



**Electromagnetic compatibility  
and Radio spectrum Matters (ERM);  
A guide to the production of Harmonized Standards for  
application under the Radio & Telecommunication Terminal  
Equipment Directive 1999/5/EC (R&TTE) and a first guide on  
the impact of the Radio Equipment Directive 2014/53/EU (RED)  
on Harmonized Standards**

## Reference

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## Keywords

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## Foreword

This ETSI Guide (EG) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The drafting of the present document has been triggered by the publication of the Radio Equipment Directive (RED) i.e. Directive 2014/53/EU [i.1].

In the present document the major differences between the R&TTE Directive [i.2] and the RED [i.1] and their impact in the drafting of Harmonized Standards have been highlighted. This approach has been followed as ETSI is working, at the moment when the present version of the Guide is being written, on a work programme whereby the Harmonized Standards supporting the R&TTE Directive [i.2] will be converted to support the RED [i.1]. It is therefore necessary to have the elements identifying what should be changed when converting the Harmonized Standards.

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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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## Introduction

Earlier versions of the present document had been prepared to assist ETSI Technical Bodies in the preparation of Harmonized Standards for application under the Radio Equipment and Telecommunications Terminal Equipment Directive (R&TTE Directive [i.2]) only. In addition, the present document addresses the first guidance on the impact on the drafting of Harmonized Standards for application under the Radio Equipment Directive (RED) [i.1]; furthermore, it supports a consistent interpretation of the technical (and possibly non-technical) requirements needed to implement the essential requirements of these Directives.

ETSI has published more than two hundred Harmonized Standards in relation to the R&TTE Directive. Therefore, the present document includes detailed comparisons of the two Radio Directives [i.2] and [i.1] (in particular in clause 4).

Aspects relating to the transition between the R&TTE Directive [i.2] to the RED [i.1] are covered in clause 7.3 of the present document.

Annex C to the present document gives some background to the R&TTE Directive [i.2] and to the RED [i.1]. Reference is made to the framework of legal documents implementing these Directives, but the present document should not be taken as an interpretation, amplification, or restatement of any other documents. A number of requirements originate from the legal framework in place and not from the present document.

A short list of Frequently Asked Questions (FAQs) relating to Harmonized Standards under these Radio Directives [i.2] and [i.1], and/or the present document as well as their answers is provided in annex G.

**NOTE:** At the time of drafting the present document, TCAM had not yet had the opportunity of offering clarifications on the RED. A TCAM guide on the RED is planned to be prepared.

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# 1 Scope

The present document gives guidance to ETSI Technical Bodies and Rapporteurs on the production of Harmonized Standards (HSs) produced by ETSI for application:

- under the R&TTE Directive [i.2] (article 5); and
- a first guide under the RED [i.1] (articles 16 and 17).

NOTE: In the present document, where "the Radio Directives" is written, this means the R&TTE Directive [i.2] and/or to the RED [i.1], as appropriate.

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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.

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

Not applicable.

### 2.2 Informative references

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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.

NOTE: The "RED".

- [i.2] 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.

NOTE: The "R&TTE Directive".

- [i.3] Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits (recast).

NOTE: The "Directive LVD" of 2014.

- [i.4] Council Directive 73/23/EEC of 19 February 1973 on the harmonisation of the laws of Member States relating to Electrical Equipment designed for use within certain voltage limits.
- NOTE: The "LV Directive".
- [i.5] Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.
- [i.6] Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast).
- NOTE: The "EMC Directive" of 2014.
- [i.7] 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.
- NOTE: The "EMC Directive".
- [i.8] Directive 98/13/EC of the European Parliament and of the Council of 12 February 1998 relating to telecommunications terminal equipment and satellite earth station equipment, including the mutual recognition of their conformity.
- [i.9] ETSI Directives: "ETSI Drafting Rules (EDRs)" and "Technical Working Procedures (TWP)".
- NOTE: The version of ETSI Directives used for preparation of the present guide is v.33 of May 2014.
- [i.10] Council Resolution 85/C 136/01 of 7 May 1985 on a new approach to technical harmonization and standards.
- [i.11] Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (Text with EEA relevance).
- [i.12] 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.
- [i.13] ETSI TR 100 028 (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".
- [i.14] ETSI ECC MoU.
- NOTE: Available at <http://webapp.etsi.org/agreementview>.
- [i.15] ETSI EN 301 489 (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services".
- [i.16] ETSI Harmonized Standard skeleton document.
- NOTE: Available at <https://portal.etsi.org/Services/editHelp!/Standardsdevelopment/Drafting/Skeletons.aspx>.
- [i.17] Document RSPG08-246: "Radio Spectrum Policy Group Opinion on "Streamlining the regulatory environment for the use of spectrum"".
- [i.18] ETSI TR 102 914: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Aspects and implications of the inclusion of receiver parameters within ETSI standards".
- [i.19] Commission Decision 2000/299/EC of 6 April 2000 establishing the initial classification of radio equipment and telecommunications terminal equipment and associated identifiers.
- [i.20] Blue Guide of 2014.
- NOTE: Available at <http://ec.europa.eu/DocsRoom/documents/4942/attachments/1/translations/en/renditions/pdf>.



