SLOVENSKI STANDARD
SIST EN 302 065-5 V1.1.1:2017

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Naprave kratkega dosega (SRD), ki uporabljajo ultra širokopasovno (UWB) tehnologijo - Harmonizirani standard, ki zajema bistvene zahteve člena 3.2 direktive 2014/53/EU - 5. del: Naprave, ki uporabljajo tehnologijo UWB na letalu

Short Range Devices (SRD) using Ultra Wide Band technology (UWB) - Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU - Part 5: Devices using UWB technology onboard aircraft

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Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU; Part 5: Devices using UWB technology onboard aircraft

Reference
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Foreword

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

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.5] 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 5 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.6].

National transposition dates	
Date of adoption of this EN:	20 June 2017
Date of latest announcement of this EN (doa):	30 September 2017
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 March 2018
Date of withdrawal of any conflicting National Standard (dow):	31 March 2019

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).

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1 Scope

The present document applies to transceivers, transmitters and receivers utilizing Ultra WideBand (UWB) technologies and used onboard aircraft, i.e. radio links for intra-aircraft communications purposes inside an aircraft.

The present document applies to impulse, modified impulse and RF carrier based UWB communication technologies.

The present document applies to UWB equipment with an output connection used with a dedicated antenna or UWB equipment with an integral antenna.

Equipment covered by the present document operates in accordance with CEPT ECC/DEC(12)03 [i.2] "*The harmonised conditions for UWB applications onboard aircraft*".

These radio equipment types are capable of operating in all or part of the frequency bands given in table 1.

Table 1: Permitted ranges of operation in accordance with CEPT ECC/DEC(12)03 [i.2]

Permitted range of operation (see note 1)	
Transmit	30 MHz to 10,6 GHz
Receive	30 MHz to 10,6 GHz
Intended ranges of operation (preferred range of operating bandwidth), see note 2	
Transmit	6,0 GHz to 6,650 GHz
Receive	6,0 GHz to 6,650 GHz
Transmit	6,6752 GHz to 8,5 GHz
Receive	6,6752 GHz to 8,5 GHz
NOTE 1: Limits in table 2 clause 4.3.2 and table 3 clause 4.3.3 are to be met. NOTE 2: This is the preferred range for the operating bandwidth, as defined in clause 4.3.1.	

2 References

2.1 Normative references

References are specific, identified by date of publication and/or edition number or version number. Only the cited version 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 (V1.1.1) (09-2016): "Short Range Devices (SRD) using Ultra Wide Band (UWB); Measurement Techniques".

[2] 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".

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] 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.

[i.2] CEPT ECC/DEC(12)03 of 2 November 2012: "The harmonised conditions for UWB applications onboard aircraft".

[i.3] Commission Decision 2014/702/EU of 7 October 2014 amending Decision 2007/131/EC on allowing the use of the radio spectrum for equipment using ultra-wideband technology in a harmonised manner in the Community (notified under document C(2014) 7083).

[i.4] CEPT/ERC Recommendation 74-01: "Unwanted emissions in the spurious domain".

[i.5] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.

[i.6] ETSI EN 302 065-1 (V2.1.1): "Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 1: Requirements for Generic UWB applications".

[i.7] ECC REP 175: "Co-existence study considering UWB applications inside aircraft and existing radio services in the frequency bands from 3.1 GHz to 4.8 GHz and from 6.0 GHz to 8.5 GHz".

[i.8] ECC REP 93: "Compatibility between GSM equipment on board aircraft and terrestrial networks. Revised ECC Report with Annex G" (May 2008).

[i.9] ETSI TR 103 181-2: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD) using Ultra Wide Band (UWB);Transmission characteristics Part 2: UWB mitigation techniques".

3 Definitions, symbols and abbreviations

3.1 Definitions

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

altitude: height of the aircraft above the ground

narrowband: equipment to be used in a non-channelized continuous frequency band with an occupied bandwidth of equal or less than 25 kHz, or equipment to be used in a channelized frequency band with a channel spacing of equal or less than 25 kHz

onboard aircraft: use of radio links for intra-aircraft communications purposes inside an aircraft

3.2 Symbols

For the purposes of the present document, the symbols given in ETSI EN 303 883 [1] apply.

3.3 Abbreviations

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

CEPT	European Conference of Postal and Telecommunications Administrations
MSL	Mean Sea Level

NF	Noise Figure
TR	Technical Report
TS	Technical Specification

4 Technical requirements specifications

4.1 Environmental conditions

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be declared by the manufacturer. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the declared operational environmental profile. The normal test conditions are defined in clause 5.4.3 of ETSI EN 303 883 [1].

4.2 General

UWB devices in the scope of the present document can operate in a broad permitted range of frequencies from 30 MHz to 10,6 GHz, as defined in table 1 of the present document. The intended range of operation gives the preferred range of operating bandwidth for the UWB operation based on the allowed spectrum mask with increased permitted emission levels in the intended range of operation.

In order to clearly identify the required limits and thus measurement procedures it is essential to define the operating bandwidth of the UWB DUT, the operating bandwidth of the UWB DUT test shall be the -10 dBc bandwidth of the intended UWB signal under normal operational conditions as defined in ETSI EN 303 883 [1], clause 5.4.3.

A single UWB device can have more than one operating bandwidth. The basic concept is descripted in figure 1.

