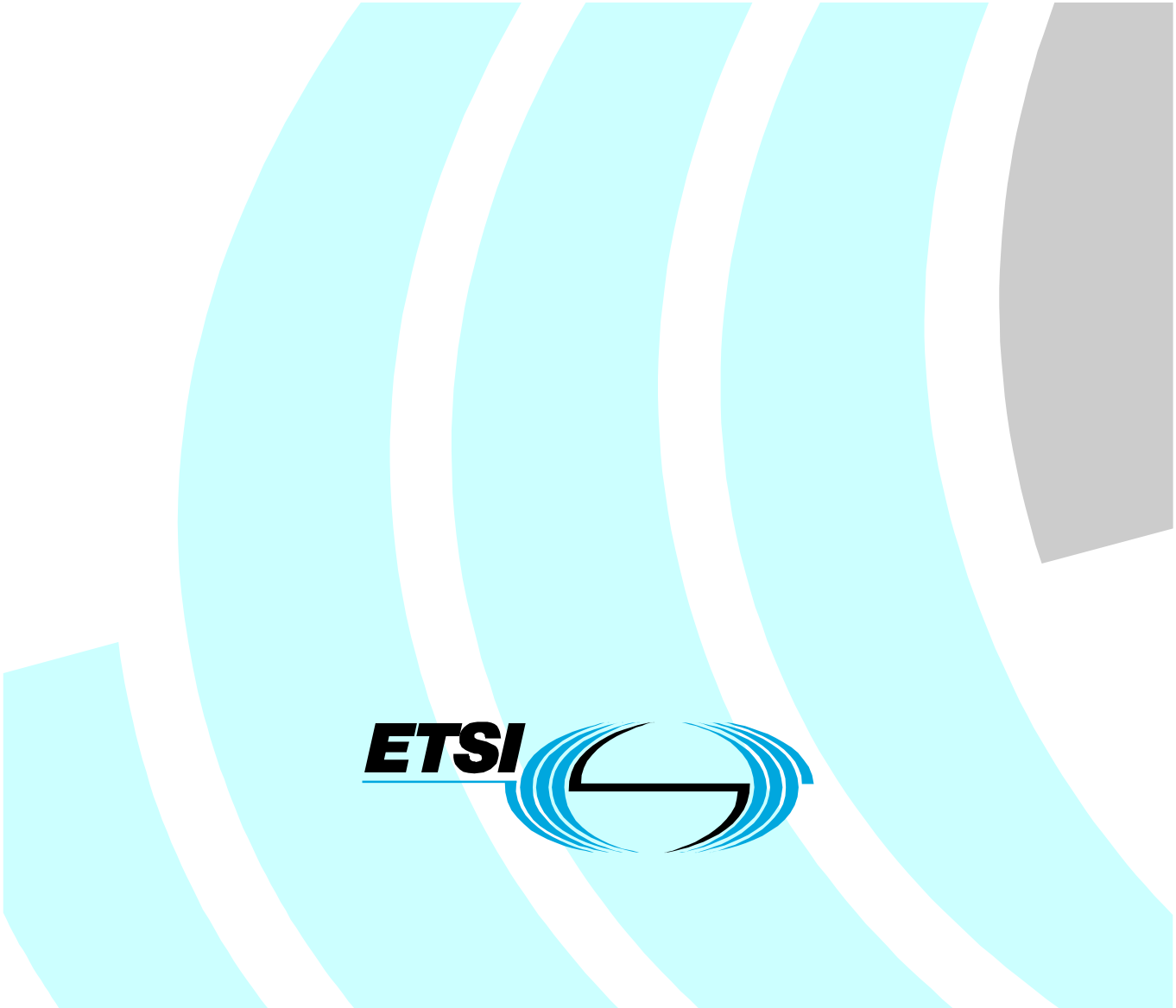
ETSI EN 302 291-2 V1.1.1 (2005-07)

Candidate Harmonized European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Close Range Inductive Data Communication equipment operating at 13,56 MHz; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive



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Foreword

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

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC (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") [1].

