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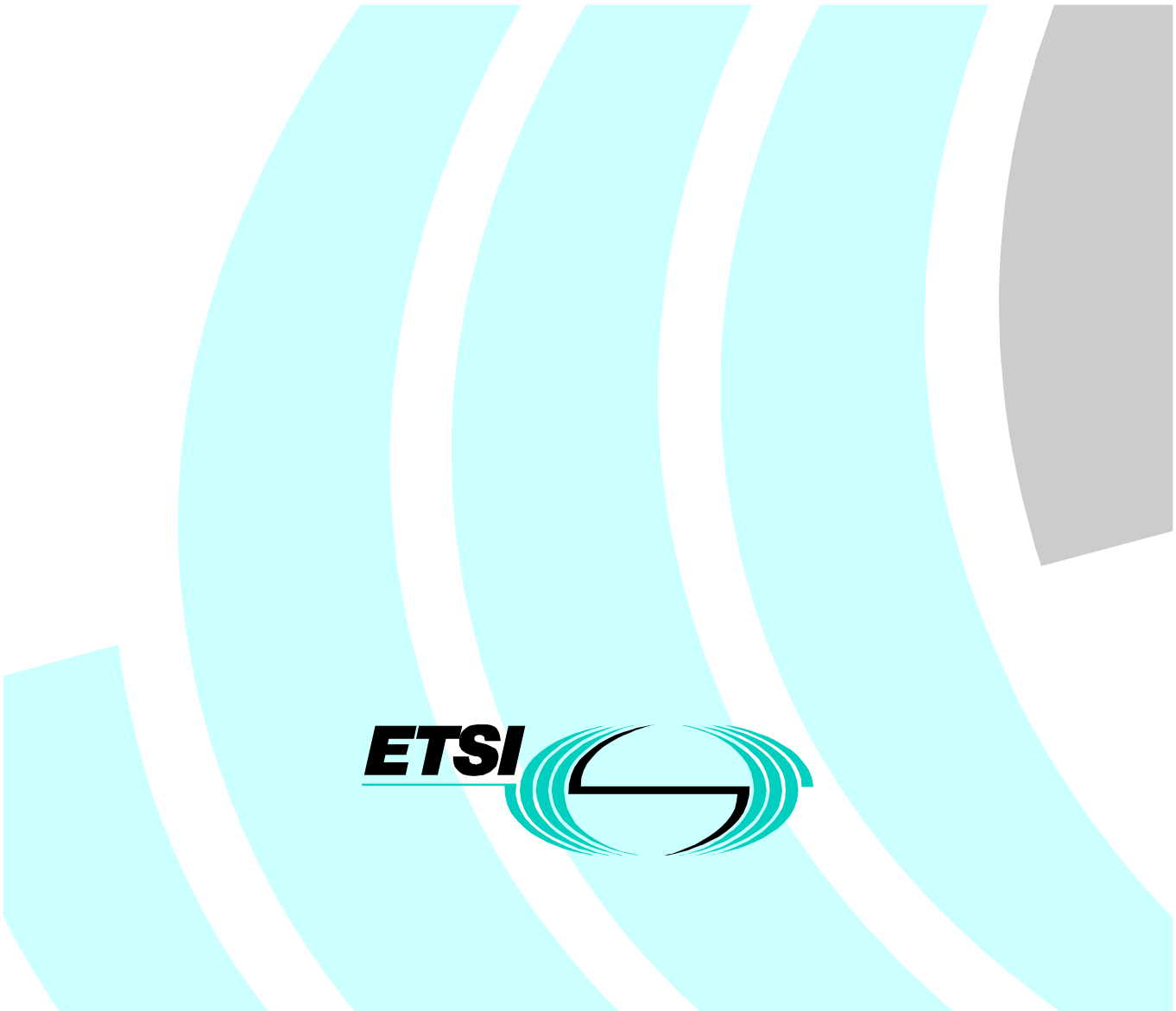
Candidate Harmonized European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive



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Contents

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Foreword

This Candidate Harmonized European Standard (Telecommunications Series) has been produced by the ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the ETSI standards One-step Approval Procedure.

The present document is part 2 of a multi-part EN covering the Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range, as identified below:

Part 1: "Technical characteristics and test methods";

Part 2: "Harmonized EN under article 3.2 of the R&TTE Directive";

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations.

The present document is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Directive 1999/5/EC [1] of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity ("the R&TTE Directive") [1].

