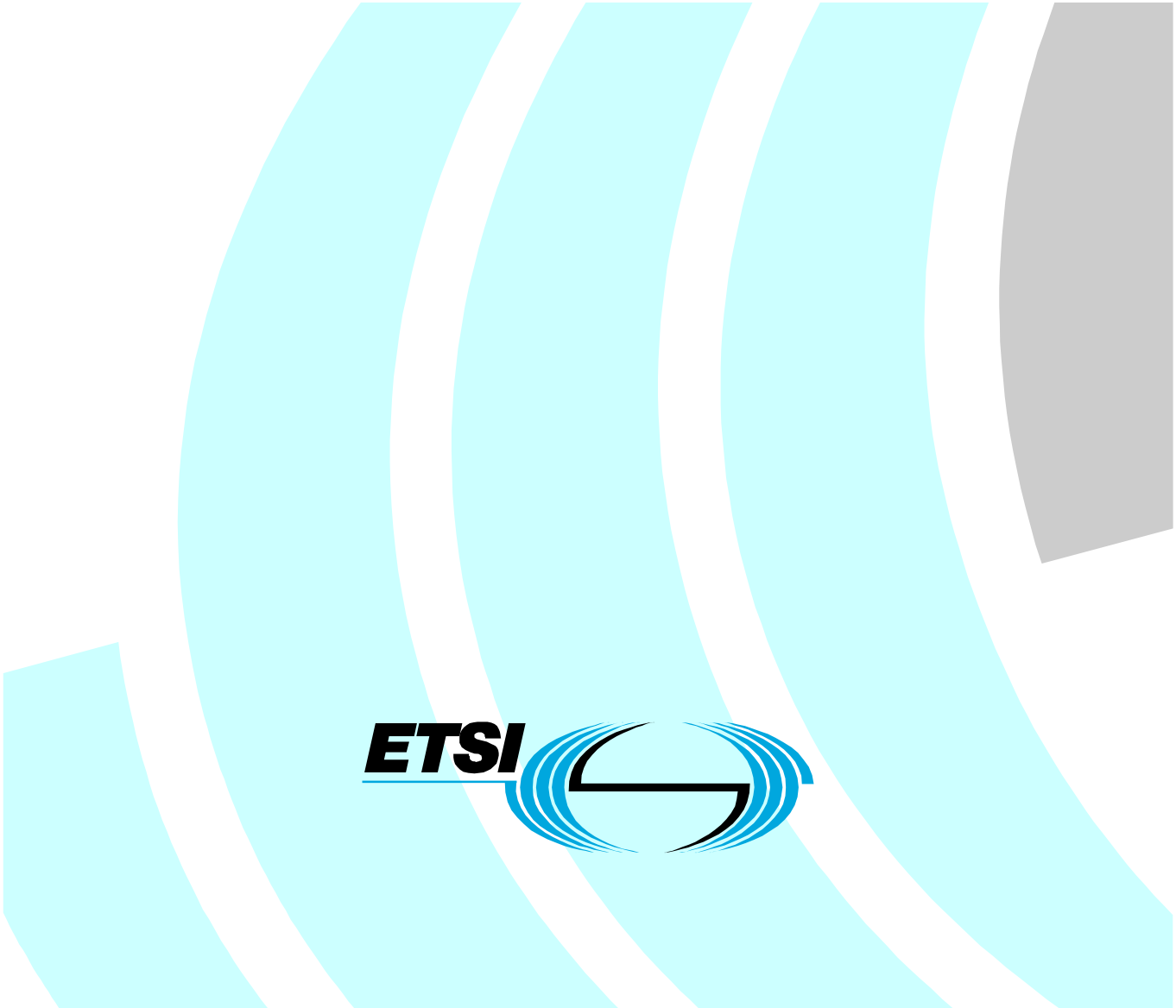
ETSI EN 302 054-2 V1.1.1 (2003-03)

Candidate Harmonized European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Meteorological Aids (Met Aids); Radiosondes to be used in the 400,15 MHz to 406 MHz frequency range with power levels ranging up to 200 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive



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Contents

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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 [3] 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").

