

Draft **ETSI EN 301 357-2** V1.1.1 (2000-03)

Candidate Harmonized European Standard (Telecommunications series)

**Electromagnetic compatibility and
Radio spectrum Matters (ERM);
Analogue cordless wideband audio devices using
integral antennas operating in the CEPT recommended
863 MHz to 865 MHz frequency range
Part 2: Harmonized EN under article 3.2 of the R&TTE Directive**



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Foreword

This Candidate Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the 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); Analogue cordless wideband audio devices using integral antennas operating in the CEPT recommended 863 MHz to 865 MHz 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 [6] 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").

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 [1]. Each standard is a module in the structure. The modular structure is shown in figure 1.

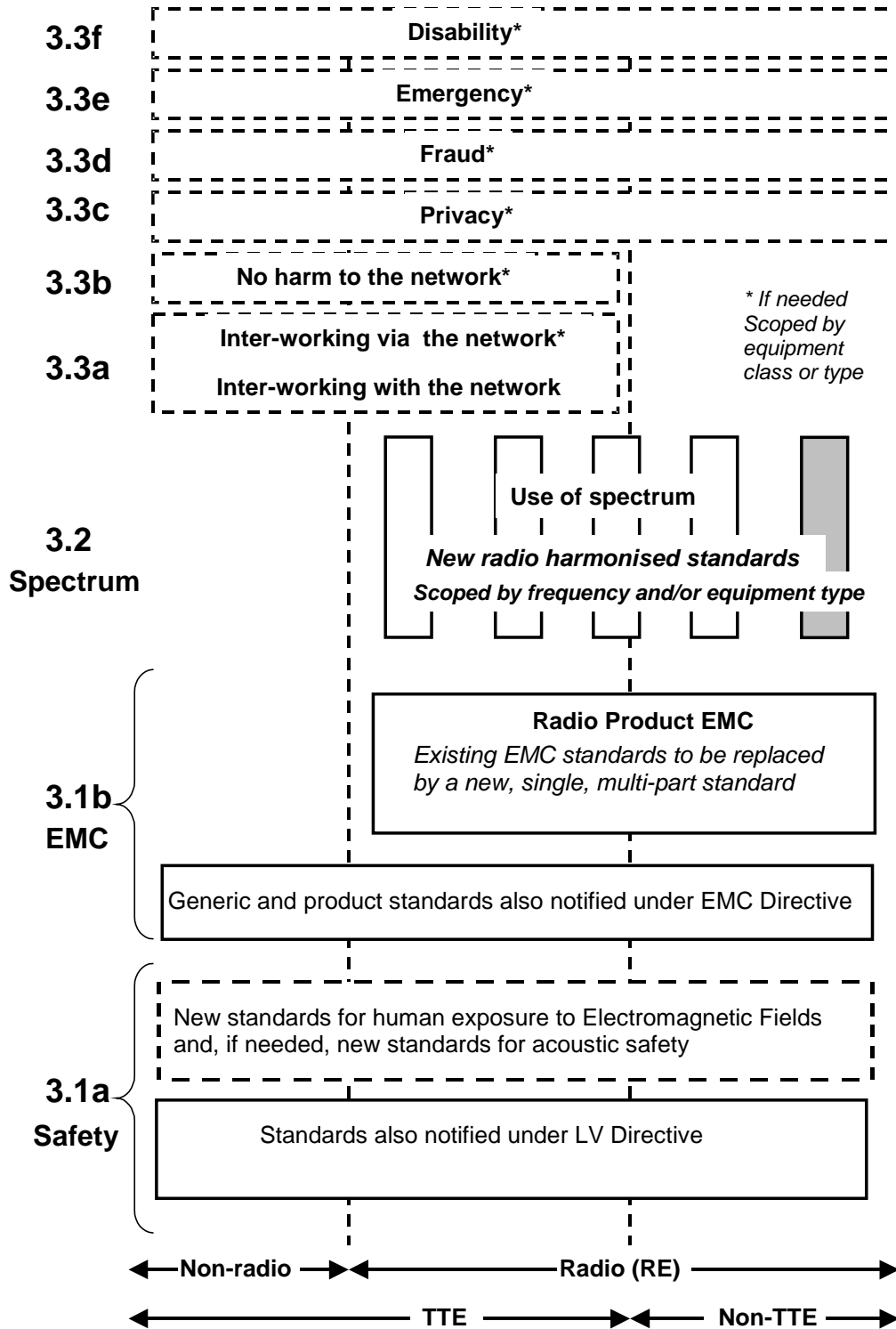


Figure 1: Modular structure for the various standards used under the R&TTE Directive [1]

The left hand edge of the figure 1 shows the different subclauses of Article 3 of the R&TTE Directive [1].

