**3GPP TSG-RAN WG4 Meeting # 97-e R4-2017409**

**Electronic Meeting, 20 – 30 Apr., 2020**

**Agenda item:** 7.17

**Source:** Moderator (Huawei)

**Title:** Email discussion summary for [97e][311] OTA\_BS\_Testing

**Document for:** Information

# Introduction

This is the email discussion summary for [97e][311] OTA\_BS\_testing on OTA BS testing WI, with the following topics covered:

* Topic 1: TR 37.941 cleanup
* Topic 2: MU / TT values: derivation and tables
* Topic 3: Others

Conclusion of the first round should conclude if the submitted CRs can be agreed or need to be revised for the second round discussion.

# Topic #1: TR 37.941 cleanup

CRs with editorials corrections to the TR 37.941 are collected in this topic.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2015960**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015960.zip)  / R4-2015961 | Huawei | CR to TR 37.941: overall TR cleanup  Proposals: Missing symbols added, cross-references corrections, empty sections filled, Drafting rules implementation, all the outstanding [] removed from the MU calculation tables.  More corrections may be introduced during the meeting. |
| [**R4-2015714**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015714.zip)  / R4-2015715 | Ericsson | CR to TR 37.941: Removal of Square Brackets  Proposals: Removal of [ ] in MU tables in TR 37.941 |
| [**R4-2016290**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016290.zip)  / R4-2016291 | Nokia, Nokia Shanghai Bell | CR to TR 37.941: Corrections to TRP measurement procedures  Proposals: Cross-references in the following procedures are corrected: Two cuts with pattern multiplication, full sphere, two or three cuts |

## Open issues summary

### Sub-topic 1-1

Sub-topic description: [] for the outstanding MU values were corrected in TR 37.941 by 3 different CRs. Single CR shall be selected as the Way Forward.

**Issue 1-1: Removal of square brackets for the outstanding MU values**

* Proposals
  + Option 1: Follow CR correcting MU values and removing [] in R4-2016466 (Rohde & Schwarz) – refer to Topic #2.
  + Option 2: Follow CR removing outstanding [] in R4-2015714 (Ericsson)
  + Option 3: Follow CR for the overall TR cleanup in R4-2015960 (Huawei)
* Recommended WF
  + Option 1

## Companies views’ collection for 1st round

### Open issues

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| **Company** | **Comments** |
| Huawei | Sub topic 1-1: Option 1 is preferred. Related modifications of CRs in Option 2 and Option 3 are actually covered by Option 1. Furthermore, CR in Option 3 can focus on the overall cleanup, while CR in Option 1 to focus on fixing the outstanding PWS MU values. |
| Nokia | Sub topic 1-1: Should discuss on finalizing the pending MU terms first, then decide which CR to be revised to incorporate the agreements. |
| Ericsson | Sub topic 1-1: We can agree to approve the updated MUs provided by R&S in Option 1 and thereby removing remaining [ ]. The new values seem reasonable with provided technical analysis. |

### CRs/TPs comments collection

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| **CR/TP number** | **Comments collection** |
| [**R4-2015960**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015960.zip)  / R4-2015961 | Moderator: CR is subject to Issue 1-1. CR to be kept as a placeholder for any other identified corrections and TR improvements. To be revised. |
| Huawei: if we would follow Option 1, this CR needs to be revised to remove overlapping modifications. Furthermore, This CR is to be kept as the placeholder for any additional TR corrections of the WI which is to be closed. |
| Nokia: clause 2, references 10 and 23 are the same; clause 3.1: 'transceiver unit array' is still used in AAS BS definition so should not be deleted; clause 6.3.4.2: 'Spherical diameter' and 'Cylindrical diameter' should be moved to clause 3.1. |
| [**R4-2015714**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015714.zip)  / R4-2015715 | Moderator: CR is subject to Issue 1-1. |
| Huawei: if we would follow Option 1, this CR can be noted as it includes modification embedded in R4-2016466. |
| Nokia: Clause 9.2.6.3 should be included in clauses affected in cover page; Table 9.2.6.3-2 and Table 10.2.6.3-1 Table 11.3.6.3-2 have different final values than in TR 37.941. |
| [**R4-2016290**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016290.zip)  / R4-2016291 | Huawei: more corrections of the cross-references in this CR were identified, e.g. in 6.3.2.3.3, or to add clarifications to the existing references in 6.3.2.3.2 or 6.3.2.3.4 (to spell out the actual procedure name for clarify and consistency). To be addressed in the revision. |
| Company B |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