- [i.21] Guide to the R&TTE Directive 1999/5/EC Version of 20 April 2009.
- NOTE: Available at [http://ec.europa.eu/enterprise/sectors/rtte/files/guide2009-04-20\\_en.pdf](http://ec.europa.eu/enterprise/sectors/rtte/files/guide2009-04-20_en.pdf).
- [i.22] ETSI EN 300 296-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment using integral antennas intended primarily for analogue speech; Part 1: Technical characteristics and methods of measurement".
- [i.23] Commission Decision 2004/71/EC of 4 September 2003 on essential requirements relating to marine radio communication equipment which is intended to be used on non-SOLAS vessels and to participate in the Global Maritime Distress and Safety System (GMDSS).
- [i.24] ETSI TR 103 265 (V1.1.2): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Definition of radio parameters".
- [i.25] ETSI TErms and Definitions Database Interactive (TEDDI).
- NOTE: Available at <http://webapp.etsi.org/Teddi/>.
- [i.26] ITU Radio Regulations.
- [i.27] Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision).
- [i.28] ETSI TR 102 579: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Report providing guidance for the production of Community Specifications for application under the Single European Sky Interoperability Regulation EC 552/2004".
- [i.29] Regulation (EC) No 552/2004 of the European Parliament and of the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (the interoperability Regulation) (Text with EEA relevance).
- [i.30] Guide to the implementation of directives based on the New Approach and the Global Approach, European Commission, 2000.
- NOTE: Available at [http://www.netinform.net/Vorschriften/pdf/BlueGuide\\_en.pdf](http://www.netinform.net/Vorschriften/pdf/BlueGuide_en.pdf).
- [i.31] Decision No 768/2008/EC of the European Parliament and of the Council of 9 July 2008 on a common framework for the marketing of products, and repealing Council Decision 93/465/EEC.
- NOTE: The "NLF".
- [i.32] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive).
- [i.33] "Vademecum".
- NOTE: Available at [http://ec.europa.eu/enterprise/policies/european-standards/documents/vademecum/index\\_en.htm](http://ec.europa.eu/enterprise/policies/european-standards/documents/vademecum/index_en.htm).
- [i.34] ETSI TR 102 070-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Guide to the application of harmonized standards to multi-radio and combined radio and non-radio equipment; Part 1: ElectroMagnetic Compatibility".
- [i.35] ETSI TR 102 070-2: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Guide to the application of harmonized standards to multi-radio and combined radio and non-radio equipment; Part 2: Effective use of the radio frequency spectrum".
- [i.36] Recommendation ITU-T K.44 (05/2012): "Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents - Basic Recommendation".
- NOTE: Available at <http://www.itu.int/rec/T-REC-K.44/en>.

