

**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 8,5 GHz;  
Part 2: Harmonized EN covering 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), and is now submitted for the Vote phase of the ETSI standards Two-step Approval Procedure.

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 8,5 GHz, as identified below:

Part 1: "Technical characteristics and test methods";

**Part 2: "Harmonized EN covering 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 [3] (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 [1] 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").

<b>Proposed national transposition dates</b>	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	18 months after doa

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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 8,5 GHz.

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

The present document applies for indoor applications only.

The present document is intended to cover the provisions of Article 3.2 of Directive 1999/5/EC [1] (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".

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# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version 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.

- [1] 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).
- [2] ETSI EN 302 500-1 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD) using Ultra-WideBand technology, Location Tracking equipment operating in the frequency range from 6 GHz to 8,5 GHz; Part 1: Technical characteristics and test methods".
- [3] 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.

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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 [1] and EN 302 500-1 [2] apply.

## 3.2 Symbols

For the purposes of the present document, the symbols given in EN 302 500-1 [2] apply.

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 302 500-1 [2] 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 8.2.3 of EN 302 500-1 [2].

#### 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 [2], clause 8.3.3.

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

The maximum peak equivalent isotropically radiated power (e.i.r.p) spectral density shall not exceed the limits specified in clause 8.4.3 of EN 302 500-1 [2].

#### 4.2.1.4 Minimum Pulse Repetition Frequency (PRF)

The minimum Pulse Repetition Frequency (PRF) shall comply with the limit specified in clause 8.5.3 of EN 302 500-1 [2].

This requirement applies to transmitters using impulsive UWB signals.

### 4.2.2 Receiver requirements

#### 4.2.2.1 Maximum receiver spurious radiations

The receiver spurious radiations as defined in EN 302 500-1 [2], clause 9.1.1, shall not exceed the limit specified in EN 302 500-1 [2], clause 9.1.3.

## 4.3 Design requirements

The equipment shall comply with the additional design requirements as defined in annex C of EN 302 500-1 [2].

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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 8.2.2 of EN 302 500-1 [2] shall be carried out.

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

The test defined in clause 8.3.2 of EN 302 500-1 [2] shall be carried out.

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

The test defined in clause 8.4.2 of EN 302 500-1 [2] shall be carried out.

#### 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 [2], shall be carried out.

### 5.3 Interpretation of measurement results

Clause 7 of EN 302 500-1 [2] 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 essential 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;
- it provides a statement of all the test procedures corresponding to those essential requirements by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in 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 technical requirements and test specifications are relevant to the presumption of conformity under Article 3.2 of the R&TTE Directive						
<b>Essential 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. spectral density	4.2.1.3	U		E	5.2.1.3
<b>4</b>	Minimum Pulse Repetition Frequency	4.2.1.4	C	Applies to transmitters using impulsive UWB signals	X	
<b>5</b>	Maximum receiver spurious radiations	4.2.2.1	U		E	5.3.1.1
<b>6</b>	Design requirements	4.3	U		E	-



**Key to columns:****Essential Requirement:**

**No** Table entry number.

**Description** A textual reference to the Essential Requirement.

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

**Conditionality:**

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

**Condition** Explains the conditions when the requirement shall or shall not be applicable for a 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 essential requirements. Tests designated "E" collectively make up the Essential Radio Test Suite; those designated "O" make up the Other Test Suite. For those requirements for which no test specification applies are designated "X". All tests classified "E" shall be performed as specified with satisfactory outcomes in order to allow a presumption of conformity. Requirements associated with tests classified "O" or "X" must be complied with although the requirement shall be complied with as demonstrated by an equivalent test or by assertion by the supplier and asserted to be complied with to allow presumption of conformity.

