



**Short Range Devices (SRD)
using Ultra Wide Band technology (UWB);
Harmonised standard for access to radio spectrum;
Part 3: UWB devices installed in motor and railway vehicles;
Sub-part 3: Requirements for UWB radiodetermination
applications operating within 6,0 GHz to 8,5 GHz**

Reference

DEN/ERM-TGUWB-615

Keywords

localisation, measurement, radiodetermination,
UWB

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 the
[ETSI Search & Browse Standards](#) application.

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 on [ETSI deliver](#) repository.

Users should be aware that the present document may be revised or have its status changed,
this information is available in the [Milestones listing](#).

If you find errors in the present document, please send your comments to
the relevant service listed under [Committee Support Staff](#).

If you find a security vulnerability in the present document, please report it through our
[Coordinated Vulnerability Disclosure \(CVD\)](#) program.

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.
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 2025.
All rights reserved.

Contents

Intellectual Property Rights	5
Foreword.....	5
Modal verbs terminology.....	7
1 Scope	8
2 References	8
2.1 Normative references	8
2.2 Informative references.....	8
3 Definition of terms, symbols and abbreviations.....	9
3.1 Terms.....	9
3.2 Symbols.....	9
3.3 Abbreviations	10
4 Technical requirements specifications	11
4.1 Environmental profile.....	11
4.2 Equipment categories	11
4.2.1 General.....	11
4.2.2 Categorization by Regulation (REG).....	11
4.2.3 Categorization by Active Mitigation Technique (AMT)	12
4.2.4 Categorization based on the wanted technical performance criteria (RDM - Radiodetermination Mode).....	12
4.2.5 Summary of EUT Categories.....	12
4.3 Transmitter Requirements	13
4.3.1 General.....	13
4.3.2 Operating Frequency Range (OFR)	13
4.3.2.1 Applicability.....	13
4.3.2.2 Description	13
4.3.2.3 Limits	13
4.3.2.4 Conformance.....	14
4.3.3 Mean e.i.r.p. Spectral Density.....	14
4.3.3.1 Applicability.....	14
4.3.3.2 Description	14
4.3.3.3 Limits	14
4.3.3.4 Conformance.....	14
4.3.4 Peak e.i.r.p. Spectral Density	14
4.3.4.1 Applicability.....	14
4.3.4.2 Description	14
4.3.4.3 Limits	14
4.3.4.4 Conformance.....	15
4.3.5 TX Unwanted Emissions (TXUE)	15
4.3.5.1 Applicability.....	15
4.3.5.2 Description	15
4.3.5.3 Limits	15
4.3.5.4 Conformance.....	15
4.3.6 Duty-Cycle.....	15
4.3.6.1 Applicability.....	15
4.3.6.2 Description	15
4.3.6.3 Limits	16
4.3.6.4 Conformance.....	16
4.3.7 TX behaviour under the complete environmental profile	16
4.3.7.1 Applicability.....	16
4.3.7.2 Description	16
4.3.7.3 Limits	16
4.3.7.4 Conformance.....	16
4.4 Receiver Requirements.....	16
4.4.1 General.....	16

4.4.2	Wanted technical performance requirements.....	16
4.4.2.1	General.....	16
4.4.2.2	Equipment Sub-category RDM1 (Micro-Motions).....	17
4.4.2.3	Equipment Sub-category RDM2 (Macro-Motions).....	17
4.4.2.4	Wanted Technical Performance Criterion 1.....	17
4.4.2.5	Wanted Technical Performance Criterion 2.....	18
4.4.3	Receiver Baseline Sensitivity (RBS).....	19
4.4.3.1	Applicability.....	19
4.4.3.2	Description for the RBS requirements.....	19
4.4.3.3	Limits.....	19
4.4.3.4	Conformance.....	20
4.4.4	Receiver Baseline Resilience (RBR).....	20
4.4.4.1	Applicability.....	20
4.4.4.2	Description.....	20
4.4.4.3	Limits.....	20
4.4.4.4	Conformance.....	21
5	Testing for compliance with technical requirements.....	21
5.1	Environmental conditions for testing.....	21
5.1.1	General.....	21
5.1.2	Normal test conditions.....	21
5.1.3	Complete environmental profile test conditions.....	21
5.2	General conditions for testing and conformance test suites.....	21
5.2.1	General conditions for testing.....	21
5.2.2	Conformance test suites.....	22
5.2.3	Test scenarios.....	22
5.3	Conformance methods of measurement for transmitter.....	22
5.3.1	General.....	22
5.3.2	Operating Frequency Range (OFR).....	22
5.3.3	Mean e.i.r.p Spectral Density.....	22
5.3.4	Peak e.i.r.p Spectral Density.....	23
5.3.5	TX Unwanted Emissions (TXUE).....	23
5.3.6	Duty-Cycle.....	23
5.3.7	TX behaviour under the complete environmental profile.....	24
5.3.7.1	General.....	24
5.3.7.2	Conformance test procedure.....	24
5.4	Conformance methods of measurement for receiver.....	24
5.4.1	General.....	24
5.4.2	Receiver Baseline Sensitivity (RBS).....	24
5.4.2.1	Equipment Category 1 and 3 (RDM1; micro-motion).....	24
5.4.2.2	Equipment Category 2 and 4 (RDM2; macro-motion).....	25
5.4.3	Receiver Baseline Resilience (RBR).....	26
Annex A (informative):	Relationship between the present document and the essential requirements of Directive 2014/53/EU.....	27
Annex B (informative):	Requirement mapping.....	29
Annex C (informative):	Equipment Category: Use-Case, wanted technical performance criteria and TX and RX-test conditions.....	31
Annex D (normative):	Interferer for RBR test.....	32
D.1	General.....	32
D.2	Relevant interferers - Frequency Band 6,0 GHz to 8,5 GHz.....	32
D.2.1	Relevant interferers.....	32
D.2.2	Limits (all equipment categories).....	32
D.3	Strong interferers.....	33
D.3.1	WAS/RLAN in 5 925 MHz to 6 425 MHz.....	33
D.3.2	Limits (all equipment categories).....	33
Annex E (informative):	Bibliography.....	34
History		35

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 IPR online database](https://standards.iteh.ai/ipr-database).

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™**, **LTE™** and **5G™** logo 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.

Foreword

This draft Harmonised European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI Standardisation Request deliverable Approval Procedure (SRdAP).

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.6] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.1].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in Table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

The present document is part 3, sub-part 3 of a multi-part deliverable covering Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonised standard for access to radio spectrum, as identified below:

Part 1: "Generic UWB devices":

Sub-part 1: "Communication devices within 3,1 GHz to 4,8 GHz using LDC mitigation or within the 6 GHz to 8,5 GHz".

Part 2: "Ultra Wide Band location tracking devices":

Sub-part 1: "Requirements for devices within 6 GHz to 8,5 GHz";

Sub-part 2: "Requirements for devices in the frequency band between 3,1 GHz to 4,8 GHz utilizing LDC mitigation technique";

Sub-part 3: "Requirements for fixed infrastructure UWB based localization systems in the frequency band between 3,1 GHz to 4,8 GHz deploying Detect-And-Avoid (DAA) mitigation technique";