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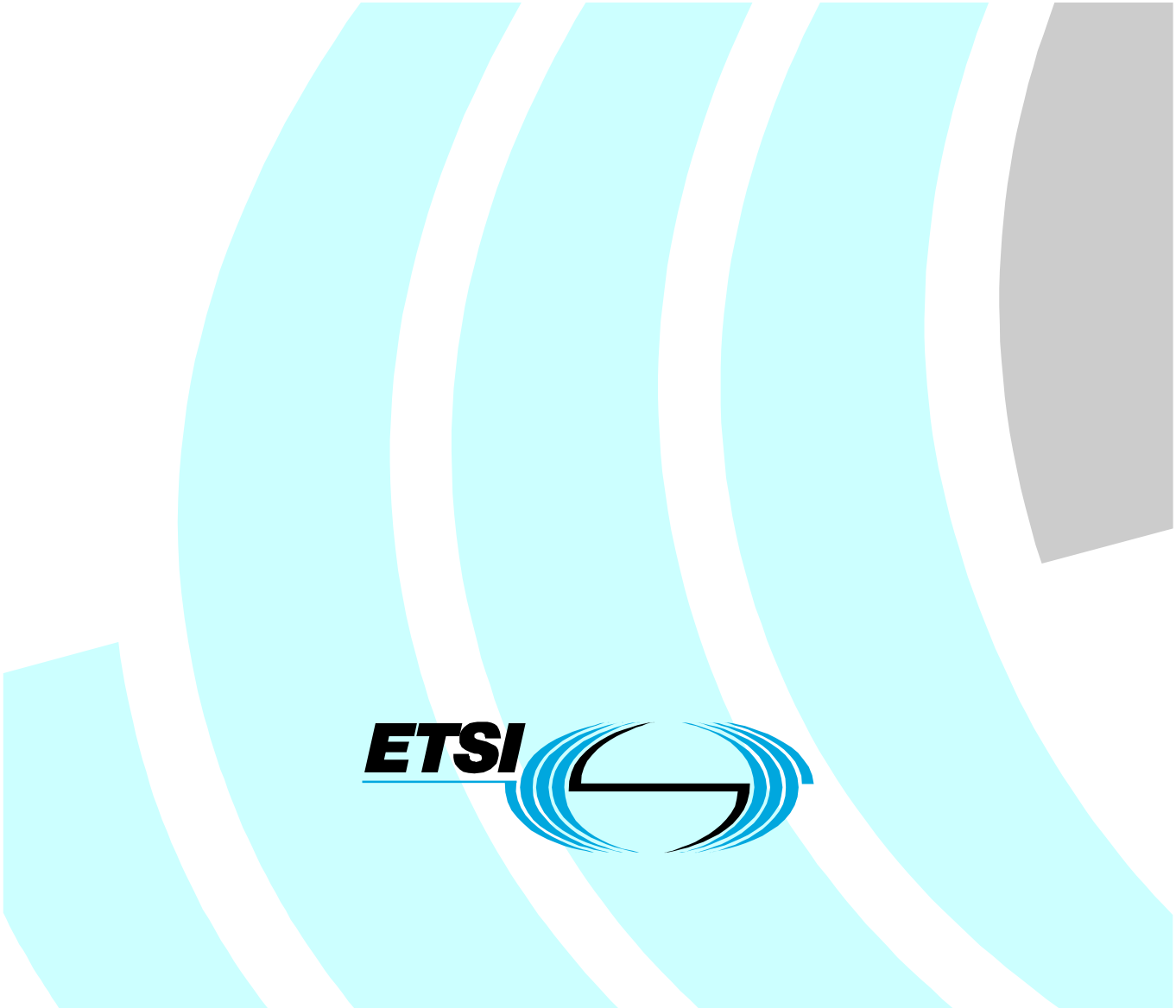
ETSI Guide

Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive



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Contents

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Foreword

This ETSI Guide (EG) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the ETSI standards Membership Approval Procedure.

Introduction

The present document is a development of previous version 1.3.1 to reflect the experience gained from implementation of the previous version as well as reflecting feedback from the European Commission, and in particular from TCAM, on such standards. The main developments appearing in version 2.1.1 (the present document):

- Background material relating to previous regimes has been assigned to annex C.
- A new clause has been introduced which guidance and specifications related to the detailed drafting of the candidate Harmonized Standard.
- The pro forma for drafting candidate Harmonized Standards and its supporting notes that were formerly published as a separate document SR 001 470 [11] have been extensively revised and reference in the present document and the pro forma is to be incorporated into the ETSI drafting rules and maintained by EditHelp!
- Revised guidance on the format of the EN requirement table (to be called the HS-RTT) which will become a mandatory feature for future HSs produced by ETSI for application under article 3.2 of the R&TTE Directive [1].
- A new clause has been introduced emphasizing issues which are inappropriate in a Harmonized Standard and therefore which shall not be addressed within the standard.
- The standard introduction to all Harmonized Standards prepared in accordance with version 1.3.1 of the present document addressing the modularity principle has been incorporated in the present document and it is proposed that future HSs merely make reference to the modularity principle in the present document, thus shortening future HSs.
- In accordance with the modularity principle, the present document now recommends that a single HS should not address more than one article of the R&TTE, and that it should address the whole set of technical requirements associated with the essential requirements related to that article.
- The present document now indicates how a TB should proceed if it believes that some aspect of the guidance is inappropriate in a specific case.

1 Scope

The present document has been prepared to assist ETSI technical bodies in the preparation of candidate Harmonized Standards for application under the Radio Equipment and Telecommunications Terminal Equipment Directive (R&TTE Directive [1]), furthermore, it establishes a methodology to allow those technical bodies to have a consistent interpretation of the technical requirements needed to implement the essential requirements of the R&TTE Directive [1].

The present document is not applicable to documents produced by other standards bodies (i.e. CEN and CENELEC) even if some of the standards they produce have application under the R&TTE Directive [1]. Nor is it applicable to Harmonized Standards produced by ETSI that are not related to the R&TTE Directive [1]: the present document does not address all ETSI standards, instead it addresses only those HSs produced for application under the R&TTE Directive [1] (article 5) by ETSI.

Annex C to the present document gives some background to the R&TTE Directive [1]. Reference is made to the framework of legal documents implementing the R&TTE Directive [1], but the present document should not be taken as an interpretation, amplification, or restatement of any other documents.

A short list of FAQ relating to Harmonized Standards under the R&TTE Directive [1] and/or the present document as well as their answers is given in annex F.

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] 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).

[3] 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).

[4] 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.

[5] ETSI SR 001 262: "ETSI drafting rules".

[6] Council Resolution of 7 May 1985 on a new approach to technical harmonization and standards.

[7] 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.

[8] ETSI TR 100 028 V1.4.1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

[9] EN 60950: "Safety of information technology equipment".

[10] CENELEC TR 62102: "Electrical safety - Classification of interfaces for equipment to be connected to information and communications technology networks".

[11] ETSI SR 001 470: "Guidance to the production of candidate Harmonized Standards for application under the R&TTE Directive (1999/5/EC); Pro-forma candidate Harmonized Standard".

[12] ETSI EG 201 838: "ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Publication of interface specifications under Directive 1999/5/EC; Guidelines for describing radio access interfaces".

NOTE: This document is under review. It is intended to be replaced by the EG 201 730 series documents.

[13] ETSI TR 101 730: "Publication of interface specification under R&TTE Directive 1999/5/EC; Guidelines for describing analogue interfaces".

NOTE: This document is under review. It is intended to be replaced by the EG 201 730 series documents.

[14] ETSI TR 101 731: "Access and Terminals (AT); Digital access to the public telecommunications network; Publication of interface specification under Directive 1999/5/EC;".

NOTE: This document is under review. It is intended to be replaced by the EG 201 730 series documents.

[15] ETSI TR 101 845: "Fixed Radio Systems; Technical Information on RF Interfaces applied by Fixed Service Systems including Fixed Wireless Access (FWA) in the light of the R&TTE Directive (Article 4.2)".

NOTE: This document is under review. It is intended to be replaced by the EG 201 730 series documents.

[16] ETSI TR 101 857: "Access and Terminals (AT); Broadband access to the Public Telecommunications Network; Publication of interface specification under Directive 1999/5/EC, art. 4.2; Guidelines for describing Multimedia Cable Network Interfaces".

NOTE: This document is under review. It is intended to be replaced by the EG 201 730 series documents.

[17] ETSI EN 300 718-3: "Electromagnetic compatibility and Radio spectrum matters (ERM); Avalanche Beacons; Transmitter-receiver systems; Part 3: Harmonized EN covering essential requirements of article 3.3e of the R&TTE Directive".

[18] ETSI EN 301 025-3: " Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF radiotelephone equipment for general communications and associated equipment for Class "D" Digital Selective Calling (DSC); Part 3: Harmonized EN under article 3.3 (e) of the R&TTE Directive".

[19] ETSI CEPT MoU http://webapp.etsi.org/agreementview.