The present document is part 2 of a multi-part deliverable, covering digitally modulated Radiosonde transmitters in the Meteorological Aids frequency band from 400,15 MHz to 406 MHz, as identified below:

Part 1: "Technical characteristics and test methods";

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

Technical specifications relevant to Directive 1999/5/EC [1] are given in annex A.

National transposition dates	
Date of adoption of this EN:	14 March 2003
Date of latest announcement of this EN (doa):	30 June 2003
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 December 2003
Date of withdrawal of any conflicting National Standard (dow):	30 June 2006

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.

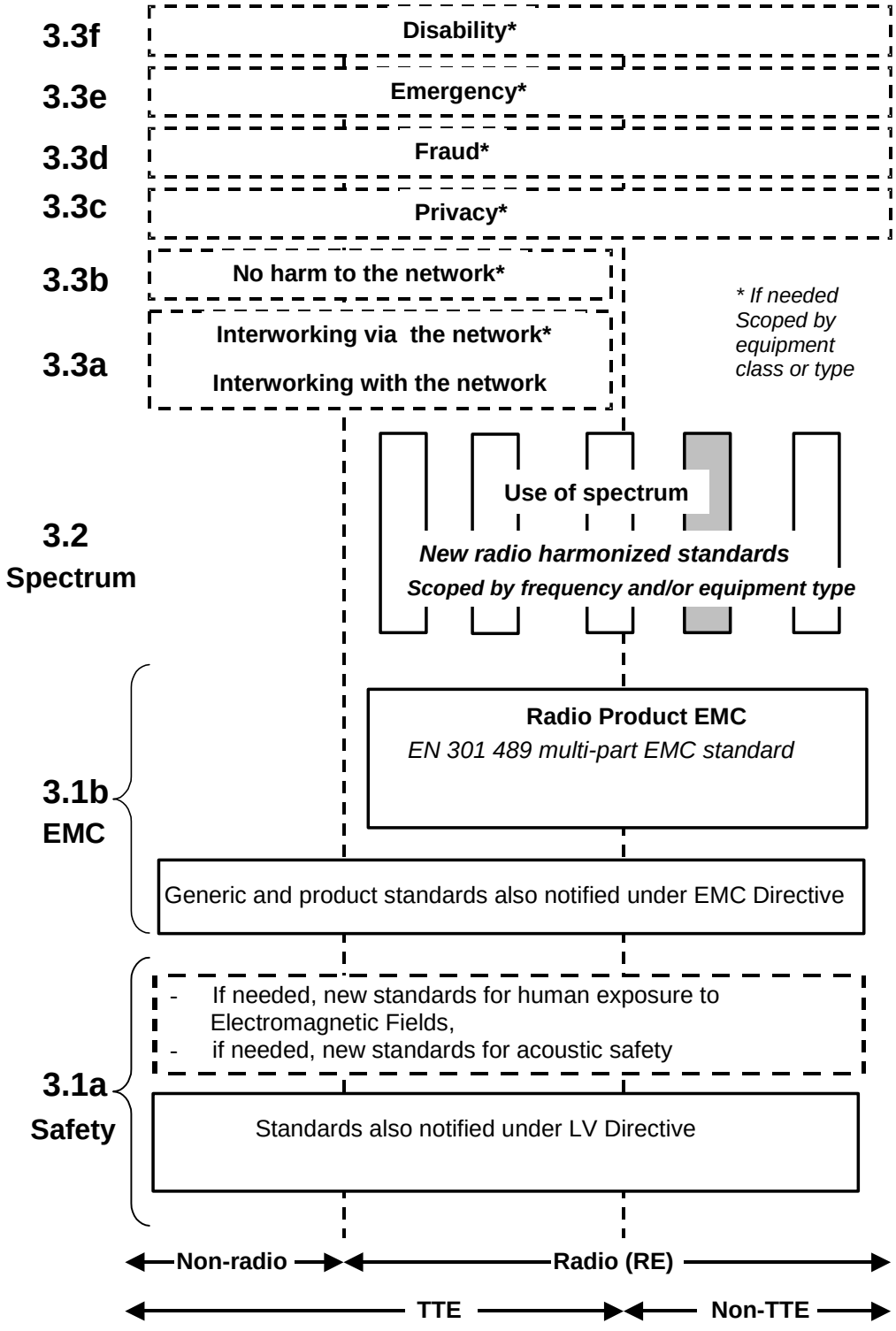

Figure 1: Modular structure for the various standards used under the R&TTE Directive [1]

The left hand edge of the figure 1 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 and 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 figure 1 shows EN 301 489 [6], the multi-part product EMC standard for radio used under the EMC Directive [7].

For article 3.1a figure 1 shows the existing safety standards currently used under the LV Directive [5] and new standards covering human exposure to electromagnetic fields. New standards covering acoustic safety may also be required.

The bottom of figure 1 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 [1] 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 [1] 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 article 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 applies to Radiosondes in the Meteorological Aids service as described in the scope of EN 302 054-1 [2].

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

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] ETSI EN 302 054-1: "Electromagnetic Compatibility and Radio spectrum Matters (ERM); Meteorological Aids (Met Aids); Radiosondes to be used in the 400,15 MHz to 406 MHz frequency range with power levels ranging up to 200 mW; 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.

[4] ETSI ETR 028: "Radio Equipment and Systems (RES); Uncertainties in the measurement of mobile radio equipment characteristics".

[5] Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits. (LV Directive).

[6] ETSI EN 301 489 (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services".

