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STN	**Zariadenia s krátkym dosahom (SRD) používajúce technológiu ultraširokého pásma (UWB) Harmonizovaná norma pre prístup k rádiovému spektru Časť 4: Materiálovo citlivé zariadenia Oddiel 4: Aplikácie snímania vonkajšieho materiálu pre pozemné vozidlá**	**STN EN 302 065-4-4 V1.1.1** 87 2065

Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonised Standard for access to radio spectrum; Part 4: Material Sensing devices; Sub-part 4: Exterior material sensing applications for ground based vehicles

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonised Standard for access to radio spectrum; Part 4: Material Sensing devices; Sub-part 4: Exterior material sensing applications for ground based vehicles

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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
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Contents

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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.3].

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 4, sub-part 4 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.13].

National transposition dates	
Date of adoption of this EN:	24 May 2022
Date of latest announcement of this EN (doa):	31 August 2022
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	28 February 2023
Date of withdrawal of any conflicting National Standard (dow):	29 February 2024

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 is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio and telecommunications terminal equipment within the scope of the Directive 2014/53/EU [i.3].

For the case of the present document, the applicable harmonised standard has been ETSI EN 302 065-4 (V1.1.1) [i.8], for Material Sensing devices using UWB technology below 10,6 GHz which was published in the OJEU without restriction at 12 April 2017.

In order to consider the above points, ETSI ERM TGUWB decided to develop more specific standards; this means instead of one generic ETSI EN 302 065-4 [i.8] standard for Material Sensing devices the following standard family ETSI EN 302 065-4-x for material sensing devices:

- ETSI EN 302 065-4-1: "Material Sensing devices; Sub-part 1: Building material analysis below 10,6 GHz".
- ETSI EN 302 065-4-2: "UWB Material Sensing devices for Security Scanning".
- ETSI EN 302 065-4-3: "Ground humidity and condition sensor".
- ETSI EN 302 065-4-4: "Material Sensing devices; Sub-part 4: Exterior material sensing applications for ground based vehicles".
- ETSI EN 302 065-4-5: "UWB surveillance devices for parking lot sensors below 10,6 GHz".

NOTE: The above list of standards represents the active work items at the time of finalizing the present document and the final structure of the ETSI EN 302 065-4-x family may change later.

1 Scope

The present document specifies the requirements for technical characteristics and methods of measurements for material sensing applications using UWB technology for external material sensing applications for ground-based vehicles.

The present document only covers non-contact based UWB material sensing devices according to ECC/DEC(07)01 [i.1] and Commission Decision 2019/785/EU [i.2].

NOTE: The relationship between the present document and essential requirements of article 3.2 of Directive 2014/53/EU [i.3] is given in annex A.

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 (V1.2.1) (02-2021): "Short Range Devices (SRD) and Ultra Wide Band (UWB); Part 1: Measurement techniques for transmitter requirements".

[2] ETSI EN 303 883-2 (V1.2.1) (02-2021): "Short Range Devices (SRD) and Ultra Wide Band (UWB); Part 2: Measurement techniques for receiver requirements".

[3] ETSI EN 302 066 (V2.2.1) (06-2020): "Short Range Devices (SRD); Ground- and Wall- Probing Radio determination (GPR/WPR) devices; Harmonised Standard for access to radio spectrum".

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] ECC/DEC/(07)01: "ECC Decision of 30 March 2007 on the harmonised use, exemption from individual licensing and free circulation of Material Sensing Devices using Ultra-Wideband (UWB) technology", amended on 26 June 2009, corrected on 18 November 2016 and amended on 8 March 2019.

[i.2] 2019/785/EU: "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.3] 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.4] CEPT Report 45: "Report from CEPT to the European Commission in response to the Fifth Mandate to CEPT on ultra-wideband technology to clarify the technical parameters in view of a potential update of Commission Decision 2007/131/EC"; Report approved on 21 June 2013 by the ECC.

[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] Recommendation ITU-R SM.1755: "Characteristics of ultra-wideband technology".

[i.7] 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.8] ETSI EN 302 065-4 (V1.1.1): "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 4: Material Sensing devices using UWB technology below 10,6 GHz".

[i.9] ECC/DEC/(20)/01: "ECC Decision of 20 November 2020 on the harmonised use of the frequency band 5945-6425 MHz for Wireless Access Systems including Radio Local Area Networks (WAS/RLAN)".

[i.10] ETSI TS 136 101 (V16.8.0): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception (3GPP TS 36.101 version 16.8.0 Release 16)".

[i.11] 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.12] ECO Frequency Information System (cept.org).

NOTE: Available at https://efis.cept.org/.

[i.13] ETSI EN 302 065-1: "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".