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

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

3 Definitions and abbreviations

3.1 Definitions

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

candidate Harmonized Standard: standard, which has been drafted in order to become a Harmonized Standard and has not yet been published in the OJEU

Harmonized Standard: has the same meaning as *harmonized standard* in the R&TTE Directive [1], 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 [7] for the purposes of establishing a European requirement, compliance with which is not compulsory"

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

equipment class: has the same meaning as *equipment class* in the R&TTE Directive [1], 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: Apparatus may belong to more than one equipment class".

harmful interference: has the same meaning as *harmful interference* as in the R&TTE Directive [1], article 2i: "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"

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

manufacturer: manufacturer or his authorized representative established in the Community (R&TTE Directive [1], annex II), or the person responsible for placing the apparatus on the market (R&TTE Directive [1], article 6.3)

essential requirement: has the same meaning as *essential requirement* in the R&TTE Directive [1]

essential radio test suite: one or more test procedure(s), referred to in annex III of the R&TTE Directive [1]

other test suite: test procedure(s) not referred to in annex III of the R&TTE Directive [1]

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

NOTE: It also indicates whether such test is a member of the *essential radio test suite* or of the *other test suite.*

Radio Equipment (RE): radio equipment as defined in R&TTE Directive [1], article 2(c), subject to the general exclusions within the Directive

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

TB: unless the context indicates otherwise this refers to the ETSI TB responsible for the development of the HS to which EG 201 399 is applied

Telecommunications Terminal Equipment (TTE): Telecommunications Terminal Equipment as defined in R&TTE Directive [1], article 2(b) subject to general exclusions within the R&TTE Directive [1]

3.2 Abbreviations

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

CATV	CAble TeleVision
CEN	Comité Européen de Normalisation
CENELEC	European Committee for Electrotechnical Standardization
EC	European Commission
ECC	Electronic Communications Committee
ECI	Equipment Class Identifier

NOTE: See R&TTE Directive [1], articles 4.1 and 11.1.

EEA	European Economic Area
EIRP	Equivalent Isotropic Radiated Power
EMC	ElectroMagnetic Compatibility
ER	Essential Requirement
ERC	European Radio Committee
ERP	Effective Radiated Power
ETSI TWP	ETSI Technical Working Procedures
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 [2].

MoU	Memorandum of Understanding
OCG R&TTE SC	ETSI's Operational Co-ordination Group R&TTE Directive Steering Committee
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 [1].

RE	Radio Equipment
TB	ETSI Technical Body
TCAM	Telecommunication Conformity Assessment and Market surveillance committee

NOTE: See R&TTE Directive [1], articles 13, 14, 15.

TDD	Time Division Duplex
TDM	Time Division Multiplex
TTCN	Testing and Test Control Notation
TTE	Telecommunications Terminal Equipment

4 Role and purpose of Harmonized Standards

4.1 Background to the R&TTE Directive

The R&TTE Directive [1] conforms to the EC Council Resolution of 7 May 1985 [6], introduced a market-led approach into the Radio and Telecommunications Terminal Equipment sector, and removed the regime of type approvals.

The R&TTE Directive [1] covers apparatus within its scope that is either TTE or RE, as defined in its articles 2(b) and 2(c), or that is both TTE and RE but excludes equipment listed in its annex I (radio amateur kits, certain marine equipment, cabling and wiring, receive-only radio/TV, certain civil aviation equipment, certain air-traffic-management equipment), and equipment used exclusively for activities of the State (article 1.5). It applies only to the communication aspects of certain medical devices (article 1.2) and vehicles (article 1.3). These limitations on the scope of the Directive apply to all TTE or RE.

4.2 Role of Harmonized Standard in Presumption of Conformity

The Directive identifies essential requirements that are to be met. Conformity with the Essential Requirements in article 3 of the R&TTE Directive [1] is by manufacturer's declaration, and may be based on HSs (see R&TTE Directive [1], article 5.1) or other means.

In principle, HSs relate to equipment when installed, operated as intended, and not under fault conditions nor when misused by the customer, deliberately or otherwise.

In certain circumstances, the Commission may also publish guidelines on the interpretation of HSs or the conditions under which compliance with that standard raises a presumption of conformity.

5 Procedure for generation of Harmonized Standards

5.1 Standardization mandate

In order for a standard to be a HS:

- it shall be developed under an EC/EFTA mandate to the European standardization bodies (CEN, CENELEC and ETSI) under the scope of a European Directive;
- one standardization body (in some case in collaboration with another one) has to prepare and publish the standard;
- the title of the standard has to be published in the OJEU in order to give presumption of conformity to the essential requirements of the concerned Directive.

With the advent of the R&TTE Directive [1] the European Commission requested ETSI to propose a programme of standardization work considered necessary under Directive. This programme of work provided the basis for a first standardization mandate.

ENs cannot be quoted in the OJEU as HSs unless they have been developed under an EC standardization mandate. Mandates under the R&TTE Directive [1] are proposed by the Commission, after consultation with TCAM, and approved by the Committee established under the terms of Directive 98/34/EC [7] before being presented to ETSI.

Where a standardization mandate exists and has been accepted by ETSI, a situation may occur where ETSI technical bodies consider that there is a need for a HS that is not covered by the mandate.

In such a situation, ETSI should adopt a work item under the ETSI TWP. The ETSI Secretariat will present the work item to TCAM with a justification covering why the HS is required. If regarded as justified, the EC may decide to modify the mandate or issue a new one. Such decisions require approval by the Committee established under the terms of Directive 98/34/EC [7].

5.2 The drafting process

Guidance of the drafting process is addressed separately in clause 7.

5.3 Adoption of candidate Harmonized Standards

Candidate HSs are adopted according to specific procedures under the ETSI TWP.

Before a candidate HS is submitted to the voting procedure, the standard should be finally examined to ascertain that the conditions imposed by the R&TTE Directive [1], the conditions of the standardization mandate, and the conditions stemming from the present document are met.

NOTE: ETSI may establish procedures to ensure that this is always the case.

5.4 Submission to EC and Publication in the OJEU

Once adopted by ETSI, HSs developed under R&TTE Directive [1] mandate are presented to the Commission by the ETSI Secretariat. It has been agreed between the Commission and ETSI that the presentation will be accompanied by the translation of the ***title*** of the document into the official languages of the EU and EFTA. In order that ETSI can fulfil its commitment, the ETSI TB should provide assistance, to the best of its ability, in the translation of titles to the ETSI Secretariat before the Standard is submitted to the Vote (or the One-step Approval Procedure). The list of official languages appears in an annex of the HS pro forma (see clause 7.1.1).

The Commission will decide whether or not the HS is acceptable in whole or in part as suitable for establishing a presumption of conformity against the relevant essential requirements. The EC may decide whether or not to cite the harmonized standard or its revision in the OJEU.

As for other ENs, HSs developed under R&TTE Directive [1] mandate shall be transposed by the National Standards Organizations.

The ETSI secretariat will set the Date of Withdrwal (DOW) to eighteen months after date of announcement (DOA) unless the relevant ETSI TB advises otherwise.

5.5 Revision of Harmonized Standards

Revisions of HSs developed under R&TTE Directive [1] mandate do not require a specific modification to the standardization mandate. However, publication of the revised standard in the OJEU is necessary to amend the requirements which give a presumption of conformity with the R&TTE Directive [1]. The TB should consider the cost and other implications on industry and other parties before proposing non-essential revisions to HSs.

If an ETSI TB considers that technical modifications to a HS are required, it should raise a work item according to the ETSI TWP.

Adoption and submission of revisions of (candidate) HSs are as specified in clauses 5.1 to 5.4.

5.6 Withdrawal of Harmonized Standards

After consultation of TCAM, the Commission may withdraw the OJEU reference to HSs by publication of a notice to that effect in the OJEU. Presumption of conformity through that HS will then cease.

If, following the Commission's action, the relevant ETSI TB considers that the HS should be withdrawn, the standard shall follow the withdrawal procedures of the ETSI TWP. The ETSI Secretariat shall ensure that the standard is archived so as to remain available if requested, including traceability that the standard had been published in the OJEU, with the relevant dates of publication and withdrawal.

6 Formulation of technical requirements

6.1 Guiding principles

6.1.1 General

This methodology is based on the evaluation of applicable technical parameters for equipment corresponding to specific attributes. The parameters and attributes are shown in annex A.

As a matter of principle, the decision of precisely how to demonstrate compliance with an essential requirement should remain the duty of the applicable TB. However, it is important that a common set of principles be made available to guide the TB when making decisions on content. The ETSI Technical Officer attached to the TB should take an active role in advising the TB on this guidance. Where a TB considers that deviation from the principles of annex A is desirable, OCG R&TTE SC should be advised who may develop a formal justification for onward transmission to the EC or other concerned parties.

6.1.2 Level of technological independence

ETSI technical bodies should take note, as a principal goal, that wherever possible, HSs which are technology independent are preferred. The level of technological independence should remain the responsibility of the appropriate TB. Means for judgement could be commonalities in equipment attributes and technical parameters as outlined below.

6.1.3 Equipment attributes

In producing HSs for application under the Directive, ETSI shall ensure that the standards do not exceed the degree of regulation envisaged by the Commission, and shall apply discernment in order not to inhibit technological innovation or the meeting of the needs of a free-market economy. To assist this objective, the present document defines groups of products sharing similar fundamental attributes.