[7] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility. (EMC Directive).

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 302 054-1 [2] apply.

3.2 Symbols

For the purposes of the present document, the symbols defined in EN 302 054-1 [2] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations defined in EN 302 054-1 [2] apply.

4 Technical requirements specifications

4.1 Transmitter requirements

4.1.1 Frequency error or frequency drift

One of the following shall be met:

- the frequency error or frequency drift, as defined in EN 302 054-1 [2], clause 8.1.1, shall not exceed the limits given in EN 302 054-1 [2] in clause 8.1.2.

This requirement applies to all transmitters.

4.1.2 Carrier power (conducted)

The carrier power (conducted), as defined in EN 302 054-1 [2], clause 8.2.1, shall not exceed the limits in EN 302 054-1 [2], clause 8.2.3.

This requirement applies to transmitters which may be used without an integral or dedicated antenna.

4.1.3 Effective radiated power

The effective radiated power, as defined in EN 302 054-1 [2], clause 8.3.1, shall not exceed the limits given in EN 302 054-1 [2], clause 8.3.3.

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

4.1.4 Transmission spectrum

The transmission spectrum, as defined in EN 302 054-1 [2], clause 8.4.1, shall not exceed the limits in EN 302 054-1 [2], clause 8.4.3.

This requirement applies to all transmitters employing digital (non- analogue FM) modulation.

4.1.5 Range of modulation bandwidth

The modulation bandwidth, as defined in EN 302 054-1 [2], clause 8.5.1, shall not exceed the limits in EN 302 054-1 [2], clause 8.5.3.

This requirement applies to all transmitters if assigned frequency band has been subdivided into channels.

4.1.6 Spurious emissions

The spurious emissions, as defined in EN 302 054-1 [2], clause 8.6.1, shall not exceed the limits given in EN 302 054-1 [2], clause 8.6.5.

This requirement applies to all transmitters employing digital (non-analogue FM) modulation.

4.1.7 Frequency stability under low-voltage conditions

The frequency stability under low-voltage conditions, as defined in EN 302 054-1 [2], clause 8.7.1, shall comply conditions given in EN 302 054-1 [2], clause 8.7.3.

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

Type tests shall be made under normal test conditions, and also, where stated, under extreme test conditions.

The test procedures shall be as specified in EN 302 054-1 [2], clauses 5.3 to 5.4.

