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

Short Range Devices (SRD) and Ultra Wide Band (UWB) - Part 1: Measurement techniques for transmitter requirements

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Short Range Devices (SRD) and Ultra Wide Band (UWB); Part 1: Measurement techniques for transmitter requirements

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Foreword

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

The present document is part 1 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".

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Introduction

Ultra Wide Band (UWB) radio technology enables a new generation of high-speed data devices for short-range communication purposes as well as location tracking and Sensor devices and opens new markets with a variety of innovative applications.

UWB devices may form an integral part of other portable electronic equipment such as future generation cellular phones or laptops equipped with UWB enabled short-range air interfaces.

In addition, UWB devices with an operating frequency range of several hundreds of MHz up to several GHz allow tens of centimetre-level accuracy real time localization and positioning even in the presence of severe multipath effects caused by walls, furniture or any other harsh radio propagation environments.

Based on the broad variety of different applications and the broad possible frequency range of operation the number of possible deployed physical signal formats can be very large. The existing range of physical signal and modulation formats range from traditional carrier based systems like OFDM over spread spectrum based system to carrier less systems based on base band pulses. The frequency regulation on the other side only defines a single set of transmission limits and values, which have to be fulfilled by all systems under the UWB regulation. Furthermore, the very high channel bandwidth of a UWB signal gives a specific challenge to the needed measurement setup and the procedures. Existing measurement procedures need to be extended and new possible techniques should be described in the present document.

The present document is structured as follows:

- Clauses 1 through 3 provide a general description on the types of equipment covered by the present document and the definition of terms, symbols and abbreviations used.
- Clause 4 provides an overview on the technical and technology basics which were considered during the preparation of the present document.
- Clause 5 specifies EUT TX requirements and the related conformance procedure.
- Annex A provides information on test conditions, used test sites and procedures.
- Annex B provides necessary information on radiated test procedures.
- Annex C provides information on TX signal types.
- Annex D provides information on the all emission concept.
- Annex E provides information for a pre-scan radiated power measurement test procedure.
- Annex F provides information on differences between the different emission power measurements.
- Annex G provides information on Out-of-band and spurious requirements for EUT covered by ECC/DEC/(22)03 [i.40].
- Annex H provides information what specifications, parameters, need to be considered in the related standard.
- Annex I provides a change history table containing the major technical changes.

1 Scope

The present document summarizes the available information of possible measurement techniques and procedures for the conformance measurement of various signal formats (e.g. Ultra Wide Band (UWB)) in order to comply with the given transmission limits given in the current regulation.

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.

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

- [1] [ETSI TS 102 754 \(V1.3.1\) \(03-2013\)](#): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Technical characteristics of Detect And Avoid (DAA) mitigation techniques for SRD equipment using Ultra Wideband (UWB) technology".
- [2] [ETSI TS 102 321 \(V1.1.1\)](#): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Normalized Site Attenuation (NSA) and validation of a fully lined anechoic chamber up to 40 GHz".
- [3] [ETSI TS 103 941 \(V.1.1.1\)](#): "Ultra Wide Band (ERM); Radiated tests for UWB technology-based devices under extreme environmental conditions".

2.2 Informative references

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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 TS 103 060 (V1.1.1) (09-2013): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Method for a harmonized definition of Duty Cycle Template (DCT) transmission as a passive mitigation technique used by short range devices and related conformance test methods".
- [i.2] [ITU Radio Regulations](#).
- [i.3] [ECC/DEC/\(06\)04](#): "The harmonised conditions for devices using UWB technology in bands below 10.6 GHz", 24 March 2006, amended 9 December 2011 and amended 8 March 2019.
- [i.4] [ECC/DEC/\(07\)01](#): "The harmonised use, exemption from individual licensing and free circulation of Material Sensing Devices using Ultra-Wideband (UWB) technology", 30 March 2007, amended on 26 June 2009, corrected on 18 November 2016 and amended on 8 March 2019.

- [i.5] [Decision \(EU\) 2019/785](#): "Commission Implementing Decision (EU) 2019/785 of 14 May 2019 on the harmonisation of radio spectrum for equipment using ultra-wideband technology in the Union and repealing Decision 2007/131/EC" (notified under document C(2019) 3461).
- [i.6] [ECC/DEC/\(11\)02](#): "Industrial Level Probing Radars (LPR) operating in frequency bands 6-8.5 GHz, 24.05-26.5 GHz, 57-64 GHz and 75-85 GHz", 11 March 2011, updated on 17 November 2017 and amended on 5 July 2019.
- [i.7] [ERC/REC 70-03](#): "Relating to the use of Short Range Devices (SRD)".
- [i.8] [Decision \(EU\) 2022/180](#): "Commission Implementing Decision (EU) 2022/180 of 8 February 2022 amending Decision 2006/771/EC as regards the update of harmonised technical conditions in the area of radio spectrum use for short-range devices".
- [i.9] [ERC/REC 74-01](#): "Unwanted Emissions in the spurious domain", latest amendment on 29 May 2019".
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