



SLOVENSKI STANDARD
SIST EN 303 883-2 V2.1.1:2024

01-oktober-2024

**Naprave kratkega dosega (SRD) in ultra širokopasovna (UWB) tehnologija - 2. del:
Merilne tehnike za zahteve sprejemnika**

Short Range Devices (SRD) and Ultra Wide Band (UWB) - Part 2: Measurement techniques for receiver requirements

iTeh Standards
(<https://standards.iteh.ai>)

Ta slovenski standard je istoveten z: ETSI EN 303 883-2 V2.1.1 (2024-08)

[SIST EN 303 883-2 V2.1.1:2024](https://standards.iteh.ai/catalog/standards/sist/afb8a57f-7e82-4f15-9672-ba97dd02b5ca/sist-en-303-883-2-v2-1-1-2024)

<https://standards.iteh.ai/catalog/standards/sist/afb8a57f-7e82-4f15-9672-ba97dd02b5ca/sist-en-303-883-2-v2-1-1-2024>

ICS:

33.060.20	Sprejemna in oddajna oprema	Receiving and transmitting equipment
-----------	-----------------------------	--------------------------------------

SIST EN 303 883-2 V2.1.1:2024 **en**

ETSI EN 303 883-2 V2.1.1 (2024-08)



Short Range Devices (SRD) and Ultra Wide Band (UWB); Part 2: Measurement techniques for receiver requirements

[SIST EN 303 883-2 V2.1.1:2024](https://standards.iteh.ai/catalog/standards/sist/afb8a57f-7e82-4f15-9672-ba97dd02b5ca/sist-en-303-883-2-v2-1-1-2024)

<https://standards.iteh.ai/catalog/standards/sist/afb8a57f-7e82-4f15-9672-ba97dd02b5ca/sist-en-303-883-2-v2-1-1-2024>

ReferenceREN/ERM-TGUWB-619

Keywordsmeasurement, receiver, testing, UWB

ETSI650 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](#).

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 2024.
All rights reserved.

Contents

Intellectual Property Rights	6
Foreword.....	6
Modal verbs terminology.....	7
Introduction	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.....	10
3.3 Abbreviations	11
4 General	11
5 Receiver Requirements.....	12
5.1 General Guidance on RX measurement	12
5.2 Receiver Spurious Emissions	12
5.2.1 Description.....	12
5.2.2 Limits.....	12
5.2.3 Conformance.....	13
5.2.3.1 General	13
5.2.3.2 Step 1: Measurement with Peak Detector	13
5.2.3.3 Step 2: Measurement with Peak Detector and calculation RMS Value	14
5.3 Use-Case Specific Input Parameters for Receiver Baseline Requirements	14
5.3.1 Introduction.....	14
5.3.2 Wanted Technical Performance Criteria.....	15
5.3.3 Examples of Use-Case Specific Input Parameter for Receiver Tests	15
5.3.3.1 Communication/Location Tracking Device	15
5.3.3.2 Radio Determination Device (non-contact based)	16
5.3.3.3 Material contact-based radio determination device.....	18
5.4 Receiver Baseline Sensitivity (RBS).....	20
5.4.1 Description.....	20
5.4.2 Limits.....	20
5.4.3 Conformance.....	21
5.4.3.1 General	21
5.4.3.2 Conducted measurements for radio communication devices	21
5.4.3.2.0 General	21
5.4.3.2.1 Step 1: Wanted Technical Performance Criteria	21
5.4.3.2.2 Step 2: Sensitivity Requirement (Power)	21
5.4.3.2.3 Step 3: Measurement Procedure	21
5.4.3.2.4 Step 4: Wanted Technical Performance Criteria Assessment.....	23
5.4.3.3 Radiated Measurements for Radio Communication Devices with Power Limit.....	23
5.4.3.3.0 General	23
5.4.3.3.1 Step 1: Wanted Technical Performance Criteria	23
5.4.3.3.2 Step 2: Sensitivity Requirement (Power)	23
5.4.3.3.3 Step 3: Measurement Procedure	23
5.4.3.3.4 Step 4: Wanted Technical Performance Criteria Assessment.....	25
5.4.3.4 Radiated measurements for radio communication devices with distance limit.....	25
5.4.3.4.0 General	25
5.4.3.4.1 Step 1: Wanted Technical Performance Criteria	25
5.4.3.4.2 Step 2: Sensitivity Requirement (Distance).....	25
5.4.3.4.3 Step 3: Measurement Procedure	25
5.4.3.4.4 Step 4: Technical Wanted Performance Criteria Assessment.....	26
5.4.3.5 Radiated Measurements for Radiodetermination Applications with Distance Limit	26