The present document is part 2 of a multi-part deliverable covering the Short Range Devices (SRD); Close Range Inductive Data Communication equipment operating at 13,56 MHz as identified below:

Part 1: "Technical characteristics and test methods";

Part 2: "Harmonized EN under article 3.2 of the R&TTE Directive".

National transposition dates	
Date of adoption of this EN:	8 July 2005
Date of latest announcement of this EN (doa):	31 October 2005
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 April 2006
Date of withdrawal of any conflicting National Standard (dow):	30 April 2007

Introduction

The present document is part of a set of standards designed to fit in a modular structure to cover all radio and telecommunications terminal equipment under the R&TTE Directive [1]. Each standard is a module in the structure. The modular structure is shown in figure 1.

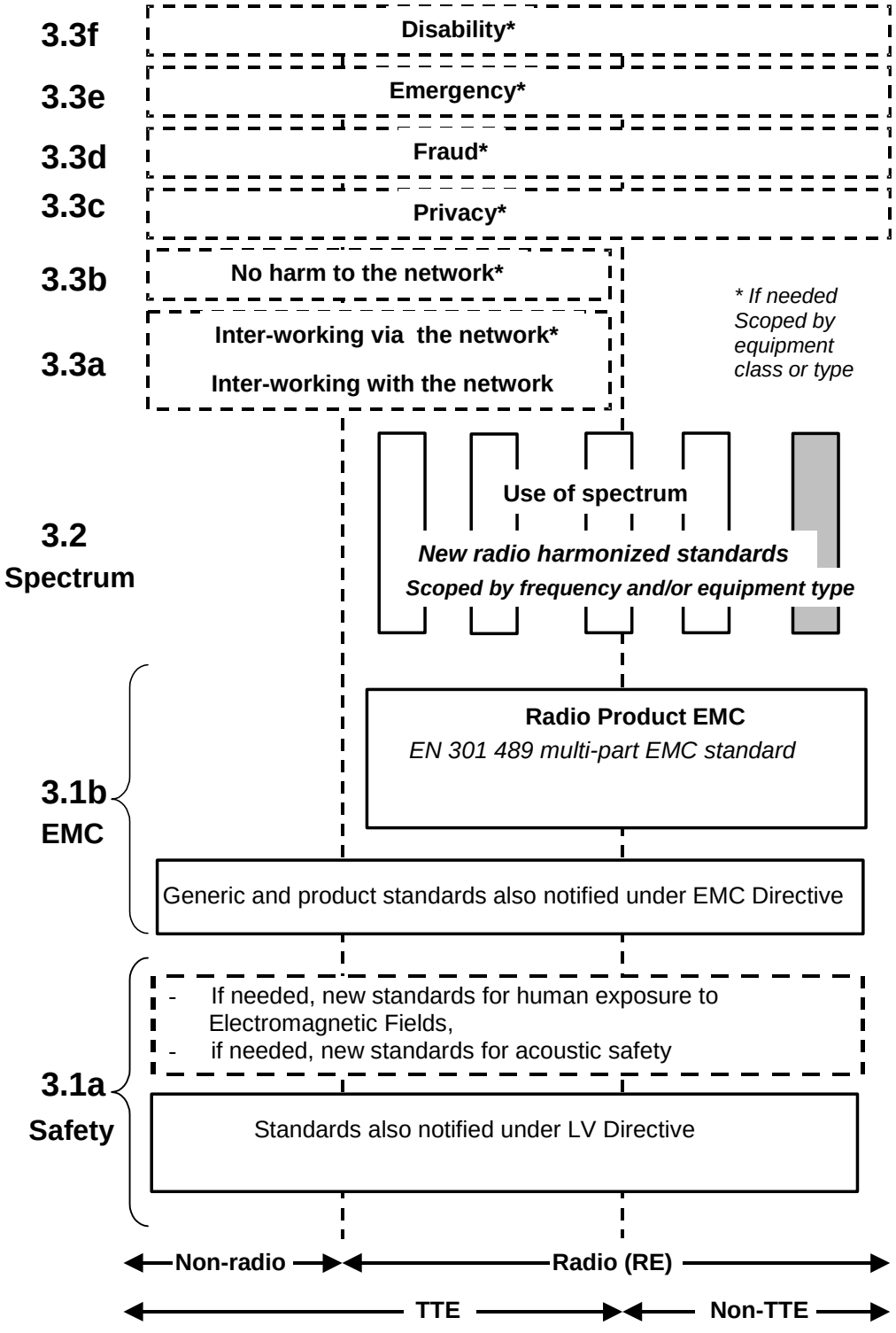

Figure 1: Modular structure for the various standards used under the R&TTE Directive [1]

The left hand edge of the figure shows the different clauses of article 3 of the R&TTE Directive [1].

For article 3.3 various horizontal boxes are shown. Dotted lines indicate that at the time of publication of the present document essential requirements in these areas have to be adopted by the Commission. If such essential requirements are adopted, and as far as long as they are applicable, they will justify individual standards whose scope is likely to be specified by function or interface type.

The vertical boxes show the standards under article 3.2 for the use of the radio spectrum by radio equipment. The scopes of these standards are specified either by frequency (normally in the case where frequency bands are harmonized) or by radio equipment type.

For article 3.1b the diagram shows EN 301 489, the multi-part product EMC standard for radio used under the EMC Directive.

For article 3.1a the diagram shows the existing safety standards currently used under the LV Directive and new standards covering human exposure to electromagnetic fields. New standards covering acoustic safety may also be required.

The bottom of the figure shows the relationship of the standards to radio equipment and telecommunications terminal equipment. A particular equipment may be radio equipment, telecommunications terminal equipment or both. A radio spectrum standard will apply if it is radio equipment. An article 3.3 standard will apply as well only if the relevant essential requirement under the R&TTE Directive is adopted by the Commission and if the equipment in question is covered by the scope of the corresponding standard. Thus, depending on the nature of the equipment, the essential requirements under the R&TTE Directive may be covered in a set of standards.