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

Introduction

The present document is part of a set of standards designed to fit in a modular structure to cover all radio and telecommunications terminal equipment under the R&TTE Directive. Each standard is a module in the structure. The modular structure is shown in figure 1.

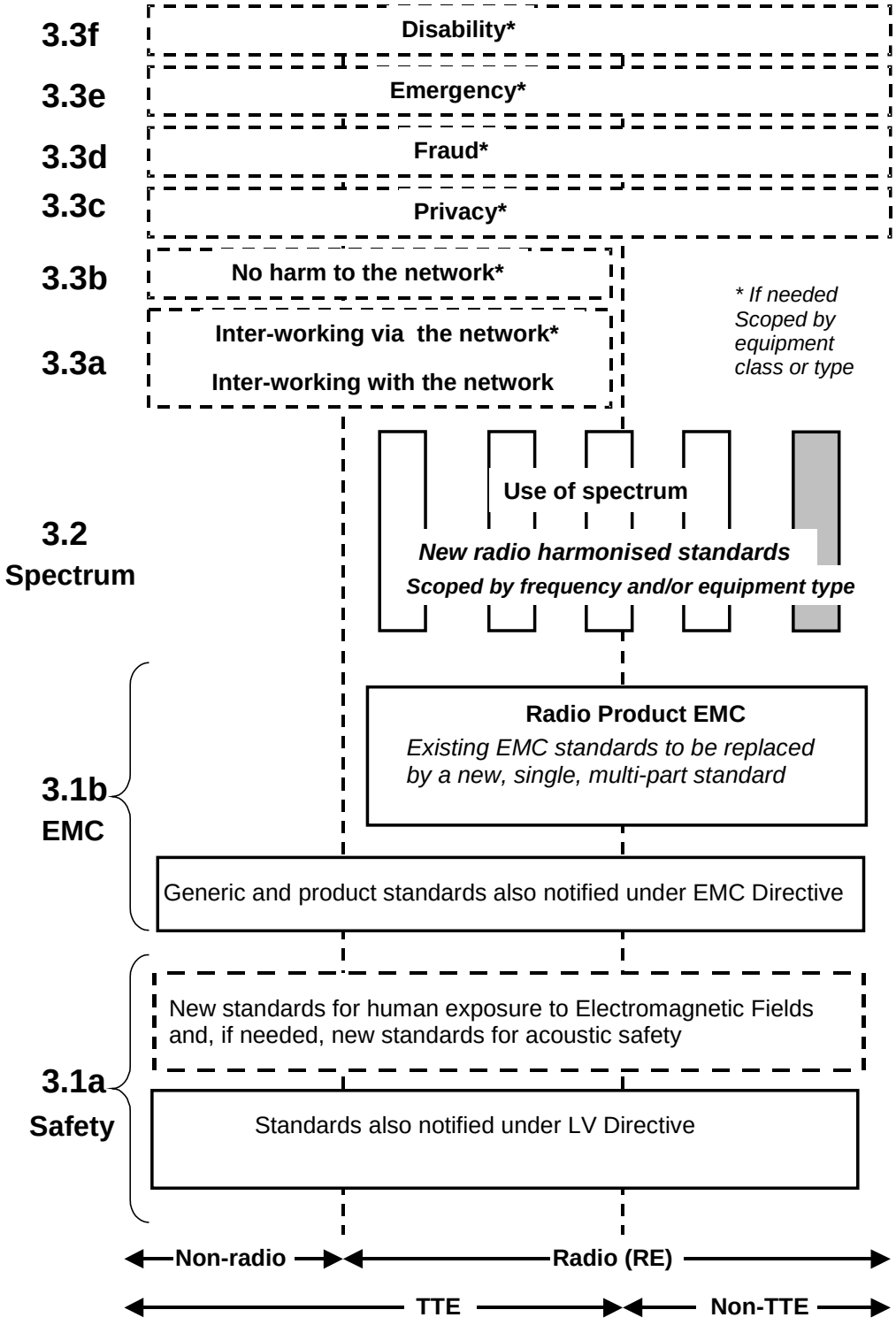

Figure 1: Modular structure for the various standards used under the R&TTE Directive

The left hand edge of the figure 1 shows the different subclauses 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 the new single multi-part product EMC standard for radio, and the existing collection of generic and product standards currently used under the EMC Directive. The parts of the present document will become available in the second half of 2000, and the existing separate product EMC standards will be used until it is available.