Equipment attributes are defined in annex A.

A single equipment can have more than one attribute. The rules for specifying attributes are set out below, and are designed such that, if required, new attributes may be added in the future for as yet unknown applications.

There is not necessarily any fixed relationship between these equipment attributes and the Equipment Classes [1] assigned by the Commission.

The rules for establishing equipment attributes are:

1) Attributes should not exist to support a particular technology. They are technology independent.

2) Attributes should not by their nature provoke questions of intellectual property rights in any form.

3) Attributes are used to categorize fundamental technical differences.

4) Attributes may exist due to fundamental differences in the circumstances of the *environment* as related to the essential requirements of the R&TTE Directive [1].

5) Attributes may exist for the purpose of differentiating operational properties.

6) Products having the same attribute should have similar technical requirements in respect of that attribute.

Subject to the above constraints, the objective is to establish a small number of attributes which collectively cover all equipment falling under the R&TTE Directive [1].

6.1.4 Evaluation of parameters

HSs should be written to address only the technical parameters necessary to allow a presumption of conformity to the Essential Requirements of article 3 of the Directive. For each essential requirement under the R&TTE Directive [1], table A.2 shows the technical phenomena related to particular equipment attributes that may need to be considered by ETSI technical bodies. These phenomena are capable of expression in terms of quantifiable technical parameters.

Usually radio receiver parameters (other than spurious emissions) are not to be specified in HSs addressed by the present document. The exceptions are where a receiver parameter directly affects the operation of a transmitter parameter with a consequent risk of harmful interference and/or where an article 3.3 essential requirement requires a receiver parameter to be specified to fulfil the obligations set out in the associated Commission Decision.

Technical Committees should consider whether requirements (up to the maximum for the attribute) are necessary. A decision tree is also provided to assist this decision process. In applying the present document to producing a specific candidate HS, the responsible ETSI TB should use the decision tree below to evaluate which technical parameters should be included in the standard.

The decision tree is:

1) For each phenomenon listed in table A.2 for the attributes relevant to the particular standard under consideration, is the phenomenon meaningful in this context? If the phenomenon is meaningful, continue.

2) In principle, is it necessary to include the phenomenon in order to meet the relevant essential requirement, or can the requirement be assured without addressing the phenomenon? If the phenomenon is in principle considered essential, continue.

3) Are there substantial, documented and well-grounded reasons for this assessment? If so, continue.

4) Can the phenomenon be expressed in terms of quantifiable technical parameters? If yes, continue.

5) For each technical parameter, is it necessary for this parameter to be included in the standard in order for the phenomenon to be adequately controlled, or can some technical parameters be omitted? If the parameter is in principle considered essential, continue.

6) Are there substantial, documented, and well-grounded reasons for this assessment? If yes, continue.

7) Is there any other Community measure which already controls this parameter? If not, continue.

8) Is there a need for discernment over the inclusion of a value for this parameter in order not to inhibit technological innovation or the meeting of the needs of a free-market economy (in this context, future needs should also be considered)? If not, continue.

9) A value for the parameter should be determined and included within the standard.

6.2 Article 3.1(a): Safety and protection of health

No requirements in the area of health and safety should be included in candidate HSs covering article 3.2 of the R&TTE Directive [1], except under exceptional circumstances, and only with the express advice of ETSI TC Safety. Nevertheless, if a TB wishes to include statements related to health and safety then that TB should consult ETSI TC Safety.

There are several product safety standards already available from CENELEC that have been published in the OJEU in connection with the LVD [2]. Such HSs, either before or after the R&TTE Directive [1] is in force, can be used to demonstrate compliance with some or all of the essential requirements of article 3.1(a) of the R&TTE Directive [1] (see article 18).

NOTE: Relevant documents covering health and safety matters are produced by standards organizations, or other bodies (e.g. the World Health Organization), some examples are:

- EN 60950 [9]: which contains requirements for information and communications technology equipment;
- CENELEC TR 62102 [10]: which describes how to categorize electrical interfaces in terms of the safety characteristics specified in EN 60950 [9].

The voltage limits within the LVD [2] are not applied in the R&TTE Directive [1]. This may require new or amended standards to meet the R&TTE Directive [1].

The essential requirements for the protection of the health and the safety of the user and any other person under the R&TTE Directive [1] include but are not necessarily limited to the Safety Objectives published in the LVD [2].

6.3 Article 3.1(b): EMC

ETSI TC ERM should be consulted concerning EMC statements to be included in candidate HSs.

The essential requirements for EMC under the R&TTE Directive [1] are the protection requirements published in the EMC Directive [3] and its successors.

There are several product EMC standards already available from ETSI and CENELEC that have been published in the OJEU in connection with the EMC Directive [3]. HSs published in the OJEU referencing the EMC Directive [3] either before or after the R&TTE Directive [1] is in force are allowed to be used under article 3.1(b) of the R&TTE Directive [1] (see article 18).

Resistibility requirements, as defined in the ITU-T K series recommendations should not be included in HSs under R&TTE Directive [1] as essential requirements.

6.4 Article 3.2: "The effective use of the radio spectrum allocated to terrestrial/space radio communication and orbital resources so as to avoid harmful interference"

6.4.1 General

In general, for spectrum management purposes assumptions are necessary concerning the performance of transmitters, receivers and control functions in the areas of signalling, code domain considerations and frequency resource sharing etc. In the case of article 3.2 the inclusion of technical requirements in HSs is limited to only those necessary for the avoidance of *"harmful interference"* (which is a term defined in the Directive). Thus requirements necessary to provide a presumption of conformity to the Directive are a subset of those used for spectrum management.

It is expected that the parameters that are not included in the HS are available or will be made available to the public in other documents. Technical Bodies writing HSs may consider it appropriate to make reference to these non-essential requirements for guidance, but only with a strict clarification that such reference forms no part of the essential requirements and thus it forms no part of the HS for the purposes of conformity assessment.

6.4.2 Co-operation with ECC

ETSI is responsible for the development of standards for radiocommunications systems and equipment. Radio standards contain by their nature several requirements which relate to the efficient use of the spectrum, including compatibility between different radio services.

In order to ensure the planning of an effective use of the radio frequency spectrum, an MoU [19] has been agreed between ETSI and the CEPT Electronic Communications Committee (ECC), for a co-operation in the development of radio technical specifications.

In the development of HSs containing technical specifications for radio equipment, the provisions of the ETSI-CEPT MoU [19] will be applied.

ERC/ECC Decisions are no longer the means of ensuring free circulation of radio products within the EEA. This role has been taken over by the R&TTE Directive [1].

ERC/ECC Decisions will still be the general means of allocation of spectrum for the radio systems corresponding to the HSs.

6.4.3 Parameters forming the basis of regulation

Certain types of radio equipment have previously been regulated under Directive 98/13/EC [4]. Article 5(e) of this Directive required that terminal equipment (as defined under Directive 98/13/EC [4]) shall satisfy the essential requirement of "effective use of the radio frequency spectrum, where appropriate". For satellite earth station equipment, this was clarified to include "the effective use of orbital resources and the avoidance of harmful interference between space-based and terrestrial communications systems and other technical systems".

Although the R&TTE Directive [1], article 3.2 has slightly different wording from Directive 98/13/EC [4], the technical specifications elaborating the essential requirements for "effective use of the spectrum so as to avoid harmful interference" are essentially the same as those under Directive 98/13/EC [4] for equipment falling within the scope of that Directive.

As a matter of principle, the definition of technical specifications to demonstrate compliance with an essential requirement is the duty of the applicable TB. However, it is important that a common set of principles be made available to guide the technical bodies when making decisions on content. The inclusion of requirements is a sensitive issue and needs careful consideration on a case by case basis by the technical bodies.

In order to give guidance to ETSI, the relevant parts of tables A.1 to A.3 show:

1) Radio system phenomena which might have an influence on the effective use of the spectrum for certain types of RE. This table gives the MAXIMUM possibilities for consideration. The applicability of individual phenomena will depend on the system concerned, and is to be determined by the relevant TB.

2) Initial classification of radio system types by equipment attributes.

3) Possible example of assignment of phenomena as essential for RE with certain attributes. This table shows the possible methodology, and should not be taken to show the specific applicable essential requirements, which should be determined by the relevant TB.

6.5 Article 3.3: Additional requirements

Article 3.3 includes the following:

- article 3.3(a) Interworking and portability;
- article 3.3(b) Harm to the network or its functioning;
- article 3.3(c) Personal data and privacy;
- article 3.3(d) Avoidance of fraud;
- article 3.3(e) Emergency services access;
- article 3.3(f) Features for disabled users.

If the Commission decides, after consulting TCAM, that there should be requirements under any of these headings, it will identify the class or type of equipment to be covered under the standardization mandate, and the specific features that the standard should cover. Therefore, a harmonized EN and, a specific Commission mandate is needed for setting essential requirements under any of the parts of article 3.3.

