



**LTE;
Evolved Universal Terrestrial Radio Access (E-UTRA)
and Evolved Universal Terrestrial
Radio Access Network (E-UTRAN);
Derivation of test tolerances for User Equipment (UE)
radio reception conformance tests
(3GPP TR 36.904 version 17.1.0 Release 17)**



Reference

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Version x.y.z

where:

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 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

1 Scope

The present document specifies a general method used to derive Test Tolerances for UE radio reception conformance tests in 3GPP TS 36.521-1 [2], and establishes a system for relating the Test Tolerances to the measurement uncertainties of the Test System.

The test cases which have been analysed to determine Test Tolerances are included as .zip files.

The present document is applicable from Release 10 up to the release indicated on the front page of the present Terminal conformance specifications.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] to [3] (void)

[4] 3GPP TR 36.904 Release 18: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Derivation of test tolerances for User Equipment (UE) radio reception conformance tests"

3 Definitions, symbols and abbreviations

Void

4 General Principles

The requirements of the present document are provided in 3GPP TR 36.904 Release 18 [4].

5 to 7 Void

Annex A: Void

Annex B: Change History

| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New |
|---------|--------|-----------|------|-----|--|--------|--------|
| 2014-04 | RAN#63 | R5-142065 | - | - | TR 36.904 Skeleton proposed for RAN#63 | - | 0.0.1 |
| 2014-05 | RAN#63 | R5-142066 | - | - | TR 36.904 update proposed including all technically endorsed TT analyses on RAN#63 | 0.0.1 | 0.0.2 |
| 2014-05 | RAN#64 | RP-140610 | - | - | TR 36.904 presented as 2.0.0 for approval at RAN#64 | 0.0.2 | 2.0.0 |
| 2014-06 | RAN#64 | - | - | - | Upgraded to v11.0.0 with no change | 2.0.0 | 11.0.0 |
| 2014-09 | RAN#65 | R5-144067 | 0001 | - | Add Test Tolerance analyses for TS 36.521-1 Test case 8.2.2.2.4 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144069 | 0002 | - | Add Test Tolerance analyses for TS 36.521-1 Test case 8.2.2.4.3 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144071 | 0003 | - | Add Test Tolerance analyses for TS 36.521-1 Test case 8.3.1.1.3 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144073 | 0004 | - | Add Test Tolerance analyses for TS 36.521-1 Test case 8.3.2.1.4 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144078 | 0005 | - | Add Test Tolerance analysis for TS 36.521-1 Test cases 8.2.1.3.3_E.1 and 8.2.2.3.3_E.1 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144100 | 0006 | - | Test Tolerance Analysis for TS 36.521-1 TC 8.2.1.4.1_E.1+8.2.2.4.1_E.1 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144106 | 0007 | - | Test Tolerance Analysis for TS 36.521-1 TC 8.4.1.2.3_E.2+8.4.2.2.3_E.2 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144110 | 0008 | - | Corrections to TR 36.904 for felCIC Group | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144113 | 0009 | - | Test Tolerance Analysis for TS 36.521-1 TC 9.2.1.5_E.1+9.2.1.6_E.1 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144116 | 0010 | - | Test Tolerance Analysis for TS 36.521-1 TC 9.3.1.3.1_E.1+9.3.1.3.2_E.1 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144119 | 0011 | - | Test Tolerance Analysis for TS 36.521-1 TC 9.5.4.1_E.1+9.5.4.2_E.1 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144285 | 0012 | - | Add Test Tolerance analysis for TS 36.521-1 Test cases 8.2.1.2.3_C.1 and 8.2.2.2.3_C.1 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144288 | 0013 | - | Add Test Tolerance analysis for TS 36.521-1 Test cases 8.2.1.2.3_E.1 and 8.2.2.2.3_E.1 | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144296 | 0014 | - | Editorial update of eICIC CSI Test Tolerance analyses | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144816 | 0015 | - | Add Test Tolerance analysis for TS 36.521-1 Test cases 9.3.6.1_F and 9.3.6.2_F | 11.0.0 | 11.1.0 |
| 2014-09 | RAN#65 | R5-144823 | 0016 | - | Add Test Tolerance analyses for TS 36.521-1 Test cases 9.3.5.2.1 and 9.3.5.2.2 | 11.0.0 | 11.1.0 |
| 2014-12 | RAN#66 | R5-145826 | 0017 | - | Test Tolerance Analysis for TS 36.521-1 TC 8.5.1.2.3_E.1+8.5.2.2.3_E.1 | 11.1.0 | 11.2.0 |
| 2014-12 | RAN#66 | R5-145834 | 0018 | - | Update Test Tolerance analyses for TS 36.521-1 Test cases 9.5.3.x and 9.5.4.x | 11.1.0 | 11.2.0 |
| 2015-03 | RAN#67 | R5-150217 | 0019 | - | Test Tolerance Analysis for TS 36.521-1 TC 8.3.1.2.1_D_1+8.3.2.2.1_D_1 | 11.2.0 | 11.3.0 |
| 2015-12 | RAN#70 | R5-155883 | 0020 | 1 | Add Test Tolerance analysis for FDD multi-cell SU-MIMO test case (8.2.1.3.1C) | 11.3.0 | 12.0.0 |
| 2015-12 | RAN#70 | R5-155884 | 0021 | 1 | Add Test Tolerance analysis for TDD multi-cell SU-MIMO test case (8.2.2.3.1C) | 11.3.0 | 12.0.0 |
| 2015-12 | RAN#70 | R5-155885 | 0022 | 1 | Addition of LTE Type C group into 36.904 | 11.3.0 | 12.0.0 |
| 2016-03 | RAN#71 | R5-160032 | 0024 | - | Add Test Tolerance analysis for FDD PDSCH Transmit Diversity 2x2 with TM9 Interference Model - Enhanced Performance Requirement Type B (8.2.1.2.6) | 12.0.0 | 12.1.0 |
| 2016-03 | RAN#71 | R5-160033 | 0025 | - | Add Test Tolerance analysis for TDD PDSCH Transmit Diversity 2x2 with TM2 Interference Model - Enhanced Performance Requirement Type B (8.2.2.2.6) | 12.0.0 | 12.1.0 |
| 2016-03 | RAN#71 | R5-160034 | 0026 | - | Add Test Tolerance analysis for TDD PDSCH Transmit Diversity 2x2 with TM9 Interference Model - Enhanced Performance Requirement Type B (8.2.2.2.7) | 12.0.0 | 12.1.0 |
| 2016-03 | RAN#71 | R5-160035 | 0027 | - | Add Test Tolerance analysis for FDD and TDD CQI reporting under fading conditions (PUCCH) TM4 - Enhanced Receiver Type B (9.3.8.1.1 and 9.3.8.1.2) | 12.0.0 | 12.1.0 |
| 2016-03 | RAN#71 | R5-160036 | 0028 | - | Addition of LTE Type B groups into TR 36.904 | 12.0.0 | 12.1.0 |