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 [2]. The parts of this new standard 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 [3] 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 [1] 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 [1] 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 wideband cordless audio and in-ear monitoring equipment operating in the CEPT recommended band 863 MHz to 865 MHz using analogue modulation.

The present document does not apply to equipment using Digital modulation, 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	Max Effective radiated power (erp)
Wideband cordless audio	10 mW
In ear monitoring	10 mW
In Vehicle cordless	2mw
Personal cordless	1mW

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.

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

- cordless headphones;
- cordless loudspeakers;
- in-ear monitoring;
- in-vehicle cordless;
- personal cordless.

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 [1] may apply to equipment within the scope of the present document.

NOTE 2: 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] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive).
- [3] 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).
- [4] ETSI EN 301 357-1 (V1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Technical characteristics and test methods for cordless wideband audio devices using integral antennas operating in the CEPT recommended 863 MHz to 865 MHz frequency range".
- [5] ETSI ETR 028 (1994): "Radio Equipment and Systems (RES); Uncertainties in the measurement of mobile radio equipment characteristics".
- [6] 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.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions in the R&TTE Directive [1] and EN 301 357-1 [4] apply.

3.2 Symbols

For the purposes of the present document, the symbols defined in EN 301 357-1 [4] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations defined in EN 301 357-1 [4] apply.

EMC	Electro-Magnetic Compatibility
LV	Low Voltage
R&TTE	Radio and Telecommunications Terminal Equipment

4 Technical requirements specifications

4.1 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be 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 301 357-1 [4], subclause 8.1.1.

4.2.1.2 Limit

The transmitter frequency error limit shall be as stated in EN 301 357-1 [4], subclause 8.1.3.

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 301 357-1 [4], subclause 8.2.1.

4.2.2.2 Limit

The carrier power limit shall be as stated in EN 301 357-1 [4], 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 301 357-1 [4], subclause 8.3.1.

4.2.3.2 Limit

The channel bandwidth limit shall be as stated in EN 301 357-1 [4], subclause 8.3.3 figure 3 or 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 301 357-1 [4], subclause 8.4.1.

4.2.4.2 Limit

The spurious emissions limit shall be as stated in EN 301 357-1 [4], 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.

4.2.5 Transmitter shutoff

4.2.5.1 Definition

This shall be as defined in EN 301 357-1 [4], subclause 8.5.1.

4.2.5.2 Limit

The transmitter shutoff limit shall be as stated in EN 301 357-1 [4], subclause 8.5.3.

4.2.5.3 Conformance

Conformance tests as defined in subclause 5.3.1.5 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 301 357-1 [4], subclause 9.1.1.

4.3.1.2 Limit

The spurious emissions limit shall be as stated in EN 301 357-1 [4], 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 301 357-1 [4] subclauses 6.2 to 6.4.2.4. The test power source shall meet the requirements of EN 301 357-1 [4] 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 [5] 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	$< \pm 1 \times 10^{-7}$
Audio Output power	$< \pm 0,5$ dB
Radiated RF power	$< \pm 6$ dB
Conducted RF power variations using a test fixture	$< \pm 0,75$ dB
Maximum frequency deviation:	
- within 300 Hz and 6 kHz of audio frequency	$< \pm 5$ %
- within 6 kHz and 25 kHz of audio frequency	$< \pm 3$ dB
Deviation limitation	$< \pm 5$ %
Radiated emission of transmitter, valid up to 12,75 GHz	$< \pm 6$ dB
Radiated emission of receiver, valid up to 12,75 GHz	$< \pm 6$ dB

5.3 Essential radio test suites

5.3.1 Transmitter test suites

5.3.1.1 Frequency error

The test specified in EN 301 357-1 [4], 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 301 357-1 [4], 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 301 357-1 [4], 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 Spurious emissions

The test specified in EN 301 357-1 [4], subclauses 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.

5.3.1.5 Transmitter shutoff

The test specified in EN 301 357-1 [4], subclauses 8.5.2 shall be carried out. The results obtained shall be compared to the limits in subclause 4.2.5.2 in order to prove compliance with the requirement.

5.3.2 Receiver test suites

5.3.2.1 Spurious emissions

The test specified in EN 301 357-1 [4], 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)

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the EN-RT proforma in this annex so that it can be used for its intended purposes and may further publish the completed 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 301 357-2				Comment
No.	Reference	EN-R (note)	Status			
1	4.2.1	Frequency error	M			
2	4.2.2	Carrier power	M			
3	4.2.3	Channel bandwidth	M			
4	4.2.4	Spurious emissions (Transmitter)	M			
5	4.2.5	Transmitter shutoff	M			
6	4.3.1	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.

History

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