**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.

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

Language	EN title
Czech	Elektromagnetická kompatibilita a rádiové spektrum (ERM) - Zařízení krátkého dosahu používající technologii velmi širokého pásma (UWB) - Zařízení pro sledování polohy pracující v kmitočtovém rozsahu od 6 GHz do 9 GHz - Část 2: Harmonizovaná EN pokrývající základní požadavky článku 3.2. Směrnice R&TTE
Danish	
Dutch	Elektromagnetische compatibiliteit en radiospectrumkwesties (ERM); Ap paratuur voor kort bereik (SRD) die gebruik maakt van ultra-breedband technologie; Positie volgsysteem apparatuur in het frequentiegebied van 6 GHz tot 9 GHz; Deel 2: Geharmoniseerde EN welke invulling geeft aan de essentiële eisen van artikel 3.2 van de R&TTE richtlijn
English	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 8,5 GHz; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive
Estonian	Elektromagnetilise ühilduvuse ja raadiospektri küsimused (ERM); Ultralairiba (UWB) tehnoloogiat kasutavad lähetoimeseadmed; Raadiosagedusalas 6 GHz kuni 9 GHz töötavad jälgimisseadmed; Osa 2: Harmoneeritud EN R&TTE direktiivi artikli 3.2 põhinõuete alusel
Finnish	Sähkömagneettinen yhteensopivuus ja radiospektriasiat (ERM); UWB-teknologiaa käytävät lyhyen kantaman laitteet (SRD); Taajuusalueella 6 GHz - 9 GHz toimivat paikannuslaitteet; Osa 2: Yhdenmukaistettu standardi (EN), joka kattaa R&TTE-direktiivin artiklan 3.2 mukaiset olennaiset vaatimukset
French	Télécommunications -CEM et spectre radioélectrique (ERM) - Appareils à courte portée (SRD)- Appareils à courte portée (SRD) utilisant la technologie de bande ultra large (UWB) Equipements de géolocalisation opérant dans la bande de fréquence de 6GHz à 9 GHz. Partie 2: EN harmonisée sous couvert de l'article 3.2 de la Directive R&TTE
German	Elektromagnetische Verträglichkeit und Funkspektrumangelegenheiten (ERM); Funkanlagen geringer Reichweite (SRD) für Ultra Wide Band Technologie, Lokalisierungsanwendungen im Frequenzbereich von 6 GHz bis 8,5 GHz; Teil 2: Harmonisierte Europäische Norm (EN) mit wesentlichen Anforderungen nach R&TTE-Richtlinie Artikel 3.2.
Greek	Ηλεκτρομαγνητική Συμβατότητα και Θέματα Ραδιοφάσματος (ERM) – Συσκευές μικρής εμβέλειας (SRD) που χρησιμοποιούν υπερευρυζωνική τεχνολογία (UWB) – Εξοπλισμός ιχνηλάτησης θέσης που λειτουργεί στην περιοχή συχνοτήτων από 6 GHz ως 8,5 GHz – Μέρος 2: Εναρμονισμένο ΕΝ για την κάλυψη των ουσιωδών απαιτήσεων του άρθρου 3.2 της Οδηγίας R&TTE
Hungarian	
Icelandic	
Italian	
Latvian	
Lithuanian	Elektromagnetinio suderinamumo ir radijo dažnių spektro dalykai. Trumpojo nuotolio įtaisai, naudojanrys ultraplačios juostos technologiją. Vietos sekimo įrenginiai, veikiantys dažnių juostoje nuo 6 GHz iki 9 GHz. 2 dalis. Darnusis Europos standartas, apimantis esminius 1999/5/EC* direktyvos 3.2 straipsnio reikalavimus
Maltese	Kompatibilità elettromanjetika u materji relatati ma' spettru radjofoniku (ERM); Apparati għal medda qasira (SRD) li juża teknologija Ultra Wide Band (UWB); tagħmir li jsib fejn qiegħda xi ħaġa li jopera fil-medda ta' frekwenzi 6 GHz sa 9 GHz; Parti 2: EN armonizzata li jkopri rekwiżiti essenzjali ta' l-artiklu 3.2 tad-Direttiva R&TTE
Norwegian	Elektromagnetisk kompatibilitet og radiospektrumspørsmål (ERM); Kortdistanseheter (SRD) som benytter ultrabredbånds (UWB) teknologi; Lokaliserings- og sporingsutstyr som opererer i frekvensområdet fra 6 GHz til 9 GHz; Del 2: Harmonisert EN som dekker de grunnleggende krav i R&TTE- direktivets artikkel 3.2
Polish	
Portuguese	Assuntos de Espectro Radioelétrico e Compatibilidade Electromagnética (ERM); Equipamentos de curto alcance (SRD) que utilizam tecnologia de Banda Ultra Larga (UWB); Equipamento de localização que opere na faixa de frequências de 6 GHz a 9 GHz; Parte 2: EN Harmonizada cobrindo os requisitos essenciais no âmbito do artigo 3.º, n.º 2, da Directiva R&TTE
Slovak	Elektromagnetická kompatibilita a závislosti rádiového spektra (ERM). Zariadenia s krátkym dosahom (SRD) využívajúce technológiu ultraširokého pásma (UWB). Zariadenia na sledovanie polohy pracujúce vo frekvenčnom rozsahu od 6 GHz do 9 GHz. Časť 2: Harmonizovaná EN vzťahujúca sa na základné požiadavky podľa článku 3.2 smernice R&TTE

Language	EN title
Slovenian	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 essential requirements of article 3.2 of the R&TTE Directive
Spanish	Cuestiones de compatibilidad electromagnética y espectro de radiofrecuencia (ERM); Dispositivos de Corto Alcance (SRD) que utilizan tecnología de banda ultra ancha (UWB), funcionando en la gama de frecuencias de 6 GHz a 8,5 GHz; Parte 2: Norma Europea (EN) armonizada cubriendo los requisitos esenciales según el artículo 3.2 de la Directiva R&TTE
Swedish	Elektromagnetisk kompatibilitet och radiospektrumfrågor (ERM); Kortdistansutrustning (SRD) som använder teknologi med extrem bandbredd (UWB); Utrustning för positionering arbetande i frekvensområdet från 6 GHz till 9 GHz; Del 2: Harmoniserad EN omfattande väsentliga krav enligt artikel 3.2 i R&TTE-direktivet

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## Annex C (informative): Bibliography

ECC/DEC/(06)04 ECC Decision of 24 March 2006 on the harmonised conditions for devices using 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); System Reference Document, Part 3: Location tracking applications operating in the frequency band from 6 GHz to 9 GHz".

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## History

<b>Document history</b>			
V1.1.1	May 2006	Public Enquiry	PE 20060922: 2006-05-24 to 2006-09-22
V1.1.1	November 2006	Vote	V 20070126: 2006-11-27 to 2007-01-26