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.

1 Scope

The present document applies to wireless microphone equipment operating on radio frequencies between 25 MHz and 3 GHz.

The present document does not apply to wireless microphones or in ear monitoring equipment employing Time Division Multiple Access (TDMA), frequency hopping and spread spectrum or similar forms of modulation.

Power limits for this equipment are listed in table 1.

Table 1: Power limits

Equipment	Effective radiated power (erp) or conducted	
	Class 1	Class 2
Radio Microphones	50 mW	2 mW
In ear monitoring	10 mW	2 mW
Tour guide systems	10 mW	2 mW
Aids for the handicapped	10 mW	2 mW

NOTE 1: Power limits recommended in the present document have been chosen to allow maximum simultaneous reusage of frequency allocations. National regulations on power output may apply up to the limits quoted above.

NOTE 2: For higher power equipment reference should be made to ETS 300 454 [4] (Wide band audio links).

The types of equipment covered by the present document are as follows:

- professional hand held radio microphones;
- professional body worn radio microphones;
- in ear monitoring systems;
- consumer radio microphones;
- tour guide systems;
- aids for the handicapped.

The classes of equipment given in the present document are as follows:

- class 1 equipment would normally be considered as a category requiring an operator licence;
- class 2 equipment would be considered in some countries as not requiring an operator licence.

Equipment with controls that if maladjusted might increase its interfering potentialities, shall only be within the scope of the present document if those controls are only accessible by partial or complete disassembly of the device and requiring the use of tools.

The present document is intended to cover the provisions of Article 3.2 of Directive 1999/5/EC [1] (R&TTE Directive), which states that "….. radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference."

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements under other parts of Article 3 of the R&TTE Directive may apply to equipment within the scope of the present document.

NOTE 3: A list of such ENs is included on the ETSI web site at XXX.

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, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive).

[2] ETSI EN 300 422-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Technical characteristics and test methods for wireless microphones in the 25 MHz to 3 GHz frequency range".

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

[4] ETSI ETS 300 454: "Radio Equipment and Systems (RES); Wide band audio links; Technical characteristics and test methods".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in the R&TTE Directive and in EN 300 422-1 [2] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in EN 300 422-1 [2] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 300 422-1 [2] apply.

4 Technical requirements specifications

4.1 Environmental profile

The technical requirements of the present document apply under the environmental profile of the equipment, which shall be determined by the environmental class of the equipment. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the required operational environmental profile.

4.2 Transmitter requirements

4.2.1 Frequency error

4.2.1.1 Definition

This shall be as defined in EN 300 422-1 [2], subclause 8.1.1.

4.2.1.2 Limit

The transmitter frequency error limit shall be as stated in EN 300 422-1 [2], subclause 8.1.3, table 2.

4.2.1.3 Conformance

Conformance tests as defined in subclause 5.3.1.1 shall be carried out.

4.2.2 Carrier power

4.2.2.1 Definition

This shall be as defined in EN 300 422-1 [2], subclause 8.2.1.

4.2.2.2 Limit

The carrier power limit shall be as stated in EN 300 422-1 [2], subclause 8.2.3, table 3.

4.2.2.3 Conformance

Conformance tests as defined in subclause 5.3.1.2 shall be carried out.

4.2.3 Channel bandwidth

4.2.3.1 Definition

This shall be as defined in EN 300 422-1 [2], subclause 8.3.1.

4.2.3.2 Limit

The channel bandwidth limit shall be as stated in EN 300 422-1 [2], subclause 8.3.3, figure 4.

4.2.3.3 Conformance

Conformance tests as defined in subclause 5.3.1.3 shall be carried out.

4.2.4 Spurious emissions

4.2.4.1 Definition

This shall be as defined in EN 300 422-1 [2], subclause 8.4.1.

4.2.4.2 Limit

The spurious emissions limit shall be as stated in EN 300 422-1 [2], subclause 8.4.3, table 4.

4.2.4.3 Conformance

Conformance tests as defined in subclause 5.3.1.4 shall be carried out.

4.3 Receiver requirements

4.3.1 Spurious emissions

4.3.1.1 Definition

This shall be as defined in EN 300 422-1 [2], subclause 9.1.1.

4.3.1.2 Limit

The spurious emissions limit shall be as stated in EN 300 422-1 [2], subclause 9.1.3, table 6.