7 Guidance for drafting Harmonized Standards

7.1 General drafting considerations

7.1.1 The HS skeleton

Each candidate Harmonized Standard is developed in accordance with the ETSI TWP by a TB which is responsible for the content and format of the document. Such HSs produced in accordance with the present document shall comply with ETSI general document drafting rules defined in SR 001 262 [5]. The skeleton is available on the ETSI Portal or from ***editHelp!***. (***edithelp@etsi.org***).

NOTE: The pro forma incorporates an annex which includes the HS-RTT and that ETSI releases this annex from its normal copyright provisions by an appropriate copyright release notice.

The skeleton includes a number of "guidance notes" to assist the drafting of the HS but these shall be removed before publications. Optional text is enclosed in "<..>" symbols. Such text may be retained, modified or deleted as required but the symbols "<..>" shall be removed before publication.

7.1.2 Informative material in HSs

Informative text and illustrations in the main body of the HS or in annexes may be included at the discretion of the TB when it is felt that this improves understanding, and provided that such material is clearly indicated as being informative.

In particular, where the relationship between a requirement or test and the corresponding essential requirement of R&TTE Directive [1] is not self-evident, then an informative annex should be added presenting the rationale for inclusion of the requirement or test.

7.1.3 Material to be avoided in HSs

The TB drafting a HS should avoid including statements beyond ETSI area of competence and so the following should be avoided:

1) Statements referring to the role of national authorities in general, for example indicating that national authorities may relax the standards requirements, ignore them or make them more severe.

2) Statements concerning the legal responsibilities or legal roles of parties involved (manufacturers, operators, authorities etc.).

3) Statements referring to sales restrictions, legal sanctions, obligations for entering the market, ban of sales, contractual arrangements/ relations between parties.

4) Statements imposing obligations outside the scope of the standards, for example an obligation to perform tests in locations defined by non-technical parameters, such as manufacturers' premises or third party laboratories.

NOTE 1: Only technical requirements may be imposed.

5) Statements related to cases of dispute, such as "In case of dispute, the method used by the manufacturer shall be used".

NOTE 2: Where alternative test methods are provided, the principle should be that compliance with the requirements may be demonstrated by either or any of the methods described in the standard.

6) Statements including dates of regulatory application.

NOTE 3: If ETSI Technical Bodies find it useful to give advice in such matters, it should be done in separate documents and not included in the text of standards. This does not apply to information about national transposition of standards.

7) Statements introducing provisional, or interim, limits or requirements.

NOTE 4: It is within the rights of national licensing authorities to specify certain parameters such as maximum permitted radiated power, bandwidth, frequency etc when putting equipment into service.

8) Statements related to normative information related to other directives beyond the scope of the HS. However, informative references to such other directives are permitted provided that no impression be given that compliance with the HS gives a presumption of conformity with anything other than the R&TTE Directive [1].

7.1.4 Difficulties with implementation of the drafting guidelines

Where a TB considers deviation from the guidance is necessary or desirable, this fact should be reported to the ETSI Secretariat and/or OCG R&TTE SC to establish a degree of traceability.

7.2 Contents of the Harmonized Standard document

7.2.1 The Title Page and "page 2"

The title page shall follow the general drafting rules defined in SR 001 262 [5].

The title should follow the format specified in the skeleton. The <Type of equipment> line should be replaced by text which is informative but in practice this description does not restrict equipment not intuitively associated with that description from claiming presumption of conformity with the HS.(See "The "Scope" clause' below.) The title should include the phrase "Harmonized EN covering essential requirements of article <n> of the R&TTE Directive" where "<n>" is replaced by the specific article number addressed, typically "3.2".

NOTE: In accordance with the modularity principle, the HS should only address the essential requirements of one specific article of the R&TTE Directive [1].

Page 2 shall follow the general drafting rules defined in SR 001 262 [5] including the standard copyright notice despite the fact that a copyright release applies to part of the document.

7.2.2 The Contents List

This shall follow the general drafting rules defined in SR 001 262 [5].

7.2.3 The "Intellectual Property Rights" clause

This clause shall follow the general drafting rules defined in SR 001 262 [5]. The TB drafting the HS has no discretion to vary this clause.

7.2.4 The "Foreword" clause

This clause shall follow the general drafting rules defined in SR 001 262 [5]. The mandatory wording of the pro forma should be adhered to so far as it is applicable. Where the HS is part of a multipart EN, text should be included to indicate the relationship between the present part and the other parts of the same document. The TB may include any other relevant non-normative information appropriate to a forward.

The transposition table should be included as specified in the pro forma but the TB should advise the secretariat if the default transposition dates are inappropriate for the particular HS.

7.2.5 The "Introduction" clause

This clause shall follow the general drafting rules defined in SR 001 262 [5].

The standard text in the pro forma should be included. The TB may include any other appropriate information in the introduction.

7.2.6 The "Scope" clause

This clause shall follow the general drafting rules defined in SR 001 262 [5]. The Scope statement is normative in that it limits what equipments can claim presumption of conformity under the HS. The TB should exercise considerable judgement over the way the scope is defined. As noted elsewhere in the present document, the standard should remain as technology independent as possible, should be defined without undue limitation of application, should be as general in operating frequencies as possible and should not address national or other regulatory restrictions.

In accordance with the spirit of the Directive there should be the minimum number of HSs, each one having the widest possible product application. One HS is typically applicable to different types of equipment sharing similar attributes.

NOTE: It is only the "Scope" clause of a HS that may identify the equipment covered. The HS title, technical requirements and tests specified elsewhere in the HS should not be taken to imply any further qualification of the scope of the equipment covered by the HS. Any equipment which falls within the scope and satisfied all relevant technical requirements qualifies for the "presumption of conformity".

7.2.7 The " References" clause

This clause shall follow the general drafting rules defined in SR 001 262 [5].

Where normative references are made to documents (other than to other HSs) then such documents shall be specifically identified by date, version or issue number.

In general, non-normative references should be listed under Bibliography rather than in references.

7.2.8 The "Definitions, Symbols and abbreviations" clause

This clause shall follow the general drafting rules defined in SR 001 262 [5].

The pro forma includes a few standard definitions for phrases that are frequently used in HSs such as: Essential Radio Test Suite, Essential requirement, Technical requirement, Environmental Profile. For each such phrase used in the HS the corresponding definition shall be included in this clause.

7.2.9 The "Technical requirements specifications" clause

For formulation of technical requirements see clause 6.

This clause shall follow the general drafting rules defined in SR 001 262 [5]. The preferred structure is shown in the pro forma.

Every technical requirement in a candidate HS for application under the R&TTE Directive [1] shall be justified by one or more essential requirements of the R&TTE Directive [1].

Every technical requirement should be expressed so as to be capable of objective verification. However, it is not mandatory that the method of verification be explicitly defined in the HS unless the outcome is considered dependent upon the method of verification or evaluation.

Manufacturers may choose not to apply parts of a HS. For the parts omitted, they shall provide descriptions and explanations of the solutions adopted to meet the essential requirements of the Directive. This does not preclude the possibility of a HS having within it alternative technical solutions for meeting an essential requirement. It is recommended that alternative technical solutions should be identified (by letters or numbers or by separation of the HS into parts) within candidate HSs, to simplify conformity declaration, licensing and surveillance.

A standard "Environmental Profile" clause should be included which indicates that technical requirements should be met throughout the environmental range indicate by the manufacturer. Explicit environment conditions should not be specified in the HS.

This clause should define the "conformance requirements" - which is the set of individual technical requirements (including limiting values of parameters where applicable) which are necessary and sufficient to meet the essential requirements referred to in the Scope clause.

NOTE: The preferred method of clearly separating the technical requirements which have to be met from the method of testing for compliance with those requirements is to have separate top-level clauses entitled "Technical requirements specifications" and "Testing for compliance with technical requirements". Historically, some HSs have interleaved "requirements" and "test procedures". Where there is a strong argument to adopt or retain this approach then it remains acceptable provided that a sharp and clear distinction between "requirement" and its "test procedure" is maintained.

The technical requirements (including any limiting values of parameters) may be specified in any of the following ways at the discretion of the TB:

a) Explicit stand-alone complete specification of the requirement.

b) Reference to one or more explicitly identified clauses in a normative reference, in which case the normative reference shall be specific (that is dated or having an identifying issue or version number) unless exceptionally, when the reference is itself an ETSI-produced HS, the TB decides that a non-specific reference is more appropriate.

c) A combination of a) and b) above. (For example, where the technical requirement is described elsewhere but the limiting values are defined explicitly in the HS.)

In all cases, clause numbering should be such that individual technical requirements may be unambiguously referenced as there is need for specific test specifications to be related to specific requirements both within the body of the HS and within the HS-RTT annex.

7.2.10 The "Testing for compliance with technical requirements" clause

This clause shall follow the general drafting rules defined in SR 001 262 [5]. The preferred structure is shown in the pro forma.

A standard "Environmental conditions for testing" clause as shown in the pro forma should be included. This indicates that testing should be carried out at representative points within the boundary limits of the environmental profile but makes no reference to explicit environmental limits.

