publication but which are simply 3GPP internal working documents, used, for example, for documenting planning and scheduling of work, or for holding the interim results of feasibility studies.  The first category have numbers of the form: xx.9xx  The second category have numbers of the form:  xx.8xx (feasibility study reports, etc) or, more rarely,  30.xxx / 50.xxx (planning and scheduling)  For some spec series, the stock of xx.8xx TRs has been exhausted, and in these cases, further internal TRs are allocated xx.7xx numbers.”  Therefore, the rule above in clause 6.1.6 of TR 21.801 does not need to apply to TR 38.817-02, and it can refer to TR 38.803. |
| Huawei: good point – so internal TR can refer to other internal TRs. Related TPs will be further verified to double check this issue. |
| R4-2007454  /  R4-2007455 |  |
| R4-2007456  /  R4-2007457 |  |
| R4-2007458 |  |

## Summary for 1st round

### Open issues

All open issues are related to the text corrections and TP revisions in 4.4.2.

### CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2007451 | Revised to R4-2008861 (check references to internal TRs; internal TR can refer to other internal TRs) |
| R4-2007452 | Revised to R4-2008862 (check references to internal TRs; internal TR can refer to other internal TRs) |
| R4-2007453 | Revised to R4-2008863 (check references to internal TRs; internal TR can refer to other internal TRs) |
| R4-2007454 | Agreed |
| R4-2007455 | Agreed |
| R4-2007456 | Agreed |
| R4-2007457 | Agreed |
| R4-2007458 | Agreed |

## Discussion on 2nd round (if applicable)

### CRs/TPs comments collection

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2008861 |  |
| R4-2008862 | Nokia: the following comment from us in the first round have not been accessed:  ‘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'.’ |
| Huawei:  Those were overlooked. Now this has been corrected in an updated version.  For the second comment below (5.2.3.1): this is not really needed, as those 3 methods are already listed in the TR 38.843, and that content (i.e. 3 methods to derive the output power accuracy) is not captured in the new TR 37.941 (as this is related to the requirement, not the test methods). Finally, this section of TS 37.843 is no longer subject to this CR and will be removed in the final version of this CR (as indicated below). |
| R4-2008863 |  |

## Summary on 2nd round (if applicable)

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
| R4-2008861 | To be agreed |
| R4-2008862 | To be agreed |
| R4-2008863 | To be agreed |