The modularity principle has been taken because:

- it minimizes the number of standards needed. Because equipment may, in fact, have multiple interfaces and functions it is not practicable to produce a single standard for each possible combination of functions that may occur in an equipment;
- it provides scope for standards to be added:
  - under articles 3.2 when new frequency bands are agreed; or
  - under article 3.3 should the Commission take the necessary decisions;

  without requiring alteration of standards that are already published;
- it clarifies, simplifies and promotes the usage of Harmonized Standards as the relevant means of conformity assessment.

1 Scope

The present document covers the minimum characteristics considered necessary in order to make the best use of the available frequencies. It does not necessarily include all the characteristics that may be required by a user, nor does it necessarily represent the optimum performance achievable.

Close Range Inductive Data Communication equipment covered within the present document are considered by definition short-range devices. The power limits for frequency bands will be found in the current version of CEPT/ERC Recommendation 70-03 [2] (or national regulations).

The present document applies to Close Range Inductive Data transmitters and receivers operating at 13,56 MHz.

ElectroMagnetic Compatibility (EMC) requirements are covered by EN 301 489-1 [3] and EN 301 489-3 [6].

The present document covers fixed stations, mobile stations and portable stations. If a system includes transponders, these are measured together with the transmitter.

The present document is intended to cover the provisions of Directive 1999/5/EC (R&TTE Directive) [1] article 3.2, 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 [1] will 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/.

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.

[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] CEPT/ERC Recommendation 70-03: "Relating to the use of Short Range Devices (SRD)".

[3] ETSI EN 301 489-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".

[4] ETSI TR 100 028 (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

[5] ETSI EN 302 291-1 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Close Range Inductive Data Communication equipment operating at 13,56 MHz; Part 1: Technical characteristics and test methods".

[6] ETSI EN 301 489-3: "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz".

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 302 291-1 [5] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in EN 302 291-1 [5] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 302 291-1 [5] apply.