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|---------|--------|-----------|------|---|---|--------|--------|
| 2016-03 | RAN#71 | R5-160040 | 0029 | - | Add Test Tolerance analysis for FDD PDSCH Transmit Diversity 2x2 with TM2 Interference Model - Enhanced Performance Requirement Type B (8.2.1.2.5) | 12.0.0 | 12.1.0 |
| 2016-03 | RAN#71 | R5-160157 | 0032 | - | Test Tolerance Analysis for TS 36.521-1 TC 9.3.7.1+9.3.7.2 | 12.0.0 | 12.1.0 |
| 2016-03 | RAN#71 | R5-160160 | 0033 | - | Test Tolerance Analysis for TS 36.521-1 TC 9.4.1.4.1+9.4.1.4.2+9.4.2.3.3+9.4.2.3.4 | 12.0.0 | 12.1.0 |
| 2016-03 | RAN#71 | R5-161124 | 0031 | 2 | Test Tolerance Analysis for TS 36.521-1 TC 9.6.1.3.1+9.6.1.3.2+9.6.1.4.1+9.6.1.4.2 | 12.0.0 | 12.1.0 |
| 2016-06 | RAN#72 | R5-162173 | 0036 | - | Add Test Tolerance analysis for Power Control Relative power tolerance for CA (intra-band contiguous DL CA and UL CA) test case | 12.1.0 | 12.2.0 |
| 2016-06 | RAN#72 | R5-162899 | 0037 | 1 | Update of NAICS demod TT analyses to clarify handling of flatness | 12.1.0 | 12.2.0 |
| 2016-06 | RAN#72 | R5-162950 | 0034 | 1 | Add Test Tolerance analysis for FDD PDSCH Closed Loop Single Layer Spatial Multiplexing 2x2 with TM4 Interference Model - Enhanced Performance Requirement Type B (8.2.1.4.4) | 12.1.0 | 12.2.0 |
| 2016-06 | RAN#72 | R5-162951 | 0035 | 1 | Add Test Tolerance analysis for TDD PDSCH Closed Loop Single Layer Spatial Multiplexing 2x2 with TM4 Interference Model - Enhanced | 12.1.0 | 12.2.0 |
| 2016-12 | RAN#74 | R5-168690 | 0041 | - | Add Test Tolerance analysis for FDD PDSCH Closed Loop Single-layer Spatial Multiplexing on antenna ports 7 or 8 with TM9 Interference Model - Enhanced Performance Requirement Type B (8.3.1.1.4) | 12.2.0 | 12.3.0 |
| 2016-12 | RAN#74 | R5-168691 | 0042 | - | Add Test Tolerance analysis for FDD PDSCH Closed Loop Single-layer Spatial Multiplexing on antenna ports 7 or 8 with TM3 interference Model - Enhanced Performance Requirement Type B (8.3.1.1.6) | 12.2.0 | 12.3.0 |
| 2016-12 | RAN#74 | R5-168692 | 0043 | - | Add Test Tolerance analysis for TDD PDSCH Closed Loop Single-layer Spatial Multiplexing on antenna ports 7 or 8 with TM9 Interference Model - Enhanced Performance Requirement Type B (8.3.2.1.5) | 12.2.0 | 12.3.0 |
| 2016-12 | RAN#74 | R5-168693 | 0044 | - | Add Test Tolerance analysis for TDD PDSCH Closed Loop Single-layer Spatial Multiplexing on antenna ports 7 or 8 with TM3 interference Model - Enhanced Performance Requirement Type B (8.3.2.1.7) | 12.2.0 | 12.3.0 |
| 2016-12 | RAN#74 | R5-168694 | 0045 | - | Add Test Tolerance analysis for FDD and TDD CQI Reporting under fading conditions - PUCCH 1-1 (CSI Reference Symbol) TM9 - Enhanced Receiver Type B (9.3.8.2.1 and 9.3.8.2.2) | 12.2.0 | 12.3.0 |
| 2016-12 | RAN#74 | R5-169739 | 0046 | - | Add Test Tolerance analysis for FDD PDSCH Closed Loop Single Layer Spatial Multiplexing 2x4 with TM4 Interference Model – Enhanced Performance Requirement Type A | 12.3.0 | 13.0.0 |
| 2016-12 | RAN#74 | R5-169740 | 0047 | - | Add Test Tolerance analysis for FDD PDSCH Single-layer Spatial Multiplexing 2x4 on antenna ports 7 or 8 with TM9 interference model – Enhanced Performance Requirement Type A | 12.3.0 | 13.0.0 |
| 2017-03 | RAN#75 | R5-171044 | 0051 | - | Test Tolerance analysis for CQI reporting enhanced receiver typeB test cases | 13.0.0 | 13.1.0 |
| 2017-03 | RAN#75 | R5-171045 | 0052 | - | Add Test Tolerance analysis for TDD PDSCH Single-layer Spatial Multiplexing 2x4 on antenna ports 7 or 8 with TM9 interference model – Enhanced Performance Requirement Type A | 13.0.0 | 13.1.0 |
| 2017-03 | RAN#75 | R5-171747 | 0053 | 1 | Test Tolerance analysis for NAICS demod test cases with CRS interference (8.3.1.1.5, 8.3.2.1.6) | 13.0.0 | 13.1.0 |
| 2017-03 | RAN#75 | R5-171749 | 0048 | 1 | Addition of Test Tolerance analysis for TS36.521-1 TC 9.9.2.1.1 and 9.9.2.1.2. | 13.0.0 | 13.1.0 |

