



**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 14.1.0 Release 14)**



Reference

RTR/TSGR-0536904ve10

Keywords

LTE

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from:

<https://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

If you find a security vulnerability in the present document, please report it through our
Coordinated Vulnerability Disclosure Program:

<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2023.
All rights reserved.

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

Legal Notice

This Technical Report (TR) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found under <https://webapp.etsi.org/key/queryform.asp>.

Modal verbs terminology

In the present document "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Intellectual Property Rights	2
Legal Notice	2
Modal verbs terminology.....	2
Foreword.....	4
Introduction	4
1 Scope	5
2 References	5
3 Definitions, symbols and abbreviations	5
4 General Principles	5
5 to 7 Void.....	5
Annex A: Void	5
Annex B: Change History	6
History	10

Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 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 36.903 Release 15: "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 15 [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

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

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
2023-06	RAN#100	R5-232143	0061	-	Removal of technical content in TR 36.904 v14.0.0 and substitution with pointer to the next Release	14.0.0	14.1.0

History

Document history		
V14.0.0	May 2023	Publication
V14.1.0	July 2023	Publication