5.4.3.5.0	General	26
5.4.3.5.1	Step 1: Technical Performance Criteria.....	26
5.4.3.5.2	Step 2: Sensitivity Requirement (Distance).....	27
5.4.3.5.3	Step 3: Measurement Procedure	27
5.4.3.5.4	Step 4: Wanted Technical Performance Criteria Assessment.....	28
5.4.3.6	Conducted measurements for radio determination devices	28
5.4.3.6.0	General	28
5.4.3.6.1	Step 1: Wanted Technical Performance Criteria	28
5.4.3.6.2	Step 2: Sensitivity Requirement (Power)	28
5.4.3.6.3	Step 3: Measurement Procedure	29
5.4.3.6.4	Step 4: Wanted Technical Performance Criteria Assessment.....	30
5.5	Receiver Baseline Resilience (RBR)	30
5.5.1	Description.....	30
5.5.2	RBR Requirements	30
5.5.2.1	Interferer test signal.....	30
5.5.2.2	RBR wanted performance criteria.....	30
5.5.3	Conformance.....	31
5.5.3.1	General	31
5.5.3.2	Conducted Measurements for Radio Communication Devices.....	31
5.5.3.2.1	Step 1: Start with the RBS Setup.....	31
5.5.3.2.2	Step 2: Adding Interfering Signal Source.....	31
5.5.3.2.3	Step 3: Degradation of Sensitivity Requirement	31
5.5.3.2.4	Step 4: Test of Wanted Technical Performance Criteria	31
5.5.3.2.5	Step 5: Measurement Assessment	32
5.5.3.2.6	Step 6: Repetition of steps 4 and 5	32
5.5.3.3	Radiated Measurements for Radio Communication Devices with Power Limit.....	32
5.5.3.3.1	Step 1: Start with the RBS Setup.....	32
5.5.3.3.2	Step 2: Adding Interfering Signal Source.....	32
5.5.3.3.3	Step 3: Degradation of Sensitivity Requirement	33
5.5.3.3.4	Step 4: Test of Wanted Technical Performance Criteria	33
5.5.3.3.5	Step 5: Measurement Assessment	33
5.5.3.3.6	Step 6: Repetition of steps 4 and 5	33
5.5.3.4	Radiated Measurements for Radio Communication Devices with Distance Limit	34
5.5.3.4.1	Step 1: Start with the RBS setup.....	34
5.5.3.4.2	Step 2: Adding interfering signal source	34
5.5.3.4.3	Step 3: Degradation of Sensitivity Requirement	35
5.5.3.4.4	Step 4: Test of Wanted Technical Performance Criteria	35
5.5.3.4.5	Step 5: Measurement Assessment	35
5.5.3.4.6	Step 6: Repetition of steps 4 and 5	35
5.5.3.5	Radiated Measurements for Radiodetermination Applications with Distance Limit	35
5.5.3.5.1	Step 1: Start with the RBS Setup.....	35
5.5.3.5.2	Step 2: Adding interfering signal source	35
5.5.3.5.3	Step 3: Degradation of Sensitivity Requirement	37
5.5.3.5.4	Step 4: Test of Wanted Technical Performance Criteria	37
5.5.3.5.5	Step 5: Measurement Assessment	37
5.5.3.5.6	Step 6: Repetition of steps 4 and 5	37
5.5.3.6	Conducted Measurements for Radio Determination Devices	37
5.5.3.6.1	Step 1: Start with the RBS Setup.....	37
5.5.3.6.2	Step 2: Adding Interfering Signal Source.....	37
5.5.3.6.3	Step 3: Degradation of Sensitivity Requirement	38
5.5.3.6.4	Step 4: Test of Wanted Technical Performance Criteria	38
5.5.3.6.5	Step 5: Measurement Assessment	38
5.5.3.6.6	Step 6: Repetition of steps 4 and 5	38
Annex A (normative):	Choose interferer for RBR.....	39
A.1	Introduction	39
A.2	Limits for the Interfering Signals	40
A.2.1	Interferer within OFR	40
A.2.1.0	Introduction.....	40
A.2.1.1	Option 1	40
A.2.1.2	Option 2	40