4 Technical requirements specifications

4.1 General requirements

The provider shall declare that the equipment operates in accordance the general requirements defined in EN 302 291-1 [5], clause 4.1.

4.2 Transmitter requirements

4.2.1 Radiated field strength

4.2.1.1 Radiated H-field

The transmitter radiated H-field, as defined in EN 302 291-1 [5], clause 7.1.1.1, shall not exceed the limits in EN 302 291-1 [5], clause 7.1.1.3, table 4 and figure 1.

This requirement applies to transmitters with an integral or dedicated antenna.

4.2.2 Transmitter spurious emissions

4.2.2.1 Conducted spurious emissions above 30 MHz

The conducted spurious emissions above 30 MHz, as defined EN 302 291-1 [5], clause 7.2.1, shall not exceed the limits in EN 302 291-1 [5], clause 7.2.2.2, table 5.

4.2.2.2 Radiated spurious emissions below 30 MHz

The radiated spurious emissions below 30 MHz, as defined in EN 302 291-1 [5], clause 7.2.1, shall not exceed the limits in EN 302 291-1 [5], clause 7.2.3.2, table 6.

This requirement applies to all transmitters.

4.2.2.3 Radiated spurious power above 30 MHz

The radiated spurious emissions above 30 MHz, as defined in EN 302 291-1 [5], clause 7.2.1, shall not exceed the limits in EN 302 291-1 [5], clause 7.2.4.2, table 7.

This requirement applies to all transmitters.

4.2.3 Duty cycle

The provider of the equipment shall declare the transmit duty cycle, as defined in EN 302 291-1 [5], clause 7.3.1 according to EN 302 291-1 [5], clause 7.3.2.

The equipment shall not exceed the limits in EN 302 291-1 [5], clause 7.3.3, table 8 as declared by the provider.

This requirement applies to all transmitters.

4.3 Receiver requirements

4.3.1 Receiver spurious radiations

4.3.1.1 Radiated emissions below 30 MHz

The spurious radiations below 30 MHz, as defined in EN 302 291-1 [5], clauses 8.2 and 8.2.1, shall not exceed the limits in EN 302 291-1 [5], clause 8.2.3.1, table 10.

Not required for transceivers or co-located receivers and transmitters using continuous transmissions.

4.3.1.2 Radiated and conducted emissions above 30 MHz

The spurious radiations above 30 MHz, as defined in EN 302 291-1 [5], clauses 8.2 and 8.2.1, shall not exceed the limits in EN 302 291-1 [5], clause 8.2.3.2.

Not required for transceivers or co-located receivers and transmitters using continuous transmissions.

5 Testing for compliance with technical requirements

5.1 Essential radio test suites

5.1.1 Environmental conditions for testing

5.1.1.1 Normal and extreme test-conditions

The test conditions shall be as declared by the manufacturer.

The test procedures shall be as specified in EN 302 291-1 [5], clauses 5.3, 5.4.1 and 5.4.2.

5.1.1.2 Test power source

The test power source shall meet the requirements of EN 302 291-1 [5], clause 5.2.

5.1.2 Choice of samples for test suites

Measurement shall be performed, according to the present document, on samples of equipment defined in EN 302 291-1 [5], clauses 4.2.1 to 4.2.4.

5.1.3 Transmitter test suites

5.1.3.1 Effective radiated H-field

The test specified in EN 302 291-1 [5], clause 7.1.1.2 shall be carried out.

This test suite applies for transmitters with an integral or dedicated antenna.

5.1.3.2 Transmitter spurious emissions

The test specified in EN 302 291-1 [5], clause 7.2.3.1 and EN 302 291-1 [5], clause 7.2.2.1 or clause 7.2.4.1 shall be carried out.

This test suite applies for transmitters with an integral or dedicated antenna.

5.1.4 Receiver test suites

5.1.4.1 Receiver spurious emissions

The tests specified in EN 302 291-1 [5], clauses 8.2 and 8.2.2 shall be carried out.

This test suite applies for receivers with an integral or dedicated antenna.