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

*Recommendations on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
| #1 |  |  |

### CRs/TPs

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| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| [**R4-2015960**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015960.zip) | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2015961 |  |
| [**R4-2015714**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015714.zip) |  |
| R4-2015715 |  |
| [**R4-2016290**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016290.zip) |  |
| R4-2016291 |  |

## 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*

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| **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: MU / TT values: derivation and tables

Tdocs related to the modifications related to the MU/TT values and MU/TT contributors descriptions were collected in this topic.

## Companies’ contributions summary

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| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2016370**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016370.zip) | Rohde & Schwarz | Plane Wave Synthesizer – Pending MU terms from 4.2GHz to 6GHz  Proposals: Proposed values for the pending MU terms for the Plane Wave Synthesizer has been provided to finalize the MU for 4.2GHz to 6GHz frequency range.  The corresponding changes to TR 37.941 are provided in the separate CRs (R4-2016466 / R4-2016467). |
| [**R4-2016466**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016466.zip)  / R4-2016467 | Rohde & Schwarz | CR to TR 37.941: PWS – Pending MU terms from 4.2GHz to 6GHz  Proposals: There are still MU values and MU descriptions between brackets for PWS that requires completion:   * System non-linearity and Field repeatability have been included in all applicable tables for the frequency range 4.2GHz to 6GHz. * Combined and expanded uncertainties have been updated in all applicable tables for the frequency range 4.2GHz to 6GHz. * Pending square brackets have been removed for the frequency range 4.2GHz to 6GHz in all applicable tables.   As described in Annex G, excel spreadsheets for MU derivation have been corrected and are attached. |
| [**R4-2015962**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015962.zip)  / R4-2015963 | Huawei | CR to TR 37.941: MU and TT values alignments and corrections  Proposals: Inconsistencies across the MU and TT values in requirements specific sections and in the summary tables in clause 17 and 18.   * 2: new reference added * 12.3.4: updated of the motivation for the TT value of the OTA RX spur requirement as per recent regulatory decisions which were already implemented in AAS BS and NR BS specifications, i.e. 0 instead of MU * 13.2.4: correction of the TT values to align with MU. * 13.3.3, 13.3.4: value rounding corrections, TT and MU alignments * 15.6, 15.7: addition of missing information on MU and TT values for the OTA BS demodulation requirements, which are also in the scope of this technical report. * 17, 18:   + Cross-reference corrections to the requirement clauses   + Notes added, to reflect the assumption on Normal test conditions   + Text consistency improvements and editorials   + TT for OTA RX spur: corrected to reflect latest regulations. |
| [**R4-2015964**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015964.zip)  / R4-2015965 | Huawei | CR to TR 37.941: alignments and corrections to the MU contributors and MU derivations  Proposals: MU contributor terms alignment for MU tables and annexes.   * Multiple MU terms reshuffling to align UID and their descriptions among MU tables and annex A, B, C descriptions. * Multiple terminology and wording alignments among MU contributors entries in MU tables and MU definitions in Annex A, B, C * Wording alignments among MU terms used in different OTA tests. |

## Open issues summary

### Sub-topic 2-1

Sub-topic description: two CRs were submitted with the Excel spreadsheets attached. For proper CR implementation to the TR, just one CR shall be finally agreed with the Excel spreadsheets attached.

**Issue 2-1: Alignment of the Excel spreadsheet updates**

* Proposals
  + Option 1: Follow CR in R4-2016466 (Rohde & Schwarz) – two updated Excel spreadsheets attached
  + Option 2: Follow CR in R4-2015964 (Huawei) – all 5 Excel spreadsheets attached
* Recommended WF
  + Option 2

## Companies views’ collection for 1st round

### Open issues

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| **Company** | **Comments** |
| Huawei | Sub topic 2-1: Option 2, as it is expected to revise all 5 Excel sheets to align with modifications in R4-2015964. |
| Ericsson | Issue 2-1: We do not have strong view on which CR to follow, however isn’t R&S CR containing new values – updates to PWS test method? Perhaps it’s better to somehow merge these 2 CRs together? |