A.2.2	Interferer outside OFR.....	41
A.3	Guidance to Setup the Power Level of the Interfering Signals @ EUT for RBR tests	41
A.3.1	Radiated tests.....	41
A.3.2	Conducted tests	43
Annex B (informative):	Guidance on Scaling Receiver Sensitivity.....	44
B.1	General	44
B.2	Scaling of power at the EUT	44
B.3	Scaling distance.....	44
Annex C (informative):	Justification of receiver requirements from ETSI EG 203 336	46
C.1	General	46
C.2	Justification	46
C.3	Summary for the RBR requirement.....	48
C.4	Justification RBS-requirement for radio determination devices	49
Annex D (informative):	Object and Radar Cross Section	51
D.1	Wanted objects	51
D.2	Direct Object Reflectors.....	51
D.3	Delay Line Object Reflectors	51
D.4	Electronic Object Reflectors	52
D.5	Test Setup with Conventional RCS in a FAR	52
D.6	Test Setup with Radar Object Generator.....	53
Annex E (normative):	Assessment procedure to find direction of the highest sensitivity	54
E.1	General	54
E.2	Assessment for communication devices.....	54
E.3	Assessment for radiodetermination devices	55
Annex F (informative):	Parameter and Specification in related Standards	56
Annex G (informative):	Change history	58
History		59

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.

Foreword

This European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document is part 2 of a multi-part deliverable covering Short Range Devices (SRD) and Ultra Wide Band (UWB), as identified below:

Part 1: "Measurement techniques for transmitter requirements";

Part 2: "**Measurement techniques for receiver requirements**".

National transposition dates	
Date of adoption of this EN:	12 August 2024
Date of latest announcement of this EN (doa):	30 November 2024
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2025
Date of withdrawal of any conflicting National Standard (dow):	31 May 2025

Modal verbs terminology

In the present document "shall", "shall not", "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.

Introduction

The present document provides measurement procedures for receiver requirements to address the spectrum efficiency requirements set out in article 3.2 of the RED [i.7].

The basis for this RX concept was developed by ETSI during two Special Task Forces.

First Special Task Force: ETSI STF 494; Update of the UWB related Harmonised Standards covering the essential requirements set out in article 3.2 of the RED [i.7].

The STF 494:

- Started: 2015-05-25
- Ended: 2016-03-31

Outcome:

- ETSI TS 103 361 [i.4]

The second Special Task Force: ETSI STF 541; Signal interferer handling, a new RX requirement to cover the essential requirements set out in article 3.2 of the RED [i.7], was a continuation to implement and consider comments received after the publication of the ETSI TS 103 361 [i.4].

The STF 541:

- Started: 2017-10-06
- Ended: 2019-05-31

Outcome:

- ETSI TR 103 566 [i.2]
- ETSI TS 103 567 [i.3]

There is no specification of receiver parameter values within the present document. These values will be derived from technical specification defined by the responsible ETSI Technical Committees and/or the findings of regulatory studies conducted by the relevant bodies like CEPT/ECC WG SE. The limits/values for the baseline RX-conformance requirements will be specified in the related standard.

In addition to two receiver baseline requirements, it can be necessary that the RX spurious emission requirement could be a further RX requirement in the related standard. This could be necessary if the EUT has a receive only mode or if it is not co-located to the transmitter. The present document specifies the receiver spurious emission requirement and the corresponding test and measurement procedure in clause 5.2.