For HSs addressing article 3.2 of the R&TTE Directive [1], the test specification shall indicate whether it falls within the Essential Radio Test Suite (see annex III of the R&TTE Directive [1]). The preferred method of achieving this is to list all such test specifications under an "Essential Radio Test Suite(s)" clause heading with all other test specifications listed under an "Other test suite(s)" heading.

Where compliance with the specification requires the value of a parameter to be assessed, the responsible ETSI TB writing the HS should consider whether the value obtained may vary according to the method of measurement employed.

The measurement method should be defined in the minimum detail required to ensure reproducibility of results between different laboratories. This should preferably be by reference to other relevant standards. However it should be made very clear what requirements (or tests) are considered included in the HS. Tests and test methods should not be identified in themselves as technical requirements.

Where a test is needed to determine whether an equipment meets the technical requirement that test should be specified unambiguously within the HS. This test may be specified in any of the following ways at the discretion of the TB:

a) Explicit stand-alone complete specification of the test method and procedure.

b) Reference to one or more explicitly identified clauses in a normative reference, in which case the normative reference shall be specific (that is dated or have an identifying issue or version number) unless exceptionally, when the reference is itself an ETSI-produced HS, the TB decides that a non-specific reference is more appropriate.

c) A combination of a) and b) above.

Test specifications may be described in non-harmonized standards. Such standards may be normatively referenced within a HS for the purpose of defining relevant test specifications.

Where testing for compliance requires measurement, the issue of interpretation of measurement results and maximum measurement uncertainty should be addressed. The preferred method of addressing this topic is shown in the pro forma as a separate clause with appropriate text and with a table indicating the maximum measurement uncertainty for each relevant parameter. However, alternative means of addressing this may be adopted by the TB. For example: the matter can be addressed in a referenced document or the uncertainty may be addressed in the individual test suite clauses described below.

The acceptable level of measurement uncertainty shall be specified.

HSs should be written on the assumption that interpretation of the measurement results is in accordance with the principles contained in TR 100 028 [8].

7.2.11 The "Abstract Test Suite" clause

A small number of HSs may choose to define abstract test suites using TTCN notation. For those cases the preferred method for introducing and presenting such test suites in TTCN Graphical or Machine processable forms is indicated in the pro forma.

7.2.12 The "HS Requirements and Conformance Test Specifications (HS-RTT) Table" annex

The HS shall include an annex comprising an HS-RTT which lists all technical requirements and relates all test specifications to them.

The HS-RTT annex is a mandatory part of all HS under article 3.2 of the R&TTE Directive [1] for equipments which are capable of radio transmission. This annex shall follow the general drafting rules defined in SR 001 262 [5] and should follow the pro forma. The initial version of the HS-RTT table annex as included in the pro forma is reproduced as annex E to the present document. The completed annex shall be included as the first normative annex of the HS.

The purpose of this annex is to provide a consistent, concise set of references to all technical requirements and to their corresponding test specifications. Where a technical requirement depends upon other factors (formerly called "optional technical requirements") this should be clarified in this annex.

NOTE 1: For HS users concerned with determining whether an equipment meets the conditions for a presumption of conformity under the HS this annex may be a starting point as it directs them to specific clauses in the HS (or in other referenced documents) concisely to all technical requirements, their test specifications and indicates which of the test specifications form the Essential Radio Test Suite. The introduction of this annex as a mandatory feature (for those HSs addressing article 3.2 of the R&TTE Directive [1]) is ETSI's response to EC requests for more consistency in HSs and to present this critical information in a consistent, precise and concise way.

The annex is made available to be used as a check list when considering a particular equipment's compliance and therefore the copyright associated with the remainder of the HS is lifted for the annex.

The HS-RTT should be completed by the TB so that it provides a standard means of

- identifying all the technical requirements in words and by cross reference to a specific clause in the present document or to a specific clause in a specific referenced document;

- identifying any test procedure corresponding to each technical requirements by cross reference to specific clause(s) in the present document or to a specific clause(s) in specific referenced document(s);

- qualifying each technical requirement to be either "Unconditional" (meaning that the requirement applies in all circumstances) or "Conditional" (meaning that the requirement is dependent on the manufacturer having chosen to support optional functionality) and in the latter case, associating the requirement with the particular optional functionality;

- qualifying 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) or "Other" (meaning that the test procedure is illustrative and that alternative means of demonstrating compliance with the technical requirement are permitted).

Where the scope of the HS includes different equipment types (for example a portable handset and a corresponding base station) it is preferred that separate HS-RTTs be included for each equipment type, although if the variations are few the different technical requirements may be indicated using the "conditionality" column in the table.

NOTE 2: In the case where the main body clauses of the HS dealing with "Technical Requirements" and "Testing for compliance" comprise nothing but references to other documents, it is possible that those references could appear in the HS-RTT and the clauses could be reduced to the environmental matters and a reference to the HS-RTT.

7.2.13 The "EN title in official languages" annex

An annex is provided in the skeleton for the provision of translations of the title of the Harmonized Standard into all languages of member states of the European Union and of EFTA. TBs are urged to use the language skills of their members to provide translations into as many of these languages as practical.

At the time of publication of the present document the 22 official languages of the EU and of EFTA are: Czech, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hungarian, Icelandic, Italian, Latvian, Lithuanian, Maltese, Norwegian, Polish, Portuguese, Slovak, Slovenian, Spanish and Swedish.

Annex A (informative): Evaluation of technical parameters according to essential requirements applicable to equipment attributes

A.1 Equipment attributes

Rules for establishing equipment attributes are given in clause 6.1.2. A single equipment can have more than one attribute. Currently the following attributes are defined:

a) RE that is unable to transmit before receiving an appropriate enabling signal under any circumstances;

b) RE that is able to transmit without receiving an appropriate enabling signal;

c) RE capable of receive only;

d) apparatus intended for use in "Emergency applications";

e) short range radio transmitting devices;

f) RE intended for installation in sites which may be shared with other RE without co-ordination from a single operator;

g) RE sharing radio spectrum resources with or without operational co-ordination;

h) TTE using an electrical interface for communication;

i) TTE using an optical interface for communication.

j) RE using received signal (e.g. the receiver level) to control transmitter power level or channel access (automatically or manually).

The attributes are explained as follows.

Attribute A

Equipment having this attribute is unable to transmit prior to receiving an enabling signal from some other equipment which co-ordinates activity in the system. This service may or may not operate on shared spectrum resource. It is believed that this attribute applies to products such as GSM mobiles, trunked radios, satellite earth stations and two-way pagers etc.

The reasoning for differentiation of this attribute is that the nature of the equipment implies the operation will be under the control of other apparatus and operating in a defined system.

Attribute B

Equipment having this attribute has the potential for uncontrolled interference to other users.

Examples of such equipment are some transportable relay station devices, simple PMR equipment, Radars, and most commercially-available amateur radio equipment, including high-power transmitters.

Attribute C

Equipment having this attribute cannot easily interfere with other users. This justifies the differentiation of this attribute.

Single-way pagers and Short-range receivers are examples of equipment with this attribute.

Attribute D

Equipment having this attribute requires a high assurance of performance when operating. Thus it is reasonable to suppose that such equipment may need to comply with additional requirements.

Equipment having this attribute will always have at least one other attribute.

Attribute E

Equipment having this attribute is generally accepted to be differentiated from other equipment. Short-range transmitting devices are defined in ERC Recommendation 70-03 [20], which broadly defines this attribute. However it is noted that this ERC Recommendation [20] also includes some devices with a power output of up to 500 mW ERP (or even higher) which is clearly not necessarily very short range. Much of the longer-range equipment operates on ISM frequencies.

Attribute F

For equipment having this attribute there is a possibility of further phenomena acting. The justification for differentiation of this attribute is principally because the equipment is stationary and thus if any problems do arise the assumption may be that the problem is permanent and some deployment scenarios may require additional site engineering. Secondly, transmitters in close proximity should be designed to limit the transmitter intermodulation issues. Other receiver effects may become more important but the traditional solutions of antenna filters, circulators etc may be used. These are separate units and thus should not be included within the HS. Examples of such equipment are base stations of any type, broadcast transmitters (broadcast receivers are not covered by the Directive), fixed link stations and pager stations.

Equipment having this attribute will always have at least one other attribute.

Attribute G

Equipment having this attribute needs differentiation to allow for the difference caused by equipment such as the above (attribute F) being set to operate in shared spectrum without co-ordination. Moreover, Fixed Service systems need this attribute differentiation for coexistence with similar systems deployed in the same geographical area and using the same frequency band.

Attribute H

Equipment having this attribute may or may not have other attributes concerning radio equipment. This attribute is differentiated from attribute I because it is anticipated that there may be different essential requirements for equipment with electrical or optical interfaces. Attribute H includes all equipment with electrical interfaces because it is accepted that all such equipments will have similar essential requirements under the R&TTE Directive [1].

There are many such equipment types so it is not necessary to provide examples.

Attribute I

Equipment having this attribute may or may not have other attributes concerning radio equipment. This attribute is differentiated from attribute H because it is anticipated that there may be different essential requirements for equipment with electrical or optical interfaces. Attribute I includes all equipment with optical interfaces because it is accepted that all such equipments will have similar essential requirements under the R&TTE Directive [1].