6 Interpretation of measurement results

The interpretation of the results recorded in the test report for the measurements described in the present document shall be as follows:

- the measured value related to the corresponding limit shall be used to decide whether an equipment meets the requirements of the present document;
- the value of the measurement uncertainty for the measurement of each parameter shall be separately included in the test report;
- the value of the measurement uncertainty shall be, for each measurement, equal to or lower than the figures in table 1.

Table 1: Measurement uncertainty

RF frequency	$\pm 1 \times 10^{-7}$
RF power, conducted	±1 dB
Conducted emission of receivers	±1 dB
Radiated emission of transmitter	±6 dB
Radiated emission of receiver	±6 dB
Temperature	±1°C
Humidity	±5 %

For the test methods, according to the present document the uncertainty figures shall be calculated according to the methods described in the TR 100 028 [4] and shall correspond to an expansion factor (coverage factor) k = 1,96 or k = 2 (which provide confidence levels of respectively 95 % and 95,45 % in case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Table 1 is based on such expansion factors.

The particular expansion factor used for the evaluation of the measurement uncertainty shall be stated.

Annex A (normative): The EN Requirements Table (EN-RT)

The EN Requirements Table (EN-RT) serves a number of purposes, as follows:

- it provides a tabular summary of all the requirements;
- it shows the status of each EN-R, whether it is essential to implement in all circumstances (Mandatory), or whether the requirement is dependent on the supplier having chosen to support a particular optional service or functionality (Optional). In particular it enables the EN-Rs associated with a particular optional service or functionality to be grouped and identified;
- when completed in respect of a particular equipment it provides a means to undertake the static assessment of conformity with the EN.

Table A.1: EN Requirements Table (EN-RT)

EN Reference		EN 302 291-2				Comment
No.	**Reference**	**EN-R (see note 1)**	**Status**			
1	4.1	General performance criteria	M			
2	4.2.1.1	Effective radiated fieldstrength	M			
3	4.2.1.1	Transmission spectrum mask	M			
4	4.2.2.2	Transmitter spurious emissions < 30 MHz	M			
5	4.2.2.1 or 4.2.2.3	Transmitter spurious emissions > 30 MHz	M			
6	4.2.3	Transmitter duty cycle	M			
7	4.3.1.1	Receiver spurious emissions < 30 MHz, (see note 2)	M			
8	4.3.1.2	Receiver spurious emissions > 30 MHz, (see note 2)	M			
NOTE 1: These EN-Rs are justified under article 3.2 of the R&TTE Directive. NOTE 2: Not required for transceivers or co-located receivers and transmitters using continuous transmissions.						

Key to columns:

No Table entry number;

Reference Clause reference number of conformance requirement within the present document;

EN-R Title of conformance requirement within the present document;

Status Status of the entry as follows:

M Mandatory, shall be implemented under all circumstances.

Comments To be completed as required.

