

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Meteorological Aids (Met Aids);
Radiosondes to be used in the
1 668,4 MHz to 1 690 MHz frequency range;
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 has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC (as amended) [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 1 668,4 MHz to 1 690 MHz, 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".

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

Proposed national transposition dates	
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):	36 months after doa

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]. The modular structure is shown in EG 201 399.

1 Scope

The present document applies to Radiosondes in the Meteorological Aids service as described in the scope of EN 302 454-1 [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>.

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 302 454-1 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Meteorological Aids (Met Aids); Radiosondes to be used in the 1 668,4 MHz to 1 690 MHz frequency range; 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 TR 100 028 (V1.4.1) (2001-12): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

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 302 454-1 [2] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in EN 302 454-1 [2] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 302 454-1 [2] apply.

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 supplier. 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 Transmitter requirements

4.2.1 Frequency error

The following shall be met:

- The frequency error, as defined in EN 302 454-1 [2], clause 8.1.1, shall not exceed the limits given in EN 302 454-1 [2], clause 8.1.3.

This requirement applies to all transmitters.

4.2.2 Carrier power (conducted)

The carrier power (conducted), as defined in EN 302 454-1 [2], clause 8.2.1, shall not exceed the limits in EN 302 454-1 [2], clause 8.2.3.

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

4.2.3 Effective radiated power

The effective radiated power, as defined in EN 302 454-1 [2], clause 8.3.1, shall not exceed the limits given in EN 302 454-1 [2], clause 8.3.3.

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

4.2.4 Transmission power spectral density

The transmission spectrum, as defined in EN 302 454-1 [2], clause 8.4.1, shall not exceed the limits in EN 302 454-1 [2], clause 8.4.3.

This requirement applies to all transmitters employing digital modulation.

4.2.5 Spurious emissions

The spurious emissions, as defined in EN 302 454-1 [2], clause 8.5.1, shall not exceed the limits given in EN 302 454-1 [2], clause 8.5.5.

This requirement applies to all transmitters employing digital modulation.

4.2.6 Frequency stability under low-voltage conditions

The frequency stability under low-voltage conditions, as defined in EN 302 454-1 [2], clause 8.6.1, shall comply conditions given in EN 302 454-1 [2], clause 8.6.3.

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 302 454-1 [2], clauses 5.3 to 5.4.

5.1.1.2 Test power source

The test power source shall meet the requirements of EN 302 454-1 [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 302 454-1 [2], clauses 4.1.1 to 4.1.4.

5.1.3 Transmitter test suites

5.1.3.1 Frequency error

The test specified in EN 302 454-1 [2], clause 8.1 shall be carried out.

5.1.3.2 Carrier power (conducted)

The test specified in EN 302 454-1 [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 302 454-1 [2], clause 8.3 shall be carried out.

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

5.1.3.4 Transmission power spectral density

The test specified in EN 302 454-1 [2], clause 8.4 shall be carried out.

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

5.1.3.5 Spurious emissions

The test specified in EN 302 454-1 [2], clause 8.5 shall be carried out.

This test suite applies to all transmitters.

5.1.3.6 Frequency stability under low-voltage conditions

The test specified in EN 302 454-1 [2], clause 8.6 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	$\pm 0,75$ dB
Transmission spectrum	± 3 dB
Conducted emission of transmitter, valid up to 12,75 GHz	± 4 dB
Radiated emission of transmitter, 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 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 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 (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 dependant 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)

Harmonized Standard EN 302 454-2						
The following essential requirements and test specifications are relevant to the presumption of conformity under Article 3.2 of the R&TTE Directive						
Essential Requirement			Requirement Conditionality		Test Specification	
No	Description	Reference: Clause No	U/ C	Condition	E/O	Reference: Clause No
1	Frequency error	4.2.1	U		E	8.1
2	Carrier power conducted	4.2.2	U		E	8.2
3	Effective radiated power	4.2.3	U		E	8.3
4	Transmission power spectral density	4.2.4	U		E	8.4
5	Spurious emissions	4.2.5	U		E	8.5
6	Frequency stability under low voltage conditions	4.2.6	U		E	8.6

Key to columns:

Essential 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 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" or "X" 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.