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|---------|---------|-----------|------|---|---|--------|--------|
| 2017-03 | RAN#75 | R5-171750 | 0049 | 1 | Addition of Test Tolerance analysis for TS36.521-1 TC 9.9.2.2.1 and 9.9.2.2.2. | 13.0.0 | 13.1.0 |
| 2017-03 | RAN#75 | R5-171751 | 0050 | 1 | Add Test Tolerance analysis for TDD PDSCH Closed Loop Single Layer Spatial Multiplexing 2x4 with TM4 Interference Model – Enhanced Performance Requirement Type A | 13.0.0 | 13.1.0 |
| 2017-09 | RAN#77 | R5-175034 | 0055 | 1 | Add Test Tolerance analysis for FDD and TDD Dual-Layer Spatial Multiplexing 2x4 (User-Specific Reference Symbols) | 13.1.0 | 13.2.0 |
| 2018-09 | RAN#81 | R5-184314 | 0056 | - | Update of Test Tolerance analyses for TDD-FDD CA PDSCH Closed Loop Single Layer Spatial Multiplexing 2x4 with TM4 Interference Model-Enhanced Performance Requirement Type A (2DL CA) | 13.2.0 | 13.3.0 |
| 2018-09 | RAN#81 | R5-184315 | 0057 | - | Update of Test Tolerance analyses for TDD-FDD CA PDSCH Single-layer Spatial Multiplexing 2x4 on antenna ports 7 or 8 with TM9 Interference Model-Enhanced Performance Requirement Type A (2DL CA) | 13.2.0 | 13.3.0 |
| 2019-03 | RAN#83 | R5-192104 | 0058 | - | Test tolerance analysis for Interference Mitigation for Downlink Control Channels Demod TCs | 13.3.0 | 13.4.0 |
| 2023-03 | RAN#99 | - | - | - | Upgrade to Rel-14 with no change | 13.4.0 | 14.0.0 |
| 2023-03 | RAN#99 | - | - | - | Upgrade to Rel-15 with no change | 14.0.0 | 15.0.0 |
| 2023-03 | RAN#99 | - | - | - | Upgrade to Rel-16 with no change | 15.0.0 | 16.0.0 |
| 2023-03 | RAN#99 | - | - | - | Upgrade to Rel-17 with no change | 16.0.0 | 17.0.0 |
| 2023-06 | RAN#100 | R5-232146 | 0064 | - | Removal of technical content in TR 36.904 v17.0.0 and substitution with pointer to the next Release | 17.0.0 | 17.1.0 |

History

| Document history | | |
|-------------------------|-----------|-------------|
| V17.0.0 | May 2023 | Publication |
| V17.1.0 | July 2023 | Publication |
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