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

Language	EN title
Czech	Elektromagnetická kompatibilita a rádiové spektrum (ERM) - Zařízení krátkého dosahu (SRD) - Zařízení datových komunikací blízkého dosahu s induktivním přenosem, pracující na 13,56 MHz - Část 2: Harmonizovaná EN podle článku 3.2 Směrnice R&TTE
Danish	Elektromagnetisk kompatibilitet og spektrumanliggender (ERM) – Apparater med kort rækkevidde (SRD) - Induktivt koblet datakommunikationsudstyr, der benytter frekvensen 13,56 MHz - Del 2: Harmoniseret EN, der dækker de væsentlige krav i R&TTE direktivets artikel 3.2
Dutch	Elektromagnetische compatibiliteit en radiospectrumaangelegenheden (ERM);Apparatuur voor kort bereik (SRD);Kort bereik inductief materiaal voor uitwisseling van gegevens werkend op 13,56 MHz;Deel 2: Geharmoniseerde EN onder artikel 3.2 van de R&TTE Richtlijn
English	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Close Range Inductive Data Communication equipment operating at 13,56 MHz; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive
Estonian	Elektromagnetilise ühilduvuse ja raadiospektri küsimused (ERM); Lähitoimeseadmed; Sagedusalas 13,56 MHz töötavad induktiivsed lähitoime andmeedastusseadmed; Osa 2: Harmoneeritud EN R&TTE direktiivi artikli 3.2 alusel
Finnish	Sähkömagneettinen yhteensopivuus ja radiospektriasiat (ERM); Lyhyen kantaman radiolaitteet (SRD); 13,56 MHz:n taajuudella toimivien lyhyen matkan induktiiviset datasiirtolaitteet; Osa 2: R&TTE-direktiivin artiklaan 3.2 perustuva yhdenmukaistettu standardi
French	Télécommunications -Compatibilité électromagnétique et spectre radioélectrique (ERM) - Appareils à courte portée (SRD) - Equipements de courtes portées à communications numériques inductives opérant à 13,56 MHz - Partie 2 : EN harmonisée sous couvert de l'article 3,2 de la Directive R&TTE
German	Elektromagnetische Verträglichkeit und Funkspektrumangelegenheiten (ERM) – Funkanlagen mit geringer Reichweite (SRD) – Induktive Datenkommunikationsgeräte für den Nahbereich zum Betrieb bei 13,56 MHz – Teil 2: Harmonisierte EN nach Artikel 3.2 der R&TTE-Richtlinie
Greek	
Hungarian	Elektromágneses összeférhetőségi és rádióspektrumügyek (ERM). Kis hatótávolságú eszközök (SRD). 13,56 MHz-en működő, kis távolságú, induktív adatkommunikációs berendezés. 2. rész: Az R&TTE-irányelv 3.2. cikkelye alá tartozó, harmonizált európai szabvány
Icelandic	
Italian	Compatibilità elettromagnetica e problematiche di Spettro Radio (ERM); Dispositivi a breve portata (SRD); Apparecchiature di prossimità induttive per comunicazioni dati operanti a 13,56 MHz; Parte 2: Norma Europea armonizzata per l'articolo 3.2 della direttiva R & TTE
Latvian	
Lithuanian	Elektromagnetinio suderinamumo ir radijo dažnių spektro dalykai. Trumpojo nuotolio įtaisai. Artimojo nuotolio induktyvioji duomenų perdavimo įranga, veikianti 13,56 MHz dažniu. 1 dalis. Techninės charakteristikos ir bandymo metodai
Maltese	Kompatibilità elettromanjetika u materji relatati ma' spettru radjofoniku (ERM); Apparati ta' Medda Qasira (SRD); Tagħmir ta' Komunikazzjoni ta' Data Induttiv li jopera fuq Medda fil-Qrib f' 13,56 MHz; Parti 2: EN armonizzat taħt l-artiklu 3.2 tad-Direttiva R&TTE
Norwegian	Elektromagnetisk kompatibilitet og radiospektrumspørsmål (ERM); Kortdistanseutstyr (SRD); kortdistanse induktivt datakommunikasjonsutstyr som opererer i 13,56 MHZ; Del 2: Harmonisert EN under artikkel 3.2 i R&TTE-direktivet
Polish	Kompatybilność elektromagnetyczna i zagadnienia widma radiowego (ERM) - Urządzenia bliskiego zasięgu (SRD) - Urządzenia indukcyjnej transmisji danych na bardzo bliskie odległości pracujące na częstotliwości 13,56 MHz - Część 2: Zharmonizowana EN zgodna z artykułem 3.2 dyrektywy R&TTE
Portuguese	
Slovak	Elektromagnetická kompatibilita a záležitosti rádiového spektra (ERM). Zariadenia s krátkym dosahom (SRD). Induktívne zariadenia dátových komunikácií blízkeho dosahu pracujúce na 13,56 MHz. Časť 2: Harmonizovaná EN vzťahujúca sa na článok 3.2 smernice R&TTE
Slovenian	
Spanish	
Swedish	

Annex C (informative): Bibliography

- 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.
- Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC (EMC Directive).

History

Document history				
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V1.1.1	July 2005	Publication		