



**HARMONISED EUROPEAN STANDARD**

**Meteorological Aids (Met Aids);  
Radiosondes to be used in the  
1 668,4 MHz to 1 690 MHz frequency range;  
Part 2: Harmonised Standard covering the essential requirements  
of article 3.2 of the Directive 2014/53/EU**

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Reference

REN/ERM-JTFEA-24

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Keywords

radio, regulation, testing

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

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## Foreword

This draft Harmonised European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document has been prepared to provide a means of conforming to the essential requirements of Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.1].

NOTE: The corresponding Commission's standardization request is expected shortly.

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

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: "Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".**

<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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## Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

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## Executive summary

The present document contains Conformance requirements for Meteorological Aids (Radiosondes) to be used in the 1 668,4 to 1 690 MHz frequency range. These requirements are defined for frequency error, carrier power, effective radiated power, modulation bandwidth, spurious emissions and frequency stability under low voltage conditions.

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# 1 Scope

The present document applies to Radiosondes in the Meteorological Aids service to be used in the 1 668,4 MHz to 1 690 MHz frequency range.

The present document contains requirements to demonstrate that "... *Radio equipment shall be so constructed that it both effectively uses and supports the efficient use of radio spectrum in order to avoid harmful interference* " [i.1].

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## 2 References

### 2.1 Normative 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 referenced 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.

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

- [1] ETSI EN 302 454-1 (V1.2.0) (06-2015): "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".

### 2.2 Informative 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 referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

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 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.
- [i.2] ETSI TR 100 028-2 (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2".
- [i.3] ETSI TR 100 028 (all parts) (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".
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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 Radio Equipment Directive [i.1] and ETSI EN 302 454-1 [1] apply.

### 3.2 Symbols

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

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI EN 302 454-1 [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 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 Conformance requirements

### 4.2.1 Transmitter requirements

#### 4.2.1.1 Frequency error

The frequency error, as defined in ETSI EN 302 454-1 [1], clause 7.2.1, shall not exceed the limits given in ETSI EN 302 454-1 [1], clause 7.2.3.

In order to assess compliance the test procedure in clause 5.3.1.1 shall be done.

#### 4.2.1.2 Carrier power (conducted)

The carrier power (conducted), as defined in ETSI EN 302 454-1 [1], clause 7.3.1, shall not exceed the limits in ETSI EN 302 454-1 [1], clause 7.3.3.

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

In order to assess compliance the test procedure in clause 5.3.1.2 shall be done.

#### 4.2.1.3 Effective radiated power

The effective radiated power, as defined in ETSI EN 302 454-1 [1], clause 7.4.1, shall not exceed the limits given in ETSI EN 302 454-1 [1], clause 7.4.3.

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

In order to assess compliance the test procedure in clause 5.3.1.3 shall be done.

#### 4.2.1.4 Modulation bandwidth

The modulation bandwidth, as defined in ETSI EN 302 454-1 [1], clause 7.5.1, shall not exceed the limits in ETSI EN 302 454-1 [1], clause 7.5.3.

In order to assess compliance the test procedure in clause 5.3.1.4 shall be done.

#### 4.2.1.5 Spurious emissions

The spurious emissions, as defined in ETSI EN 302 454-1 [1], clause 7.6.1, shall not exceed the limits given in ETSI EN 302 454-1 [1], clause 7.6.3.

In order to assess compliance the test procedure in clause 5.3.1.5 shall be done.

#### 4.2.1.6 Frequency stability under low-voltage conditions

The frequency stability under low-voltage conditions, as defined in ETSI EN 302 454-1 [1], clause 7.7.1, shall comply conditions given in ETSI EN 302 454-1 [1], clause 7.7.3.

In order to assess compliance the test procedure in clause 5.3.1.6 shall be done.

## 5 Testing for compliance with technical requirements

### 5.1 Environmental conditions for testing

#### 5.1.1 Normal and extreme test-conditions

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

The test procedures shall be as specified in ETSI EN 302 454-1 [1], clauses 5.3 to 5.4.

#### 5.1.2 Test power source

The test power source shall meet the requirements of ETSI EN 302 454-1 [1], clause 5.2.

## 5.2 Interpretation of the measurement results

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

- the measured value related to the corresponding limit will 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 included in the test report;
- the recorded value of the measurement uncertainty shall be, for each measurement, equal to or lower than the figures in table 1.

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated 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 the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)). Principles for the calculation of measurement uncertainty are contained in ETSI TR 100 028 [i.3], in particular in annex D of the ETSI TR 100 028-2 [i.2].

Table 1 is based on such expansion factors.

**Table 1: Measurement uncertainty: maximum values**

Parameter	Uncertainty
RF frequency	$\pm 1 \times 10^{-7}$
RF power, conducted	$\pm 2,5$ dB
Radiated emission of transmitter, valid up to 12,75 GHz	$\pm 6$ dB
Conducted emission of transmitter, valid up to 12,75 GHz	$\pm 4$ dB
Temperature	$\pm 1$ °C
Relative Humidity	$\pm 10$ %RH
Voltage (DC)	$\pm 1$ %

### 5.3 Radio test suites

#### 5.3.1 Transmitter test specifications

##### 5.3.1.1 Frequency error

The test procedure is specified in ETSI EN 302 454-1 [1], clause 7.2.

##### 5.3.1.2 Carrier power (conducted)

The test procedure is specified in ETSI EN 302 454-1 [1], clause 7.3.



### 5.3.1.3 Effective radiated power

The test procedure is specified in ETSI EN 302 454-1 [1], clause 7.4.

### 5.3.1.4 Modulation bandwidth

The test procedure is specified in ETSI EN 302 454-1 [1], clause 7.5.

### 5.3.1.5 Spurious emissions

The test procedure is specified in ETSI EN 302 454-1 [1], clause 7.6.

### 5.3.1.6 Frequency stability under low-voltage conditions

The test procedure is specified in ETSI EN 302 454-1 [1], clause 7.7.

## Annex A (normative): Relationship between the present document and the essential requirements of Directive 2014/53/EU

The present document has been prepared to provide a means of conforming to the essential requirements of Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.1].

NOTE: The corresponding Commission's standardization request is expected shortly.

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

**Table A.1: Relationship between the present document  
and the essential requirements of Directive 2014/53/EU [i.1]**

Harmonised Standard ETSI EN 302 454-2				
The following requirements are relevant to the presumption of conformity under the article 3.2 of Directive 2014/53/EU [i.1]				
Requirement			Requirement Conditionality	
No	Description	Reference: Clause No	U/C	Condition
1	Frequency error	4.2.1.1	U	
2	Carrier power	4.2.1.2	U	
3	Effective radiated power	4.2.1.3	U	
4	Modulation bandwidth	4.2.1.4	U	
5	Spurious emission	4.2.1.5	U	
6	Frequency stability under low-voltage conditions	4.2.1.6	U	

### Key to columns:

#### Requirement:

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

**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 shall 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 requirement which is classified "conditional".

Presumption of conformity stays valid only as long as a reference to the present document is maintained in the list published in the Official Journal of the European Union. Users of the present document should consult frequently the latest list published in the Official Journal of the European Union.

Other Union legislation may be applicable to the product(s) falling within the scope of the present document.

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## History

<b>Document history</b>		
V1.1.1	July 2007	Publication
V1.2.0	June 2015	EN Approval Procedure AP 20151022: 2015-06-24 to 2015-10-22