Attribute J

Equipment having this attribute includes a receiver and a transmitter and the received signal (e.g. the receiver level) is used to control (automatically or manually) channel access by the transmitter or the power level of the transmitter. However, unlike equipment qualified with attribute A, equipment having attribute J does not necessarily need to receive an enabling signal from some other equipment prior to transmit.

Examples of equipment having this attribute are most of the land mobile applications (PMR, etc.) and some terminals for fixed wireless access.

In some systems corresponding to attribute J transmitters may transmit without any enabling from a central control unit (e.g. PMR in Direct mode) (see also the definition on attribute A).

In equipment having this attribute power control may be implemented. Examples of such systems are satellite earth stations with uplink power control and fixed service stations.

It is expected that when used under normal conditions the power control will enhance the efficiency of the usage of radio spectrum by adjusting the power level of the transmitter to a level not significantly higher than what is really necessary and thereby limiting the out-of-band emissions towards others services or systems. When used under abnormal conditions equipment with attribute J and using power control may become excessive sources of interference. Specific requirements may be necessary for ensuring a normal operation of such equipment.

Equipment having this attribute will always have at least one other attribute.

A.2 Technical Phenomena

The tables that follow provide the phenomena associated with specific essential requirements that may need to be considered by ETSI technical bodies. The list of phenomena is the MAXIMUM for consideration, and each parameter marked "Yes" shall be evaluated according to the methodology of clause 6.1.

Table A.1

Essential Requirement	Phenomena
3.1 (a)	Requirements regarding the protection of the health and safety of the user and any other person are described in clause 6.2.
3.1 (b)	Requirements for EMC are already identified in a number of published EMC Harmonized Standards and are described in clause 6.3.
NOTE: Phenomena relevant to essential requirements under article 3.1 do not depend directly on equipment attributes.	

Table A.2

Essential Requirement	Phenomena	Equipment Attributes									
		A	B	C	D	E	F	G	H	I	J
3.2 (Transmitting)	Frequency error/stability, and designation of channels	Yes	Yes			Yes		Yes			
	Transmitter power	Yes	Yes			Yes		Yes			
	Adjacent channel power	Yes	Yes			Yes		Yes			
	Spurious emissions	Yes	Yes			Yes		Yes			
	Inter-modulation attenuation						Yes				
	Release time	Yes						Yes			
	Transient behaviour of the transmitter	Yes	Yes					Yes			
	Modulation Accuracy	Yes	Yes			Yes		Yes			
	Duty cycle					Yes		Yes			
3.2 (Directional)	Off-axis EIRP density	Yes	Yes					Yes			
	Antenna gain	Yes	Yes					Yes			
	Antenna X-polar discrimination	Yes	Yes					Yes			
	Antenna pointing accuracy/control	Yes	Yes					Yes			
	Active antenna spurious emissions (see guidance from TCAM below this table)										
3.2 (Receiving)	(Maximum usable) sensitivity (inc. duplex)				Yes						Yes
	Co-channel rejection				Yes						
	Adjacent channel selectivity	Yes	Yes	Note		Yes		Yes			
	Spurious response rejection (inc. duplex)	Yes	Yes	Note		Yes		Yes			
	Inter-modulation response rejection	Yes	Yes	Note		Yes	Yes	Yes			
	Blocking or desensitization (inc. duplex)	Yes	Yes	Note		Yes		Yes			
	Spurious emissions	Yes	Yes	Yes		Yes		Yes			
	Multipath sensitivity				Yes						

Essential Requirement	Phenomena	Equipment Attributes									
		A	B	C	D	E	F	G	H	I	J
3.2 (TDM: CDM: Control and Monitoring Functions for Terminal)	Enabling Signalling	Yes									
	Sharing Protocols	Yes	Yes					Yes			
	Network interface bit errors	Yes									
	Error control by coding and decoding of logical channels	Yes									
	Logical channel arrangement	Yes									
	Control of communication in logical channels	Yes									
	Correct interpretation of Network control information	Yes									
	Network interface addressing	Yes									
	Control of basic link communication	Yes									
	Control of random access	Yes									
	Control of radio resource allocation	Yes									
	Monitoring functions for cell selection	Yes									
	Control functions for usage of cells	Yes									
	Control of group attach/detach	Yes									
	Tx enable/disable control	Yes									
	Tx Call set up control	Yes									
	Control of call maintenance	Yes									
	Control of call disconnect	Yes									
	Authentication control	Yes									
	Encryption control procedures	Yes									
NOTE: See clause 6.1.4											

Table A.3

Essential Requirement	Phenomena
3.3	Currently there are some essential requirements defined under article 3.3 (see clause 6.5) reported in harmonized ENs (see note 2). It is noted that the technical nature of the requirements may be different from requirements related to articles 3.1 and 3.2.
NOTE 1: Phenomena considered to be relevant to essential requirements under article 3.3 have not depended directly, so far, on equipment attributes.	
NOTE 2: E.g. EN 300 718-3 [17] and EN 301 025-3 [18] contains parameters relevant to article 3.3(e) essential requirements.	

A.3 Antennas, borderline of coverage of the Directive

In the case that the equipment is intended to be operated with one or more integral or dedicated antenna(s), the RE HS should cover the relevant antenna characteristics.

Separately supplied antennas may also be considered to be relevant components under article 2c of the R&TTE Directive [1], under certain circumstances.

If the TB considers that there is a reasonable risk of failure to meet the essential requirements if antenna characteristics are not specified, they may either:

1) include antenna requirements within the radio equipment HS; or

2) develop a separate HS for the antenna.

Annex B (informative): Alternative formulations

B.1 Alternative formulation of requirements under article 3.2

The following alternative formulation has been proposed and may be most valuable in relation to new systems.

Table B.1: Tests required for radio equipment to support the essential requirements of the R&TTE Directive [1]

Phenomena to test/for the state of TX	Start TX	Cont. TX	Change Power	Change Freq.	Stop TX	Justification 3.2 Interference
Allowed/requested to TX	X	X	X	X		X
Allowed/requested to change Power			X			X
Allowed/requested to change Frequency				X		X
Allowed/requested to stop TX				X	X	X
Inform about actions	X	X	X	X	X	X
Start TX within required time	X			X		
Stop TX within required time				X	X	X
Start at the assigned Frequency	X			X		X
Start at the assigned Power	X		X			X
Change Power within required time			X			X
Transient Frequency behaviour	X			X	X	X
Transient Power behaviour	X		X	X	X	X
Modulation accuracy		X				
Transmitter Mask		X				X

NOTE 1: Cont. TX covers continuous state of any transmitter also the conversation mode of a TDM or TDD techniques.
NOTE 2: All requirements shall be assessed at the transmitter output. Necessary stimuli shall be applied at the network interface and/or the Man Machine Interface.
NOTE 3: The tests to evaluate a specific phenomenon and the phenomena are selected by the product group as appropriate for the technology.
NOTE 4: Where access to the Emergency Services is a requirement; additionally the ability to understand the message (data or voice) is required, end-to-end in both directions.

B.2 Second alternative formulation of requirements for Attribute "A"

B.2.1 Control and monitoring functions of a Terminal

The following minimum set of Control and Monitoring Functions shall be implemented in a Terminal in order to minimize the probability that they originate unwanted transmissions that may give rise to harmful interference to other systems.

For the purpose of the present document the states of the Terminal are:

- "non valid";
- "initial phase";
- "transmission disabled"; and
- "transmission enabled".

In the "Non-valid" state and in the "Transmission disable" state the Terminal shall not transmit. In the "Transmission-enabled" state the Terminal is allowed to transmit. In the "Initial phase" state the Terminal is only allowed to transmit initial bursts.

Under any fault condition when the Terminal transmissions are being suppressed the Harmful Interference shall not exceed the limits for the "Transmission disabled" state specified.

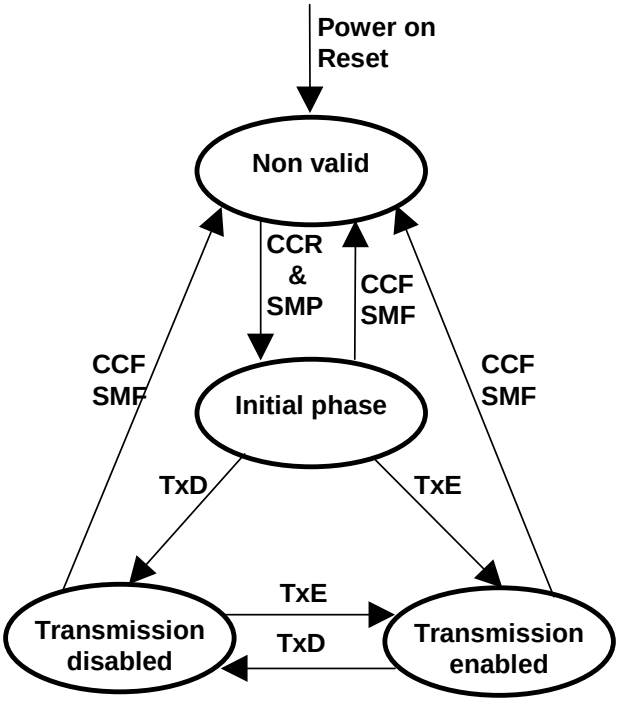

Figure B.1: State transition diagram of the control and monitoring function of a Terminal

When the Terminal transmits several carriers having different frequencies, a Terminal state machine as described above may be associated with each carrier or each set of carriers. The events then apply to the subsystem associated with the specific carrier or the specific set of carriers, rather than the whole Terminal.