4.3.1.3 Conformance

Conformance tests as defined in subclause 5.3.2.1 shall be carried out.

5 Testing for compliance with technical requirements

5.1 Environmental conditions for testing

The test conditions and procedures shall be as specified in EN 300 422-1 [2] subclauses 6.2 to 6.4. The test power source shall meet the requirements of EN 300 422-1 [2] subclause 6.2.

5.2 Interpretation of the measurement results

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

- the measured value related to the corresponding limit will be used to decide whether an equipment meets the requirements of the present document;
- the value of the measurement uncertainty for the measurement of each parameter shall be included in the test report;
- the recorded value of the measurement uncertainty shall be, for each measurement, equal to or lower than the figures in table 2

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with ETR 028 [3] and shall correspond to an expansion factor (coverage factor) k = 1,96 or k = 2 (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Table 2 is based on such expansion factors.

Table 2: Measurement uncertainty

Parameter	Uncertainty
RF frequency	< ±1 x 10^{-7}
Audio Output power	< ±0,5 dB
Radiated RF power	< ±6 dB
Conducted RF power variations using a test fixture	< ±0,75 dB
Maximum frequency deviation: - within 300 Hz and 6 kHz of audio frequency - within 6 kHz and 25 kHz of audio frequency	 < ±5 % < ±3 dB
Deviation limitation	< ±5 %
Radiated emission of transmitter, valid up to 12,75 GHz	< ±6 dB
Radiated emission of receiver, valid up to 12,75 GHz	< ±6 dB

5.3 Essential radio test suites

5.3.1 Transmitter test suites

5.3.1.1 Frequency error

The test specified in EN 300 422-1 [2], subclause 8.1.2 shall be carried out. The results obtained shall be compared to the limits in subclause 4.2.1.2 in order to prove compliance with the requirement.

5.3.1.2 Carrier power

The test specified in EN 300 422-1 [2], subclauses 8.2.2 and 8.2.3 shall be carried out. The results obtained shall be compared to the limits in subclause 4.2.2.2 in order to prove compliance with the requirement.

5.3.1.3 Channel bandwidth

The test specified in EN 300 422-1 [2], subclause 8.3.2 shall be carried out. The results obtained shall be compared to the limits in subclause 4.2.3.2 in order to prove compliance with the requirement.

5.3.1.4 Channel bandwidth

The test specified in EN 300 422-1 [2], subclause 8.4.2 shall be carried out. The results obtained shall be compared to the limits in subclause 4.2.4.2 in order to prove compliance with the requirement.

5.3.2 Receiver test suites

5.3.2.1 Channel bandwidth

The test specified in EN 300 422-1 [2], subclauses 9.1.2, 9.1.3 and 9.1.4 shall be carried out. The results obtained shall be compared to the limits in subclause 4.3.1.2 in order to prove compliance with the requirement.

Annex A (normative): The EN Requirements Table (EN-RT)

The EN Requirements Table (EN-RT) serves a number of purposes, as follows:

- it provides a tabular summary of all the requirements;
- it shows the status of each EN-R, whether it is essential to implement in all circumstances (Mandatory), or whether the requirement is dependent on the supplier having chosen to support a particular optional service or functionality (Optional). In particular it enables the EN-Rs associated with a particular optional service or functionality to be grouped and identified;
- when completed in respect of a particular equipment it provides a means to undertake the static assessment of conformity with the EN.

Table A.1: EN Requirements Table (EN-RT)

EN Reference		EN 300 422-2				Comment
No.	**Reference**	**EN-R (note)**	**Status**			
1	4.1.1	Frequency error	M			
2	4.1.2	Carrier power	M			
3	4.1.3	Channel bandwidth	M			
4	4.1.4	Spurious emissions (Transmitter)	M			
5	4.2.1	Spurious emissions (Receiver)	M			
NOTE: These EN-Rs are justified under Article 3.2 of the R&TTE Directive.						

Key to columns:

No Table entry number;

Reference Subclause reference number of conformance requirement within the present document;

EN-R Title of conformance requirement within the present document;

Status Status of the entry as follows:

M: Mandatory, shall be implemented under all circumstances;

O: Optional, may be provided, but if provided shall be implemented in accordance with the requirements;

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

Comments To be completed as required.

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

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

73/23/EEC: "Council Directive 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)".

History

Document history			
V1.1.1	March 2000	One-step Approval Procedure	OAP 20000721: 2000-03-22 to 2000-07-21