

# ETSI EN 302 500-2 V2.1.1 (2010-10)

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*Harmonized European Standard (Telecommunications series)*

**Electromagnetic compatibility  
and Radio spectrum Matters (ERM);  
Short Range Devices (SRD) using  
Ultra WideBand (UWB) technology;  
Location Tracking equipment operating in  
the frequency range from 6 GHz to 9 GHz;  
Part 2: Harmonized EN covering the essential requirements  
of article 3.2 of the R&TTE Directive**

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## Foreword

This Harmonized European Standard (Telecommunications series) 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) using Ultra WideBand (UWB) technology; Location Tracking equipment operating in the frequency range from 6 GHz to 9 GHz, as identified below:

Part 1: "Technical characteristics and methods of measurement";

**Part 2: "Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".**

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC [i.1] (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations.

The present document is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity ("the R&TTE Directive") [i.2].

The requirements relevant to Directive 1999/5/EC [i.2] are summarised in annex A.

<b>National transposition dates</b>	
Date of adoption of this EN:	5 October 2010
Date of latest announcement of this EN (doa):	31 January 2011
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 July 2011
Date of withdrawal of any conflicting National Standard (dow):	31 July 2012

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# 1 Scope

The present document specifies the requirements for ultra-wideband Location Tracking equipment operating in all or part of the frequency range from 6 GHz to 9 GHz.

The present document applies for indoor as well as portable or mobile outdoor applications.

It covers ultra-wideband location tracking tags which are attached to people or objects and are tracked using a fixed receiver infrastructure to only receive the UWB emission by the tags. Equipment covered by the present document is fitted with an integral or dedicated antenna.

The present document is intended to cover the provisions of article 3.2 of Directive 1999/5/EC [i.2] R&TTE Directive, which states that "... radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference".

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements under other parts of article 3 of the R&TTE Directive may apply to equipment within the scope of the present document.

NOTE: A list of such ENs is included on the web site <http://www.newapproach.org>.

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# 2 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 reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://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.

## 2.1 Normative references

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

- [1] ETSI EN 302 500-1 (V2.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD) using Ultra WideBand (UWB) technology; Location Tracking equipment operating in the frequency range from 6 GHz to 9 GHz; Part 1: Technical characteristics and methods of measurement".

## 2.2 Informative references

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 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.
- [i.2] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive).

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## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in the R&TTE Directive [i.2] and EN 302 500-1 [1] apply.

### 3.2 Symbols

For the purposes of the present document, the symbols given in EN 302 500-1 [1] apply.

### 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 302 500-1 [1] apply.

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## 4 Technical requirements specifications

### 4.1 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be declared by the provider. 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.

### 4.2 Conformance requirements

#### 4.2.1 Transmitter requirements

##### 4.2.1.1 Maximum mean equivalent isotropically radiated power spectral density

The maximum mean equivalent isotropically radiated power (e.i.r.p.) spectral density shall not exceed the limits specified in clause 8.1.3 of EN 302 500-1 [1].

This requirement applies to all transmitters.

##### 4.2.1.2 Frequency of highest maximum mean e.i.r.p. spectral density

The frequency of the highest maximum mean equivalent isotropically radiated power (e.i.r.p.) spectral density shall not lie outside the limits specified in EN 302 500-1 [1], clause 8.2.3.

This requirement applies to all transmitters.

##### 4.2.1.3 Maximum peak equivalent isotropically radiated power

The maximum peak equivalent isotropically radiated power (e.i.r.p.) shall not exceed the limits specified in clause 8.3.3 of EN 302 500-1 [1].

This requirement applies to all transmitters.

#### 4.2.1.4 Indirect Detect-And-Avoid (DAA)

The equipment shall meet the design requirements for Indirect Detect-And-Avoid (DAA) as specified in EN 302 500-1 [1], clause 8.4.2.

Furthermore, the maximum mean equivalent isotropically radiated power (e.i.r.p.) spectral density and maximum peak e.i.r.p., as measured in Non-Interference Mode and non-NIM operation mode, shall not exceed the limits specified in clause 8.4.4 of EN 302 500-1 [1].

This requirement applies to all transmitters operating in the range 8,5 GHz to 9 GHz.

### 4.2.2 Receiver requirements

#### 4.2.2.1 Maximum receiver spurious radiations

The receiver spurious radiations as defined in EN 302 500-1 [1], clause 9.1.1, shall not exceed the limit specified in EN 302 500-1 [1], clause 9.1.3.

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## 5 Testing for compliance with technical requirements

### 5.1 Environmental conditions for testing

Tests defined in the present document shall be carried out at representative points within the boundary limits of the declared operational environmental profile.

Where technical performance varies subject to environmental conditions, tests shall be carried out under a sufficient variety of environmental conditions (within the boundary limits of the declared operational environmental profile) to give confidence of compliance for the affected technical requirements.

### 5.2 Essential radio test suites

#### 5.2.1 Transmitter test suites

##### 5.2.1.1 Maximum mean e.i.r.p. spectral density

The test defined in clause 8.1.2 of EN 302 500-1 [1] shall be carried out.

This test suite applies to all transmitters.