Annex C (informative): Background

C.1 The "New approach"

The most significant aspect of the introduction of the R&TTE Directive [1] was that it conformed to the EC Council Resolution of 7 May 1985 [6]. This introduced a market-led approach into the Radio and Telecommunications Terminal Equipment sector, and removed the regime of type approvals. Conformity to the Essential Requirements in article 3 of the R&TTE Directive [1] became by manufacturer's declaration, and could be based on Harmonized Standards, or other means. Essential requirements were substantially reduced compared with the earlier regime.

C.2 Scope of the Directive

The R&TTE Directive [1] covers apparatus within its scope that is either TTE or RE, as defined in its articles 2(b) and 2(c), or that is both TTE and RE (for example, cellular phones).

TTE was previously covered by Directive 98/13/EC [4], although there are differences in the definition of "TTE" between the two Directives.

RE was not previously covered by a specific Directive, although there were provisions on RE included in the EMC Directive [3].

For the products within its scope, the R&TTE Directive [1] covers all aspects of placing on the market and putting into service, except for licensing of RE, which remains a national matter. The aspects of safety and EMC covered in other Directive 73/23/EEC [2] are taken over into the R&TTE Directive [1], although the manufacturer has the option of using the procedures in these earlier Directives, for equipment which falls within their scope (R&TTE Directive [1], article 10.2), as a means to demonstrate conformity to the requirements of articles 3.1(a) and 3.1(b) in the R&TTE Directive [1].

Because of the separate backgrounds in the TTE and RE areas, they are occasionally treated separately in the present document, where this may have an effect on the production of Harmonized Standards.

C.3 Implications for Telecommunications Terminal Equipment (TTE)

The definition of TTE given in the R&TTE Directive [1] is "a product enabling communication or relevant component thereof which is intended to be connected directly or indirectly by any means whatsoever to interfaces of public telecommunications networks (that is to say, telecommunications networks used wholly or partly for the provision of publicly available telecommunications services)". In contrast to the earlier Directive 98/13/EC [4], article 1.2, interworking with the network is not part of the definition for indirectly connected terminals.

Under the R&TTE Directive [1], TTE is no longer subject to type approval. Products can be placed on the market under the responsibility of the manufacturer. The manufacturer makes a Declaration of Conformity to the essential requirements of the Directive, and shall keep this declaration, together with supportive product technical documentation, as outlined in R&TTE Directive [1] annex II, for at least ten years after the last product of that type has been manufactured.

For TTE which does not use radio transmission, it is not necessary for a Notified Body to be involved in placing the product on the market. However, R&TTE Directive [1], article 10.3 allows manufacturers of TTE which does not use radio transmission to voluntarily submit their technical files to a Notified Body for assessment under annex IV, in which case that body's identification number forms part of the CE marking.

Manufacturers are responsible for ensuring that each item of TTE produced meets the essential requirements. If a manufacturer has an accredited full quality assurance system, R&TTE Directive [1], article 10.3 allows annex V to be used, instead of annex II or IV, at the manufacturer's choice.

There is no simple relationship between the "new" essential requirements of the R&TTE Directive [1] and the "old" essential requirements applied to TTE under Directive 98/13/EC [4], except for satellite earth stations, for which the essential requirements are effectively the same.

C.4 Implications for Radio Equipment (RE)

The definition of Radio Equipment (RE) given in the R&TTE Directive [1], article 2(c), is "a product, or relevant component thereof, capable of communication by means of the emission and/or reception of radio waves utilizing the spectrum allocated to terrestrial/space radiocommunications". This definition has no lower limit on the transmitted power.

RE shall be constructed to avoid harmful interference, defined as "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". RE using frequency bands whose use is not harmonized throughout the Community shall be notified to national spectrum management authorities at least four weeks before it is placed on that national market.

For radio transmitters, including TTE which uses radio transmission, essential radio test suites shall be carried out for the product (refer to annex III of the R&TTE Directive [1]). If the test suites are not defined in Harmonized Standards, a Notified Body of the manufacturer's choice shall be consulted to identify which test suites are essential for the product concerned, and that body's identification number forms part of the CE marking. The manufacturer's Declaration of Conformity to the essential requirements shall state that the essential radio transmitter tests have been carried out.

C.5 Equipment classes and equipment class identifiers

The definition of Equipment Class given in the R&TTE Directive [1] is "a class identifying particular types of apparatus which under this Directive are considered similar and those interfaces for which the apparatus is designed. Apparatus may belong to more than one equipment class".

Equipment Class Identifiers are assigned by the Commission after consultation of TCAM (R&TTE Directive [1], article 4.1). According to R&TTE Directive [1], article 12.1, the CE conformity marking on RE shall be accompanied by the ECI where this has been assigned. The Directive does not preclude that the ECI may be a blank, i.e. no additional marking, for example for RE using harmonized frequencies.

The Commission may also decide that equipment within certain equipment classes or apparatus of particular types shall be so constructed as to meet additional essential requirements given in article 3.3. Such decisions are made according to TCAM's regulatory procedure (article 15). There is not necessarily any relationship between equipment classes and the need to meet additional essential requirements.

The concept of equipment classes has been further developed by TCAM. CEPT/ECC WG RR has also been involved in this work.

C.6 Notified interfaces

Where a Member State has regulated an interface, which may be a network termination point and/or an air interface specifying a radio path, the regulated interface is notified to the Commission (R&TTE Directive [1], article 4.1). Under Directive 98/34/EC [7] the Member State is obliged to provide details of its regulation. Although it might be helpful to Member States for this purpose if European standards were available for certain interfaces, such standards would not be published in the OJEU, would not relate to essential requirements under the R&TTE Directive [1], and hence would not be candidate Harmonized Standards within the meaning of the present document.

C.7 Interface specifications

Network Operators are expected to be obliged by their Member States' legislation to publish technical specifications of interfaces before they provide the corresponding services (R&TTE Directive [1], article 4.2). The information shall be in sufficient detail to allow design of TTE that can attach to the respective interfaces. Although it may be helpful to the operators if European standards were to be produced for certain interfaces, such standards would not be published in the OJEU under the R&TTE Directive [1], would not relate to essential requirements under the R&TTE Directive [1], and would not be Harmonized Standards for application under the R&TTE Directive [1] within the meaning of the present document.

Since the publication of version 1.1.1 of the present document, ETSI has produced the following guidance on the specification of interfaces:

- EG 201 838 [12] (radio interfaces);
- TR 101 730 [13] (analogue line interfaces);
- TR 101 731 [14] (digital line interfaces);
- TR 101 845 [15] (radio fixed service interfaces);
- TR 101 857 [16] (CATV interfaces).

Annex D (informative): The modular nature of ETSI's R&TTE Harmonized Standards

NOTE: The following text has been adapted (and brought up to date) from standard introductory text which appeared in early Harmonized Standards. Although it is no longer felt desirable to include this text in every such standard the principles are still valid.

ETSI HSs are designed to fit in a modular structure to cover all radio and telecommunications terminal equipment under the R&TTE Directive. Each standard is a module in the structure. The modular structure is shown in figure D.1.