- [i.37] Regulation (EU) No 182/2011 of the European Parliament and of the Council of 16 February 2011 laying down the rules and general principles concerning mechanisms for control by Member States of the Commission's exercise of implementing powers.
- [i.38] Council Directive 93/42/EEC of 14 June 1993 concerning medical devices.
- [i.39] Council Directive 90/385/EEC of 20 June 1990 on the approximation of the laws of the Member States relating implantable medical devices.
- [i.40] Council Directive 72/245/EEC of 20 June 1972 on the approximation of the laws of the Member States relating to the suppression of radio interference produced by spark-ignition engines fitted to motor vehicles.
- [i.41] Council Directive 92/61/EEC of 30 June 1992 relating to the type-approval of two or three-wheel motor vehicles.
- [i.42] Council Directive 96/98/EC of 20 December 1996 on marine equipment.
- [i.43] Council Directive 93/65/EEC of 19 July 1993 on the definition and use of compatible technical specifications for the procurement of air-traffic- management equipment and systems.
- [i.44] Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC.
- [i.45] Council Regulation (EEC) No 3922/91 of 16 December 1991 on the harmonization of technical requirements and administrative procedures in the field of civil aviation.
- [i.46] Regulation (EC) No 717/2007 of the European Parliament and of the Council of 27 June 2007 on roaming on public mobile telephone networks within the Community and amending Directive 2002/21/EC.
- [i.47] Regulation (EC) No 544/2009 of the European Parliament and of the Council of 18 June 2009 amending Regulation (EC) No 717/2007 on roaming on public mobile telephone networks within the Community and Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services.
- [i.48] Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009 amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services.
- [i.49] Commission Directive 2008/63/EC of 20 June 2008 on competition in the markets in telecommunications terminal equipment (Codified version).
- [i.50] ETSI EN 300 220: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW".

## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in R&TTE Directive [i.2], the RED [i.1] and the following apply:

**equipment class:** has the same meaning as *equipment class* in the R&TTE Directive [i.2], article 2f: "a class identifying particular types of apparatus which under this Directive are considered similar and those interfaces for which the apparatus is designed"

NOTE 1: Apparatus may belong to more than one equipment class.

NOTE 2: See also Commission Decision 2000/299/EC of 6 April 2000 [i.19].

**essential radio test suite:** one or more **essential** test procedure(s), referred to in annex III of the R&TTE Directive [i.2]

NOTE: In the RED, the term "essential radio test suite" is not used. Term to be replaced by "method of measurement" or "test", as appropriate (see clause 7.2.10, annex F and "Q6" in annex G) in HSs under the RED.

**essential requirement:** requirement identified in article 3 of the R&TTE Directive [i.2] and in article 3 of the RED [i.1]

NOTE: See also the Blue Guide clause 4.1.1 [i.20].

**harmful interference:** is "interference which endangers the functioning of a radionavigation service or of other safety services or which otherwise seriously degrades, obstructs or repeatedly interrupts a radiocommunications service operating in accordance with the applicable Community or national regulations"

NOTE 1: Source: R&TTE Directive [i.2], article 2i.

NOTE 2: The definition of "Harmful interference" is also defined in the RED (article 2(7)) through a reference to the Framework Directive.

**Harmonized Standard (HS):** has the same meaning as *harmonized standard* in the R&TTE Directive [i.2], article 2h: "a technical specification adopted by a recognized standards body under a mandate from the Commission in conformity with the procedures laid down in Directive 98/34/EC [i.12] for the purposes of establishing a European requirement, compliance with which is not compulsory" and as in the RED [i.1], article 2 (18)

NOTE 1: Unless the context indicates otherwise, this is restricted to those Harmonized Standards within the scope of the present document.

NOTE 2: Directive 98/34/EC [i.12] has been replaced by Regulation 1025/2012/EU [i.11], where the new definition of Harmonized Standard is provided in point 1 of article 2 as "(c) 'harmonised standard' means a European standard adopted on the basis of a request made by the Commission for the application of Union harmonization legislation".

**HS Requirements and conformance Test specifications Table (HS-RT(T)):** table annexed to a Harmonized Standard concisely setting out explicit references to the specification of each technical (and possibly non-technical) requirement and, where appropriate, the corresponding test procedure which may be executed to demonstrate that a particular equipment conforms with that requirement (see annex F of the present document)

**interference:** effect of unwanted energy due to one or a combination of emissions, radiation, or induction upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy

**other test suite:** other test procedure(s) not referred to in annex III of the R&TTE Directive [i.2]

NOTE: In the RED, the term "essential radio test suite" is not used. Term "other test suite" to be replaced by "method of measurement" or "test", as appropriate (see clause 7.2.10, annex F and "Q6" in annex G) in HSs under the RED.

**Radio Equipment (RE):** radio equipment as defined in R&TTE Directive [i.2], article 2(c), subject to the general exclusions within the R&TTE Directive [i.2] (see its annex I)

NOTE: This term has been defined in a different way in the RED [i.1], as follows, and is 4 fold:

- (1) "radio equipment' means an electrical or electronic product, which intentionally emits and/or receives radio waves for the purpose of radio communication and/or radiodetermination, or an electrical or electronic product which must be completed with an accessory, such as antenna, so as to intentionally emit and/or receive radio waves for the purpose of radio communication and/or radiodetermination [i.1];
- (2) 'radio communication' means communication by means of radio waves [i.1];
- (3) 'radiodetermination' means the determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to those parameters, by means of the propagation properties of radio waves [i.1];
- (4) 'radio waves' means electromagnetic waves of frequencies lower than 3 000 GHz, propagated in space without artificial guide [i.1]".