### CRs/TPs comments collection

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| **CR/TP number** | **Comments collection** |
| [**R4-2016466**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016466.zip)  / R4-2016467 | Moderator: CR is subject to Issue 1-1 and Issue 2-1. All the modifications to the Excel spreadsheets needs to be aligned in a single CR. |
| Huawei: according to the Issue 1-1 and 2-1, we would suggest to keep the TR corrections in the (revision of) this CR, while the Excel spreadsheets modifications to be collected in the revision of R4-2015964. |
| Nokia: Would R&S share how it has been concluded that the following MU contributors are not affected? C1-1, A7-3, A7-13, A7-6, A7-7, C1-4, C7-4b. |
| [**R4-2015962**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015962.zip)  / R4-2015963 | Ericsson: The CR is ok, other than the statement added in Section 12.3.4 regarding ERC recommendation. We would like further time for checking on this (may come back at second round). |
| Company B |
|  |
| [**R4-2015964**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015964.zip)  / R4-2015965 | Moderator: once the modifications in this CR are agreed, related updates in all the affected Excel spreadsheets needs to be implemented. Revision will be required. |
| Huawei: as captured in the CR cover page, it is proposed to revise it to align all the Excels with the TR modifications, plus the PWS updates from R4-2016466. |
| Nokia: no need to add 'normal test conditions' and 'extreme test conditions' in table entries where these are already clearly stated in table headings. |
| Ericsson: Not sure it’s needed to have the “normal test conditions” in brackets of the MU as this is table (Table 9.2.2.3-1) already highlights that the contents of the table is for normal test conditions. This applies in a few places within the document where the heading (table caption) already specifies the MU is under normal test conditions  Several places the “NOTES” in the annex are not needed. As an example:  NOTE: For the MU derivation, this contribution is denoted as B2-4a for QZ ripple experienced by BS, and as B2-4b for QZ ripple experienced by calibration antenna.  However the “a” and “b” has already been defined by the heading:  **B2-4 QZ ripple BS (a) /calibration antenna (b)**  It’s also our understanding that correcting editorial aspects such as lower case or upper case in words should be left for MCC and not needed as a CR. |

## Summary for 1st round

### Open issues

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

*Recommendations on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
| #1 |  |  |

### CRs/TPs

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| **CR/TP number** | **CRs/TPs Status update recommendation** |
| [**R4-2016466**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016466.zip) | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2016467 |  |
| [**R4-2015962**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015962.zip) |  |
| R4-2015963 |  |
| [**R4-2015964**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2015964.zip) |  |
| R4-2015965 |  |

## 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: Other

Additional test cases for PWS are captured in this topic.

## Companies’ contributions summary

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| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2016292**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016292.zip) | Rohde & Schwarz | Justification for additional test cases for PWS  Proposals: justification to add the corresponding clauses for PWS and cover additional test cases: OTA transmitted signal quality: TAE, OTA dynamic range, OTA adjacent channel selectivity, general blocking and narrowband blocking, OTA receiver intermodulation, OTA in-channel selectivity.  Related CRs submitted in R4-2016293 and R4-2016300. |
| [**R4-2016293**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016293.zip)  / R4-2016300 | Rohde & Schwarz | Proposals: PWS method is able to cover additional test cases for BS OTA conformance.   * Added sub-clauses for PWS for the following requirements: 9.8 OTA transmitted signal quality: TAE, 10.4 OTA dynamic range, 10.5 OTA adjacent channel selectivity, general blocking and narrowband blocking, 10.6 OTA receiver intermodulation and 10.7 OTA in-channel selectivity. * Added missing figures in clause 7.6.1. |

## Open issues summary

### Sub-topic 3-1

## Companies views’ collection for 1st round

### Open issues

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| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 1-1:  Sub topic 1-2:  ….  Others: |

### CRs/TPs comments collection

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| --- | --- |
| **CR/TP number** | **Comments collection** |
| [**R4-2016293**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016293.zip)  / R4-2016300 | Huawei: ok with the motivation of this CR. |
| Company B |
|  |

## Summary for 1st round

### Open issues

### CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| [**R4-2016293**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_97_e/Docs/R4-2016293.zip) | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2016300 |  |

## 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*

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| --- | --- |
| **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”* |