##### 5.2.1.2 Frequency of highest maximum mean e.i.r.p. spectral density

The test defined in clause 8.2.2 of EN 302 500-1 [1] shall be carried out.

This test suite applies to all transmitters.

##### 5.2.1.3 Maximum peak e.i.r.p.

The test defined in clause 8.3.2 of EN 302 500-1 [1] shall be carried out.

This test suite applies to all transmitters.

##### 5.2.1.4 Indirect Detect-And-Avoid (DAA)

The tests defined in clause 8.4.3 of EN 302 500-1 [1] shall be carried out.

This requirement applies to all transmitters operating in the range 8,5 GHz to 9 GHz.

## 5.2.2 Receiver test suites

### 5.2.2.1 Receiver spurious radiations

The test defined in clause 9.1.2 of EN 302 500-1 [1], shall be carried out.

## 5.3 Interpretation of measurement results

Clause 7 of EN 302 500-1 [1] shall apply.

## Annex A (normative): HS Requirements and conformance Test specifications Table (HS-RTT)

The HS Requirements and conformance Test specifications Table (HS-RTT) in table A.1 serves a number of purposes, as follows:

- it provides a statement of all the requirements in words and by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it provides a statement of all the test procedures corresponding to those requirements by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it qualifies each requirement to be either:
  - Unconditional: meaning that the requirement applies in all circumstances; or
  - Conditional: meaning that the requirement is dependent on the manufacturer having chosen to support optional functionality defined within the schedule.
- in the case of Conditional requirements, it associates the requirement with the particular optional service or functionality;
- it qualifies each test procedure to be either:
  - Essential: meaning that it is included with the Essential Radio Test Suite and therefore the requirement shall be demonstrated to be met in accordance with the referenced procedures;
  - Other: meaning that the test procedure is illustrative but other means of demonstrating compliance with the requirement are permitted.

**Table A.1: HS Requirements and conformance Test specifications Table (HS-RTT)**

<b>Harmonized Standard EN 302 500-2</b>						
The following requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive						
<b>Requirement</b>			<b>Requirement Conditionality</b>		<b>Test Specification</b>	
<b>No</b>	<b>Description</b>	<b>Reference: Clause No</b>	<b>U/C</b>	<b>Condition</b>	<b>E/O</b>	<b>Reference: Clause No</b>
<b>1</b>	Maximum mean equivalent isotropically radiated power spectral density	4.2.1.1	U		E	5.2.1.1
<b>2</b>	Frequency of highest maximum mean e.i.r.p. spectral density	4.2.1.2	U		E	5.2.1.2
<b>3</b>	Maximum peak e.i.r.p.	4.2.1.3	U		E	5.2.1.3
<b>4</b>	Indirect Detect-And-Avoid (DAA)	4.2.1.4	C	Applies for equipment operating in the range 8,5 GHz to 9 GHz	E	5.2.1.4
<b>5</b>	Maximum receiver spurious radiations	4.2.2.1	U		E	5.2.2.1

### Key to columns:

#### Requirement:

**No** A unique identifier for one row of the table which may be used to identify a requirement or its test specification.

**Description** A textual reference to the requirement.

**Clause Number** Identification of clause(s) defining the essential requirement in the present document unless another document is referenced explicitly.

**Requirement Conditionality:**

**U/C** Indicates whether the requirement is to be *unconditionally* applicable (U) or is *conditional* upon the manufacturers claimed functionality of the equipment (C).

**Condition** Explains the conditions when the requirement shall or shall not be applicable for a technical requirement which is classified "conditional".

**Test Specification:**

**E/O** Indicates whether the test specification forms part of the *Essential Radio Test Suite* (E) or whether it is one of the *Other Test Suite* (O).

**NOTE:** All tests whether "E" or "O" are relevant to the requirements. Rows designated "E" collectively make up the Essential Radio Test Suite; those designated "O" make up the Other Test Suite; for those designated "X" there is no test specified corresponding to the requirement. The completion of all tests classified "E" as specified with satisfactory outcomes is a necessary condition for a presumption of conformity. Compliance with requirements associated with tests classified "O" is a necessary condition for presumption of conformity, although conformance with the requirement may be claimed by an equivalent test or by manufacturer's assertion supported by appropriate entries in the technical construction file.

**Clause Number** Identification of clause(s) defining the test specification in the present document unless another document is referenced explicitly. Where no test is specified (that is, where the previous field is "X") this field remains blank.

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## Annex B (informative): The EN title in the official languages

The enlargement of the European Union (EU) resulted in a requirement from the EU for a larger number of languages for the translation of the titles of Harmonized Standards and mandated ENs that are to be listed in the Official Journal to support the implementation of this legislation.

For this reason the title translation concerning the present document can be consulted via the [e-approval](#) application.

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## Annex C (informative): Bibliography

ECC/DEC/(06)04: "ECC Decision of 24 March 2006 on the harmonized conditions for devices using Ultra-Wideband (UWB) technology in bands below 10.6 GHz".

ETSI TR 102 495-3: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Technical characteristics for SRD equipment using Ultra Wide Band Sensor technology (UWB); Part 3: Location tracking applications type 1 operating in the frequency band from 6 GHz to 9 GHz for indoor and outdoor usage".

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## History

<b>Document history</b>		
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