**recital:** "whereas" in the RED [i.1]

**resistibility:** resistibility is the ability of telecommunication equipment or installations to withstand, in general, without damage, the effects of overvoltages or overcurrents, up to a certain specified extent, and in accordance with a specified criterion

NOTE 1: Source: Recommendation ITU-T K.44 [i.36].

NOTE 2: Resistibility is considered to cater for the needs of the whole of the telecommunication network, i.e. all types of networks, public and private, as well as any equipment installed in or connected to this network. The resistibility requirements are based on the following electromagnetic phenomena: lightning, power induction, earth potential rise and low-voltage power contact.

**skeleton document:** pre-built deliverable of ETSI, already laid out as required and containing essential titles and text blocks

**TB:** the ETSI Technical Body responsible for the development of the HS being considered

**Telecommunications Terminal Equipment (TTE):** Telecommunications Terminal Equipment as defined in R&TTE Directive [i.2], article 2(b) subject to general exclusions within the R&TTE Directive [i.2] (see its annex I)

NOTE: TTE equipment is not covered by the RED [i.1].

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

kHz	kiloHertz
V	Volt

## 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ATM	Air Traffic Management
BEM	Block Edge Mask
CCF	Call Control reception Failure
CCR	Control Channel correctly Received
CEN	Comité Européen de Normalisation
CENELEC	European Committee for Electrotechnical Standardization
CEPT	Conference Européenne des Postes et Télécommunications
DOA	Date Of Announcement
DOW	Date Of Withdrawal
EC	European Commission (often referred to as "Commission" in the present document)
ECC	Electronic Communications Committee (a committee of CEPT)

ECI Equipment Class Identifier

NOTE: See R&TTE Directive [i.2], articles 4.1 and 11.1 and Commission Decision 2000/299/EC of 6 April 2000 [i.19].

EEA European Economic Area  
 EFTA European Free Trade Association  
 EIRP Equivalent Isotropic Radiated Power  
 EMC ElectroMagnetic Compatibility

NOTE: See also "new" EMC Directive 2004/108/EC [i.7].

EN European Norm  
 ER Essential Requirement  
 ERC European Radiocommunications Committee

NOTE: This committee of CEPT led later to ECC.

ERP Effective Radiated Power  
 ETSI TWP ETSI Technical Working Procedures  
 FAQ Frequently Asked Questions  
 HS Harmonized Standard  
 HS-RTT HS Requirements and conformance Test specifications Table  
 ISM Industrial Scientific Medical  
 LVD Low Voltage Directive

NOTE: See Directive 73/23/EEC [i.4], more recently replaced by 2006/95/EC [i.5] and subsequently replaced by Directive 2014/35/EU [i.3].

MoU Memorandum of Understanding  
 Nb Number  
 OCG R&TTE ETSI's Operational Co-ordination Group sub-group on Radio Equipment & Telecommunications Terminal Equipment  
 OJEU Official Journal of the European Union  
 PMR Private Mobile Radio  
 R&TTE Radio Equipment and Telecommunications Terminal Equipment

NOTE: See Directive 1999/5/EC [i.2].

RE Radio Equipment  
 RED Radio Equipment Directive

NOTE: See Directive 2014/53/EU [i.1].

RIS Radio Interface Specification  
 RSCoM Radio Spectrum Committee  
 RSPG Radio Spectrum Policy Group  
 SMF System Monitoring Fail  
 SMP System Monitoring Pass  
 TB ETSI Technical Body  
 TCAM Telecommunication Conformity Assessment and Market surveillance committee

NOTE: See R&TTE Directive [i.2], articles 13, 14 and 15 and the RED [i.1] article 45.

TDD Time Division Duplex  
 TDM Time Division Multiplex  
 TTCN Testing and Test Control Notation or (previously Tree and Tabular Combined Notation)

NOTE: Both are valid and have been used associated different version of TTCN.

TEDDI TErms and Definitions Database Interactive  
 TTE Telecommunications Terminal Equipment  
 TxD Transmission Disable command  
 TxE Transmission Enable command