The present document provides practical information and guidance for the compliance receiver tests of UWB and Short Range technology and related devices.

It is recommended that, in drafting the related standards, a thorough analysis is conducted on all possible applicable receiver parameters (see annex C), selecting the most appropriate RX-requirements and having a robust reasoning for those that are disregarded.

1 Scope

The present document provides measurement procedures for receiver requirements to address the spectrum efficiency requirements set out in article 3.2 of the RED [i.7].

The baseline receiver concept is a set of two parameters given in clause 5 of the present document providing guidance for HS development, which can be further refined by the responsible TB.

Baseline receiver concept comprises the following parameters:

- Receiver Baseline Sensitivity (RBS); and
- Receiver Baseline Resilience (RBR).

The Baseline receiver concept is a further development of the signal interferer handling concept, see ETSI TS 103 361 [i.4].

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference/>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] [ETSI EN 303 883-1 \(V2.1.1\)](https://standards.iteh.ai/ca/ETSI-EN-303-883-2-V2.1.1-2024): "Short Range Devices (SRD) and Ultra Wide Band (UWB); Part 1: Measurement techniques for transmitter requirements".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI EG 203 336 (V1.2.1) (05-2020): "Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".
- [i.2] ETSI TR 103 566 (V1.1.1) (10-2018): "Evaluation status on receiver requirement on Signal interferer handling".
- [i.3] ETSI TS 103 567 (V1.1.1) (09-2019): "Requirements on signal interferer handling".
- [i.4] ETSI TS 103 361 (V1.1.1) (03-2016): "Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Receiver technical requirements, parameters and measurement procedures to fulfil the requirements of the Directive 2014/53/EU".

- [i.5] [ERC/REC 74-01](#): "Unwanted emissions in the spurious domain", approved 1998, corrected May 2022.
- [i.6] ETSI TR 103 181-2 (V1.1.1) (06-2014): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD) using Ultra Wide Band (UWB); Transmission characteristics Part 2: UWB mitigation techniques".
- [i.7] [Directive 2014/53/EU](#) of the European Parliament and of the Council of 16 April 2014 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 (RED).
- [i.8] European Communications Office: "[EFIS: ECO Frequency Information System](#)".
- [i.9] ETSI TR 103 181-1 (V1.1.1) (07-2015): "Short Range Devices (SRD) using Ultra Wide Band (UWB); Technical Report Part 1: UWB signal characteristics and overview CEPT/ECC and EC regulation".
- [i.10] ETSI TS 103 788 (V1.1.1) (09-2022): "Short Range Devices (SRD) and Ultra Wide Band (UWB); Measurement techniques and specification for RX conformance tests with target simulator".
- [i.11] ETSI TS 103 789 (V1.1.1) (05-2023): "Short Range Devices (SRD) and Ultra Wide Band (UWB); Radar related parameters and physical test setup for object detection, identification and RCS measurement".
- [i.12] ETSI TS 103 941 (V1.1.1): "Short Range Devices (SRD) and Ultra Wide Band (UWB); Measurement setups and specifications for testing under full environmental profile (normal and extreme environmental conditions)".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI EN 303 883-1 [1] and the following apply:

event failure rate: ratio of failed tests compared to total number of tests

interfering transmit antenna: antenna which radiates the interfering signal to EUT during the RBR test

received power at the EUT ($P_{@EUT}$): received signal with a specified power level the EUT is able to detect

NOTE 1: $P_{@EUT}$ is similar to the specified sensitivity level for the EUT as specified in the related standard (kind of power (e.g. dBm or dBm/MHz) and limit, see note 2).

NOTE 2: $Sensitivity @ EUT = P_{@EUT}$.

Receiver Baseline Resilience (RBR): capability to maintain a pre-determined minimum acceptable level of performance in the presence of unwanted signals over the frequency band of operation, applicable adjacent and remote frequency bands

Receiver Baseline Sensitivity (RBS): capability to receive a wanted signal at application related defined input signal levels while providing a pre-determined minimum acceptable level of technical performance

NOTE 1: The pre-determined minimum acceptable level of technical performance is the basis for all other receiver parameters.