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

Language	EN title
Bulgarian	
Czech	Elektromagnetická kompatibilita a rádiové spektrum (ERM) - Pomocné prostředky meteorologie (Met Aids) - Rádiové sondy používané v kmitočtovém rozsahu 1 668,4 MHz až 1690 MHz - Část 2: Harmonizovaná EN pokrývající základní požadavky podle článku 3.2 Smernice R&TTE
Danish	Elektromagnetisk kompatibilitet og radiospektrumanliggender (ERM); Meteorologiske hjælpmidler (Met Aids); Radiosonder, som benytter frekvenser fra 1 668,4 kHz til 1 690 MHz. Del 2: Harmoniseret EN, som dækker de væsentlige krav i R og TTE-direktivets artikel 3.2
Dutch	Elektromagnetische compatibiliteit en radiospectrumzaken (ERM); Meteorologische hulpmiddelen (Met Aids); te gebruiken in de frequentieband van 1 668,4 MHz tot 1 690 MHz; 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 1 668,4 MHz to 1 690 MHz frequency range; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive
Estonian	Elektromagnetilise ühilduvuse ja raadiospektri küsimused (ERM); Raadiometeoroloogia (Met Aids); Raadiosagedusvahemikus 1 668,4 MHz kuni 1 690 MHz töötavad raadiosondid; Osa 2: Harmoneeritud EN R&TTE direktiivi artikli 3.2 põhinõuete alusel
Finnish	Sähkömagneettinen yhteensopivuus ja radiospektriasiat (ERM); Meteorologian apulaitteet (Met Aids); Taajuusalueella 1 668,4 MHz - 1 690 MHz toimivat radiosondit; 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 1 668,4 MHz à 1 690 MHz; 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 1 668,4 MHz bis 1 690 MHz; 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 πρόκειται να χρησιμοποιηθούν στην περιοχή συχνοτήτων 1 668,4 MHz ως 1 690 MHz Μέρος 2: Εναρμονισμένο EN για την κάλυψη των ουσιαστών απαιτήσεων του άρθρου 3.2 της Οδηγίας R&TTE
Hungarian	Elektromágneses összeférhetőségi és rádióspektrumügyek (ERM). Meteorológiai segédszolgálatok (Met Aids). Az 1 668,4 MHz-tól 1 690 MHz-ig terjedő frekvenciatartományban használt rádiószondák. Az R&TTE-irányelv 3.2. cikkelyének alapvető követelményeit tartalmazó, harmonizált európai szabvány
Icelandic	Sampýðanleiki rafsegulbylgja og nýting á útvarpsbylgjusviði (ERM); Veðurfræðileg hjálpartæki (Met aids); Háloftakannar (radiósondur) sem nýta tíðnir frá 1668,4 MHz til 1690 MHz; - Annar hluti: Samræmdur Evrópustaðall (EN) sem nær yfir helstu skilyrði í grein 3.2 í R&TTE tilskipuninni
Italian	Compatibilità Elettromagnetica e Spettro Radio (ERM); Sistemi Ausiliari della Meteorologia (Met Aids); Apparati radiosonde operanti nella banda di frequenza da 1 668,4 MHz a 1 690 MHz; Parte 2: Norma europea armonizzata relativa ai requisiti essenziali di cui all'articolo 3, paragrafo 2, della direttiva R & TTE Articolo 3, paragrafo 2
Latvian	Elektromagnētiskā saderība un radio spektra jautājumi (ERM); Meteoroloģiskie līdzekļi (Met līdzekļi); radiozondes, kas lietojamas 1 668,4 MHz līdz 1 690 MHz frekvences joslā; 2. daļa: Saskaņots EN, kas regulē svarīgākās prasības saskaņā ar R&TTE Direktīvas 3.2. punktu
Lithuanian	Elektromagnetinio suderinamumo ir radijo dažnių spektro dalykai. Meteorologinės priemonės. Radijo zondai, naudojami nuo 1 668,4 MHz iki 1 690 MHz dažnių diapazone. 2 dalis. Darnusis Europos standartas, apimantis esminius reikalavimus pagal R&TTE direktyvos 3.2 straipsnį
Maltese	Kompatibilità elettromanjetika u materji relatati ma' spettru radjofoniku (ERM); Mezzi Meteorologici (Met Aids); Radjusondi li għandhom jintużaw fil-faxxa ta' frekwenzi 1668.4 MHz sa 1690 MHz; Parti 2: EN armonizzata li jkopri r-rekwiziti essenzjali taħt l-Artikolu 3.2 tad-Direttiva dwar R&TTE
Norwegian	
Polish	Kompatybilność elektromagnetyczna i zagadnienia widma radiowego (ERM) - Urządzenia meteorologiczne (Met Aids) – Sondy radiowe używane w zakresie częstotliwości od 1 668,4 MHz do 1 690 MHz - Część 2: Zharmonizowana EN zapewniająca spełnienie zasadniczych wymagań zgodnie z artykułem 3.2 dyrektywy R&TTE
Portuguese	Assuntos de Espectro Radioeléctrico e Compatibilidade Electromagnética (ERM); Apoio à Meteorologia (Met Aids); Radiossondas para a faixa dos 1 668,4 MHz a 1 690 MHz; Parte 2: EN harmonizada cobrindo os requisitos essenciais no âmbito do artigo 3.2 da Directiva R&TTE Artigo 3.2
Romanian	

Language	EN title
Slovak	Elektromagnetická kompatibilita a záležitosti rádiového spektra (ERM). Pomocné meteorologické prostriedky (Met Aids). Radiosondy určené pre frekvencný rozsah od 1 668,4 MHz do 1 690 MHz. Čast 2: Harmonizovaná EN vzťahujúca sa na základné požiadavky podľa článku 3.2 smernice R&TTE
Slovenian	Elektromagnetna združljivost (EMC) in zadeve v zvezi z radijskim spektrom (ERM) - Meteorološki pripomočki (Met Aids) - Radiosonde za uporabo v frekvenčnem območju od 1 668,4 MHz do 1 690 MHz - 2. del: Harmonizirani evropski standard (EN), ki zajema bistvene zahteve člena 3.2 direktive o radijski in telekomunikacijski terminalski opremi R&TTE
Spanish	Cuestiones de compatibilidad electromagnética y de espectro radiofrecuencia (ERM); Ayudas a la meteorología (Met Aids); radiosondas para ser utilizadas en la gama de frecuencias de 1 668,4 MHz a 1 690 MHz; Parte 2: Norma Europea (EN) armonizada que cubre los requisitos esenciales según artículo 3.2 de la Directiva R&TTE
Swedish	Elektromagnetisk kompatibilitet och radiospektrumfrågor (ERM); Meteorologiska hjälpanordningar (Met Aids); Radiosonder för användning i frekvensbandet 1 668,4 till MHz 1 690 MHz ; Del 2: Harmoniserad EN omfattande väsentliga krav enligt artikel 3.2 i R&TTE-direktivet

Annex C (informative): Bibliography

ETSI EN 301 489-1 (V1.6.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".

ETSI EG 201 399: "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".

History

Document history		
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