5.1.1.2 Test power source

The test power source shall meet the requirements of EN 302 054-1 [2], 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 302 054-1 [2], clauses 4.1.1 to 4.1.4.

5.1.3 Transmitter test suites

5.1.3.1 Frequency error or drift

The test specified in EN 302 054-1 [2], clause 8.1. shall be carried out.

5.1.3.2 Carrier power (conducted)

The test specified in EN 302 054-1 [2], clause 8.2 shall be carried out.

This test suite applies to Radiosondes which may be used without an integral or dedicated antenna.

5.1.3.3 Effective radiated power

The test specified in EN 302 054-1 [2], clause 8.3 shall be carried out.

This test suite applies to Radiosondes with an integral or dedicated antenna.

5.1.3.4 Range of modulation bandwidth

The tests specified in EN 302 054-1 [2], clause 8.5 1 shall be carried out.

This test suite applies to all transmitters if the assigned frequency band is divided into channels.

5.1.3.5 Transmission spectrum

The test specified in EN 302 054-1 [2], clause 8.4. shall be carried out.

This test suite applies to transmitters if the assigned frequency band is not divided into channels.

5.1.3.6 Spurious emissions

The test specified in EN 302 054-1 [2], clause 8.6 shall be carried out.

This test suite applies to all transmitters.

5.1.3.7 Frequency stability under low-voltage conditions

The test specified in EN 302 054-1 [2], clause 8.7 shall be carried out.

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	±0,75 dB
Maximum frequency deviation: - within 300 Hz and 6 kHz of audio frequency - within 6 kHz and 25 kHz of audio frequency	 ±5 % ±3 dB
Adjacent channel power	±3 dB
Conducted emission of transmitter, valid up to 12,75 GHz	±4 dB
Conducted emission of receivers	±3 dB
Radiated emission of transmitter, valid up to 12,75 GHz	±6 dB
Radiated emission of receiver, valid up to 12,75 GHz	±6 dB

For the test methods, according to the present document the uncertainty figures shall be calculated according to the methods described in the ETR 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 302 054-2				Comment
No.	**Reference**	**EN-R (see note)**	**Status**			
1	4.1.1	Frequency error or frequency drift	M			
2	4.1.2	Carrier power (conducted)	M			
3	4.1.3	Effective radiated power	M			
4	4.1.4	Transmission spectrum	M			
5	4.1.5	Range of modulation bandwidth	M			
6	4.1.6	Spurious emissions	M			
7	4.1.7	Frequency stability under low-voltage conditions	M			
NOTE: These EN-Rs are justified under article 3.2 of the R&TTE Directive.						

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.
- O Optional, may be provided, but if provided shall be implemented in accordance with the requirements.
- O.n this status is used for mutually exclusive or selectable options among a set. The integer "n" shall refer to a unique group of options within the EN-RT. A footnote to the EN-RT shall explicitly state what the requirement is for each numbered group. For example, "It is mandatory to support at least one of these options", or, "It is mandatory to support exactly one of these options".

Comments To be completed as required.