NOTE 2: The purpose of the sensitivity requirement is to assure a basic measure of efficient use of spectrum that strikes balance between sensitivity and the need to avoid being sensitive to interference.

Wanted Technical Performance Criteria (WTPC): specified technical behaviour of the EUT (e.g. information via use-interface) or specified measurable specified output signal to demonstrate that the EUT operates as intended

NOTE: The wanted technical performance will be specified in the rates standard and the requirement is closely linked with the use-case of the EUT.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

σ	Radar Cross Section
ΔD	degradation of the distance from RBR test
Δf	additional frequency range to increase the range (ORF_{RBR}) for the RBR interferer assessment
A	size of the antenna aperture
A_{eff}	effective area of the antenna [m ²]
att	attenuation of the "Variable Attenuator" in [dB]
c	the velocity of light [m/s]
ca	cable attenuation
cf	coupling factor of the coupler in [dB]
d_g	degradation of the sensitivity in [dB]
dB	decibel
dB _i	gain in decibels relative to an isotropic antenna
dB _m	gain in decibels relative to one milliwatt
dl	attenuation of the "Delay Line" in [dB]
D	measurement distance
D_{int}	distance between interfering antenna and EUT
D_{min}	minimum distance from EUT to a specified object the EUT is able to detect
D_{real}	real distance between EUT and target simulator in [m]
D_{sens}	minimum range from an ideal/companion source to the EUT (RX) value in [m]
D_{scal}	scaled distance for the RBS tests
D_{sim}	simulated target distance within target simulator in [m]
f	test frequency in [GHz]
f_c	centre frequency of the EUT OFR
F_{LOWER}	lowest frequency of receiver spurious emission test
F_{UPPER}	highest frequency of receiver spurious emission test
$g_{measure}$	measurement antenna gain in [dBi] at test frequency f
g_i	measurement test antenna gain in [dBi] at test frequency f
g_e	EUT antenna gain in [dBi]
g_{rt}	measurement receiving test antenna gain in [dBi] at test frequency f
G_{int}	interfering transmit antenna
g_{int}	antenna gain of test antenna to transmit interfering signal [dBi]
G_{RX}	gain of the receiving antenna
G_{TX}	gain of the transmitting antenna
il	insertion loss of the coupler in [dB]
$IP_{@EUT}$	interfering Power@EUT
IP_{out}	output power of the interference signal source (generator)
ORF_{RBR}	Frequency range for the RBR interferer assessment
$P_{@EUT}$	Sensitivity @ EUT
P_{EUT}	measured transmitted power of the EUT [e.g. dBm/MHz] or in [W]
P_{meas}	measured received power with the spectrum analyser
P_{out}	output power of the signal generator A
P_{reg}	maximum regulated radiated emission for ideal TX/companion device
P_{RX}	power received back from the object by the EUT [W]
P_{trans}	measured transmitted power from the EUT in [dB]
P_{TX}	transmitter power [W]
$RBR_{in-band}$	frequency range for the RBR interferer assessment ($ORF_{RBR} + 2\Delta f$)
RX_{ref}	sensitivity limit at antenna port
$RX_{refsense}$	scaled sensitivity limit for the RBS test
SCP	Scaling factor (absolute value)
X_{VALUE}	symbol for a value/limit specified in the related standard