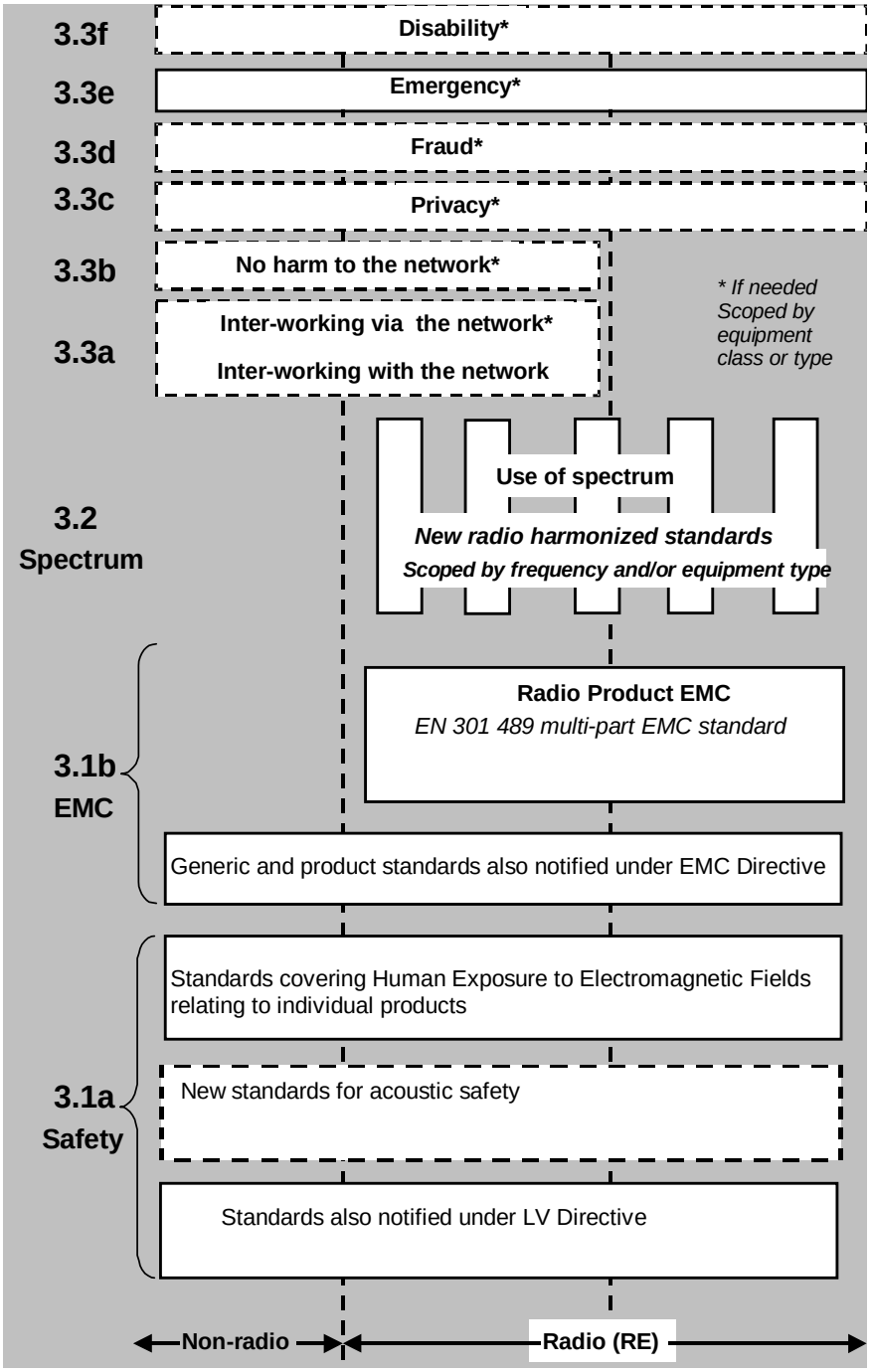

Figure D.1: Modular structure for the various standards used under the R&TTE Directive

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

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 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 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.

Annex E (informative): HS-RTT

The HS Requirements & conformance Test specifications Table (HS-RTT) in table E.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 in the present document or to a specific clause in a specific referenced document;
- it provides a statement of all the test procedure corresponding to those essential requirements by cross reference to specific clause(s) in the present document or to a specific clause(s) in 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 dependent 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;
- when the schedule is completed in respect of a particular equipment including the testing outcomes, including a completed version of table E.1 it provides a means to assert the "presumption of conformity" with the HS.

Table E.1: HS Requirements & conformance Test specifications Table (HS-RTT)

Harmonized Standard EN <en_no> The following technical requirements and test specifications are relevant to the presumption of conformity under article <art> of the R&TTE Directive						
Technical Requirement reference			**Technical Requirement Conditionality**		**Test Specification**	
No	**Description**	**Reference: Clause No**	**U/C**	**Condition**	**E/O**	**Reference: Clause No**
1						
2						
Etc.						

Key to columns:

Essential Requirement:

No A unique identifier for one row of the table which may be used to identify an essential requirement or its test specification.

Guidance note: Allocated sequentially

Description A textual reference to the Technical Requirement

Reference: Clause Number

Identification of clause(s) defining the technical requirement in the present document unless another document is referenced explicitly

Guidance note: If reference made to another document, this reference should be included in the list of references in the present document and that reference should either bear a specific date or a specific version number unless it is a reference to another ETSI-produced Harmonized Standard when non-specific references are exceptionally permitted at the discretion of the responsible TB.

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"

Guidance note: Either use a short description such as "if power control implemented" or a note which is amplified at the foot of the table

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)

Guidance note: The following note should be edited so as to refer only to the codes actually used in this HS.

NOTE: All tests whether "E" or "O" are relevant to technical 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 technical requirements. All tests classified "E" shall be performed as specified with satisfactory outcomes is a necessary condition for a presumption of conformity. Technical requirements associated with tests classified "O" or "X" must be complied with as 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.

Reference: 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 F: "FAQ" relating to Harmonized Standards under the R&TTE Directive [1] and/or the present document.

E.1 Introduction

A number of questions about Harmonized Standards (HSs) drafted by ETSI, in particular in relation to the R&TTE Directive [1], have been asked.

The text included in the present set of "FAQs" (Frequently Asked Questions) has been drafted in an endeavour to answer some of these questions. It is intended to be made available on the ETSI website and/or as an annex to the present document.

More specifically, the present "FAQs" focuses on questions relating to HSs under one of the Directives having an impact on standards,, which are in force, i.e. the R&TTE Directive [1].

Further information intended to support ETSI Technical Bodies, in order to support them when drafting candidate Harmonized Standards can be found in the main body of the present document.

It is hereby emphasized that the main body of the present document has been drafted in support of the ***ETSI TBs*** drafting harmonized standards, whereas the text "FAQs" is intended to support the ***users*** of harmonized standards.

E.2 FAQs relating to the R&TTE Directive and the corresponding HSs

Disclaimer

These FAQs and corresponding answers do not replace the text of the R&TTE Directive [1], nor the material included in the various HSs published by ETSI.

Q1 How have the drafts for HS under the R&TTE been prepared?

Draft candidate HSs (CHSs) under the R&TTE Directive [1] have been drafted and approved for publication by ETSI under the responsibility of the ETSI TB in charge of that area (standards intended to be harmonized have to go through a public enquiry process).

In order to ensure that the formats (and contents) of HSs are as much uniform as possible, ETSI has:

- prepared the present document, for the production of HSs under the R&TTE Directive [1]; and
- set up the R&TTE Steering Committee (under the OCG).

See also:

- Q2 Why are there differences between HS under the R&TTE?
- Q4 What is meant by the term "modular approach"?

Q2 Why are there differences between the various HS under the R&TTE?

A number of reasons may explain differences in terms of structure and in terms of choice of parameters to be included in the HS, in particular:

- special needs (e.g. particular requirements corresponding to various technologies);
- differences in the context (e.g. structure of the related standards).
- differences in the choices of which parameters have to be harmonized in the case of a particular product, in order to fulfil the R&TTE Directive [1] essential requirements (choices to be made by the ETSI TBs).

To support the agreements between the EC and ETSI, a number of CHSs also include an annex with the title in various languages.

See also:

- Q3 Can receiver requirements be essential?

Q3 Can receiver requirements be essential?

A number of receiver requirements have been considered essential under the R&TTE Directive [1], for a number of products.

Below are some of the various reasons taken in account:

- because receivers they may generate interference "directly" (e.g. spurious emissions (see note));
- because receivers may generate interference via an associated transmitter (e.g. in the case of "listen before talk" applications).

NOTE: Receiver spurious are always essential requirement although there are not always corresponding "Essential Radio Test Suites", by definition.

This was discussed in an ETSI task group (TG 18) and endorsed by TCAM.

As a result, ETSI TBs, on a case-by-case basis, have included the receiver parameters they believed essential, under the R&TTE Directive [1], in the various HS.

Obviously, this may have lead to differences between the various HSs published by ETSI.

Receiver parameters may also have to be included, in relation to essential requirements relating to article 3.3 (e.g. 3.3 e).

This is also explained further in clause 6.1.4.

See also:

- Q4 What is meant by the term "modular approach"?

Q4 What is meant by the term "modular approach"?

Industry has often supported the view that HSs should not change too often.

It was felt that avoiding cross-references between various HSs could help to achieve this goal (it would allow for the evolution of one particular HS without any necessary effect on the others).

As a result, in order to comply with the various essential requirements of the R&TTE Directive [1], equipment has to comply with a number of HSs, each one focusing on one particular aspect (e.g. essential requirements of the R&TTE Directive [1]:

- article 3.1;
- article 3.2;
- possibly article 3.3 (when activated for a particular product), etc.

Hence the usage of a "modular approach".

According to the principles of the modular approach, each of the corresponding HSs deals with a set of parameters and other particular features to be harmonized for a particular product (as defined in the scope of the HS). The selection of these parameters and other particular features is performed by the appropriate TB. The present document contains tables in order to guide the TBs in their choices, and hopefully helps avoiding unnecessary differences between the various ETSI HSs.

See also:

- Q1 How have the drafts for HS under the R&TTE been prepared?
- Q2 Why are there differences between HS under the R&TTE?

Q5 What are the relations between "requirements" and "test suites" or "test specifications"?

According to the skeleton:

- Clause 4 of an HS contains the technical requirements (e.g. characteristics of the power in the adjacent channel).
- Clause 5 provides details concerning the way in which the technical requirement is assessed (e.g. environmental conditions, measurement uncertainties, test suites or specifications, etc …).

These clauses take precedence on any annex of the HS (they are in the main body of the HS).

History

Document history		
V1.1.1	January 2000	Publication
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