Annex B (informative): Bibliography

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

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

Language	EN title
Danish	Elektromagnetisk kompatibilitet og radiospektrumanliggender (ERM); Meteorologiske hjælpmidler (Met Aids); Radiosonder, som benytter frekvenser fra 400,15 kHz til 406 MHz med sendeeffekter op til 200 mW Del 2: Harmoniseret EN, som dækker de væsentlige krav i R og TTE-direktivets artikel 3.2.
Dutch	Elektromagnetische compatibiliteit en radiospectrumzaken (ERM); Meteorologische hulpmiddellen (Met Aids); te gebruiken in de frequentieband van 400,15 MHz tot 406 MHz en werkend met een maximale zendvermogen van 200 mW ; Deel 2: Geharmoniseerde Europese norm welke invulling geeft aan de wezelijke vereisten, neergelegd in artikel 3, lid 2, van Richtlijn 1999/5/EG Artikel 3, lid 2
English	Electromagnetic Compatibility and Radio spectrum Matters (ERM); Meteorological Aids (Met Aids); Radiosondes to be used in the 400,15 MHz to 406 MHz frequency range with power levels ranging up to 200 mW; Part 2: Harmonized EN covering essential requirementsunder article 3.2 of the R&TTE Directive
Finnish	Sähkömagneettinen yhteensopivuus ja radiospektriasiat (ERM); Meteorologian apulaitteet (Met Aids); Taajuusalueella 400,15 MHz - 406 MHz toimivat radiosondit, joiden teho on enintään 200 mW; Osa 2: Yhdenmukaistettu standardi (EN), joka kattaa R&TTE-direktiivin artiklan 3.2 mukaiset olennaiset vaatimukset
French	Compatibilité électromagnétique et spectre radioélectrique (ERM); Auxiliaires de la Météorologie (Met Aids); Les radiosondes fonctionnant dans la gamme de fréquences 400,15 MHz à 406 MHz avec des niveaux de puissance ne dépassant pas 200 mW Partie 2: Norme harmonisée couvrant les exigences essentielles de l'article 3.2 de la directive R&TTE Article 3, paragraphe 2
German	Electromagnetic Compatibility and Radio spectrum Matters (ERM); Wetterhilfenfunk; Radiosonden im Frequenzbereich von 400,15 MHz bis 406 MHz mit maximaler Strahlungsleistung von 200 mW; Teil 2: Harmonisierte Europäische Norm mit den wesentlichen Anforderungen gemäß Artikel 3.2 der R&TTE Direktive
Greek	Ηλεκτρομαγνητική συμβατότητα και Θέματα Ραδιοφάσματος (ERM): Μετεωρολογικά βοηθήματα (Met Aids): Ραδιοβολίδες που προορίζονται να χρησιμοποιηθούν στην περιοχή συχνοτήτων 400,15MHz ως 406MHz με στάθμη ισχύος ως 200mW: Μέρος 2: Εναρμονισμένο πρότυπο EN για την κάλυψη ουσιωδών απαιτήσεων του Άρθρου 3.2 της Οδηγίας R&TTE
Italian	Compatibilità Elettromagnetica e Spettro Radio (ERM); Sistemi Ausiliari della Meteorologia (Met Aids); Apparati radiosonde operanti nella banda di frequenza da 400,15 MHz a 406 MHz con livelli di potenza fino a 200 mW; Parte 2: Norma europea armonizzata relativa ai requisiti essenziali di cui all'articolo 3, paragrafo 2, della direttiva R&TTE Articolo 3, paragrafo 2
Portuguese	Assuntos de Espectro Radioeléctrico e Compatibilidade Electromagnética (ERM); Apoio à Meteorologia (Met Aids); Radiossondas para a faixa dos 400,15 MHz a 406 MHz com níveis de potência até 200 mW; Parte 2: EN harmonizada cobrindo os requisitos essenciais no âmbito do artigo 3.2 da Directiva R&TTE Artigo 3.2
Spanish	Compatibilidad Electromagnética y Cuestiones de Espectro de Radiofrecuencia (ERM); Ayudas a la Meteorologia (Met Aids); Las radiosondas para ser usadas en el rango de frecuencia entre 400,15 MHz y 406 MHz, con niveles de potencia hasta 200 mW Parte 2: EN armonizada cubriendo los requisitos esenciales según el apartado 2 del artículo 3 de la Directiva de R&TTE Apartado 2 del artículo 3
Swedish	Elektromagnetisk kompatibilitet och radiospektrumfrågor (ERM); Meteorologiska hjälpanordningar (Met Aids); Radiosonder för användnig i frekvensbandet 400,15 till MHz 406 MHz med effektnivåer upp till 200 mW; Del 2: Harmoniserad EN omfattande väsentliga krav enligt artikel 3.2 i R&TTE-direktivet

History

Document history			
V1.1.1	April 2002	Public Enquiry	PE 20020809: 2002-04-10 to 2002-08-09
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V1.1.1	March 2003	Publication	