Here two separate operating bandwidths are depicted, one with a UWB operating bandwidth in the lower frequency range (< 6 GHz) and one in the upper frequency range (> 6 GHz). All UWB related emissions shall be measured in the identified operating bandwidth(s) of the UWB device under test. The mitigation techniques are only valid in the operating bandwidth(s).

The RX interference signal handling is focused in the operating bandwidth and some clearly identified frequencies outside the operating bandwidth(s), see clause 4.4.3.

TE: Total emission including UWB emission (mean power spectral density) and Other Emissions (OE) (e.g. RX spurious, TX spurious and unwanted emission not belonging to the UWB emissions), see clause 7.3 of ETSI EN 303 883 [1].

The peak power limit shall only to be measured at the frequency and the direction with the highest mean power spectral density.

OE emission shall only be considered in the operating bandwidth if the given UWB limits (UE limits for mean power and peak power) are not met. In this case OE shall be clearly identified.

The tests of any mitigation techniques are only relevant inside the operating bandwidth(s).

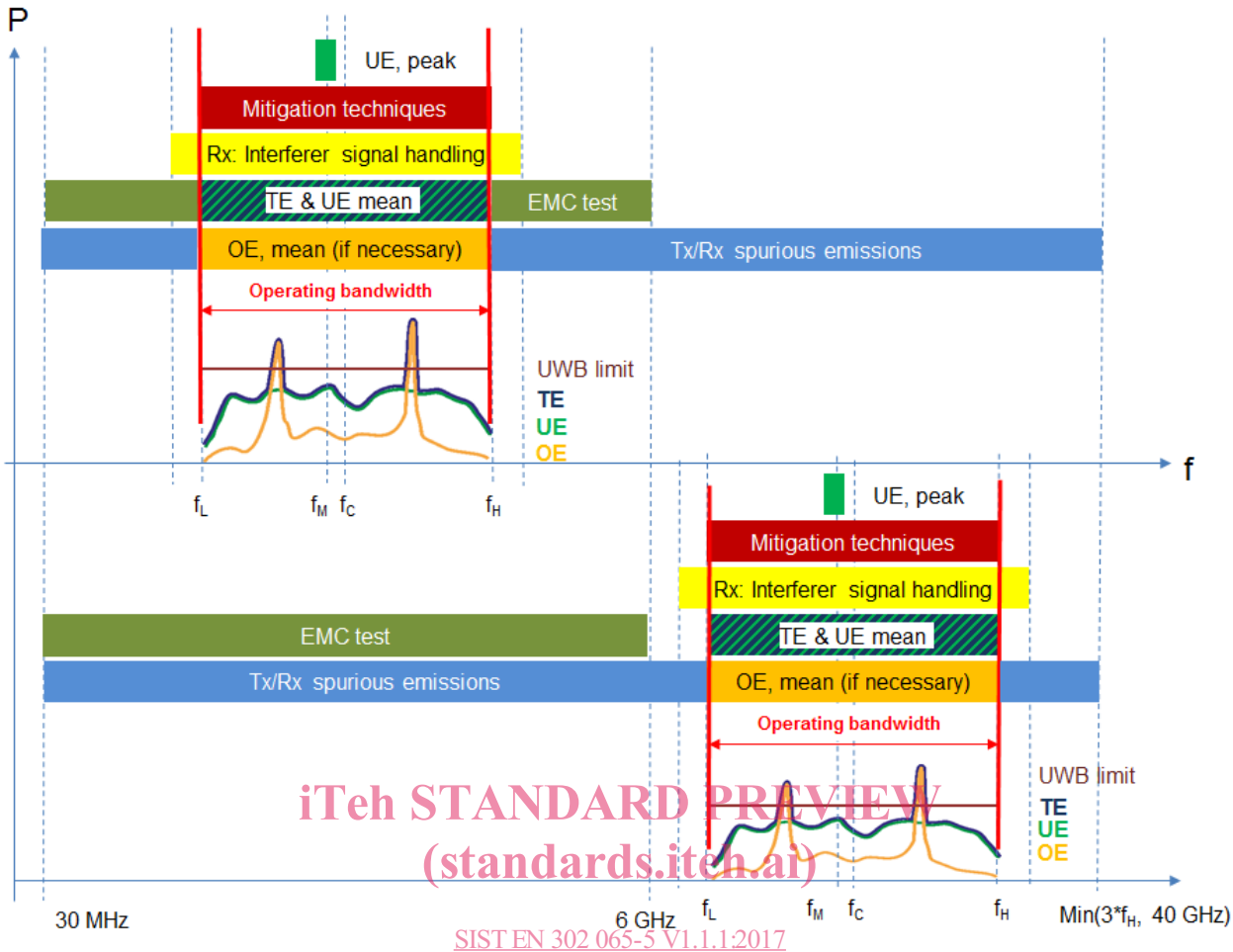

Figure 1: Concept of operating bandwidth including the relevant UWB related parameter

4.3 Transmitter Conformance Requirements

4.3.1 Operating Bandwidth

4.3.1.1 Applicability

This requirement shall apply to all transmitting DUT.

4.3.1.2 Description

The description in ETSI EN 303 883 [1], clause 7.2.2 applies.

4.3.1.3 Limits

Any operating bandwidth of all the DUT shall lie within one permitted frequency range of operation of the device (see table 1) and shall be > 50 MHz.

4.3.1.4 Conformance

The conformance test suite for operating bandwidth shall be as defined in clause 6.5.3 of the present document.

Conformance shall be established under normal test conditions, see clause 4.1.

The interpretation of the results for the measurements uncertainty shall be as given in clause 5.3.