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACS	Adjacent Channel Selectivity
ADM	Accuracy in Distance Measurement
BER	Bit Error Rate
CEPT	European Conference of Postal and Telecommunications administrations
CW	Continuous Wave
DAA	Detect And Avoid
ECC	Electronic Communications Committee
ECO	European Communications Office
EFIS	ECO Frequency Information System
EFR	Event Failure Ratio
EN	European Norm
ENAP	EN Approval Process
ERM	Electromagnetic compatibility and Radio spectrum Matters
EUT	Equipment Under Test
EUT-RX	Receiver of the Equipment Under Test
FAR	Fully Anechoic Room
FCC	Federal Communications Commission
LAES	Location tracking Applications for Emergency Services
LBT	Listen Before Talk
LT1	Location Tracking type 1
LT2	Location Tracking type 2
NA	Not Applicable
ODP	Object Detection Probability
OFR	Operating Frequency Range
OOB	Out Of Band
PER	Packet Error Rate
RBR	Receiver Baseline Resilience
RBS	Receiver Baseline Sensitivity
RBW	Resolution BandWidth
RCS	Radar Cross Section
RED	Radio Equipment Directive
RF	Radio Frequency
RMS	Root Mean of Squares
RP	Radiated Power
RX	Receiver
SAC	Semi Anechoic Chamber
SE	Spectrum Engineering
SRD	Short Range Device
STF	Special Task Force of ETSI
TB	Technical Body
TPC	Total Power Control
TX	Transmitter
UWB	Ultra Wide Band
VBW	Video BandWidth
WG	Working Group
WTPC	Wanted Technical Performance Criteria

4 General

The present document provides practical information and guidance for the compliance receiver tests of UWB and Short Range technology and devices.

The baseline receiver requirements were developed based on the findings of ETSI TR 103 566 [i.2] and ETSI TS 103 567 [i.3], where the signal interferer handling concept from ETSI TS 103 361 [i.4] has been analysed on its applicability for the RED [i.7].

The baseline receiver concept is a set of two parameters given in clause 5 of the present document providing guidance for harmonised standard development, which can be further refined by the responsible TB.

Baseline receiver concept comprises the following parameters:

- Receiver Baseline Sensitivity (RBS); see clause 5.4; and
- Receiver Baseline Resilience (RBR); see clause 5.5.

The baseline receiver concept is a further development of the signal interferer handling concept, see ETSI TS 103 361 [i.4].

In annex C these two parameters are put in relation to existing receiver parameters given in ETSI EG 203 336 [i.1] and the assessments prepared by ETSI STF 494 and 541. Annex C additionally provides the summary assessment/justification for this new baseline receiver concept described in the present document.

5 Receiver Requirements

5.1 General Guidance on RX measurement

Complementary information to the conformance tests in the clauses below are provided in annex A and B of ETSI EN 303 883-1 [1], for example:

- test conditions, power supply and ambient temperatures (see clause A.5 of ETSI EN 303 883-1 [1]);
- measurement uncertainty and the interpretation of the measurement results (see clause A.8 of ETSI EN 303 883-1 [1]);
- test setups and radiated measurements (see annex B of ETSI EN 303 883-1 [1]).

5.2 Receiver Spurious Emissions

5.2.1 Description

The RX spurious emissions shall be measured within the frequency range defined in table 2.

The receiver spurious emission requirement is applicable for communication and tracking EUT if the EUT is a receive only device (TX not implemented) or for EUT which has a receive only mode (TX off, standby, idle).

For radiodetermination and sensor applications (e.g. radar sensor) the receiver spurious emission requirement is applicable for EUT if it is a receive only device (receiver is separated from the transmitter within a separate housing) or for EUT which has a receive only mode (TX off, standby, idle). The receive only mode shall be specified in the related standard based on the intended-use and the EUT device categories. For EUT without a receive only mode than the spurious emissions are covered by provisions of clause 5.5 of ETSI EN 303 883-1 [1] on TX unwanted emissions.

5.2.2 Limits

The limit for RX spurious emissions could be provided in the applicable related standard.

If no limits for RX spurious emissions are provided in the related standard, then the limits in table 1 shall apply.

Table 1: Receiver spurious emission limits in line with ERC/REC 74-01 [i.5]

Frequency range	Limit values
$F_{\text{LOWER}} \leq f \leq 1\,000\text{ MHz}$ (see note)	-57 dBm
$1\,000\text{ MHz} < f \leq F_{\text{UPPER}}$ (see note)	-47 dBm
NOTE: F_{UPPER} and F_{LOWER} are linked with the OFR of the EUT, see table 2.	