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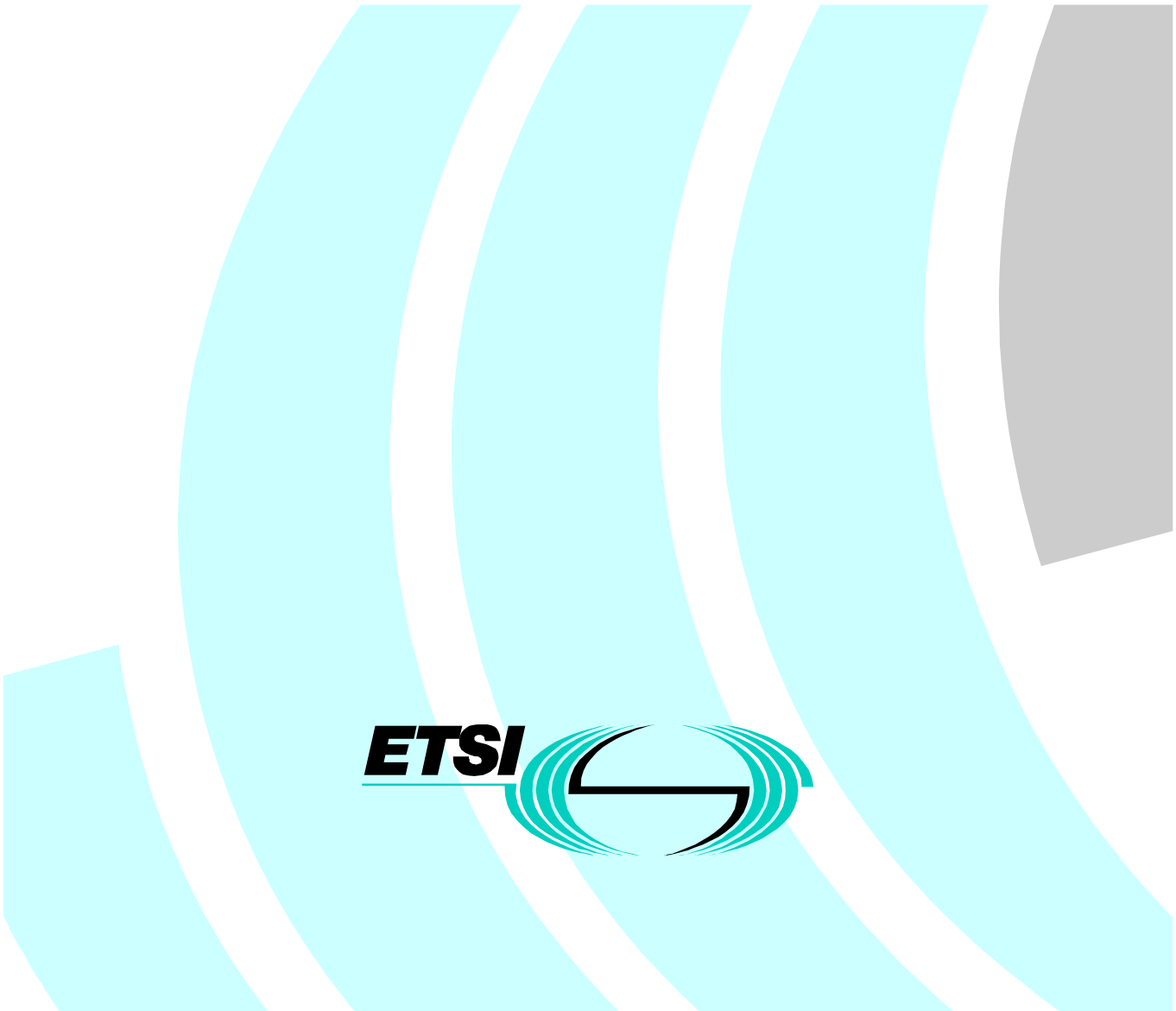
*Candidate Harmonized European Standard (Telecommunications series)*

**Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and speech) and having an antenna connector; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive**



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# Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure.

The present document is part 2 of a multi-part EN covering the Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and speech) and having an antenna connector, as identified below:

Part 1: "Technical characteristics and methods of measurement";

**Part 2: "Harmonized EN covering essential requirements 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 [1]. Each standard is a module in the structure. The modular structure is shown in figure 1.

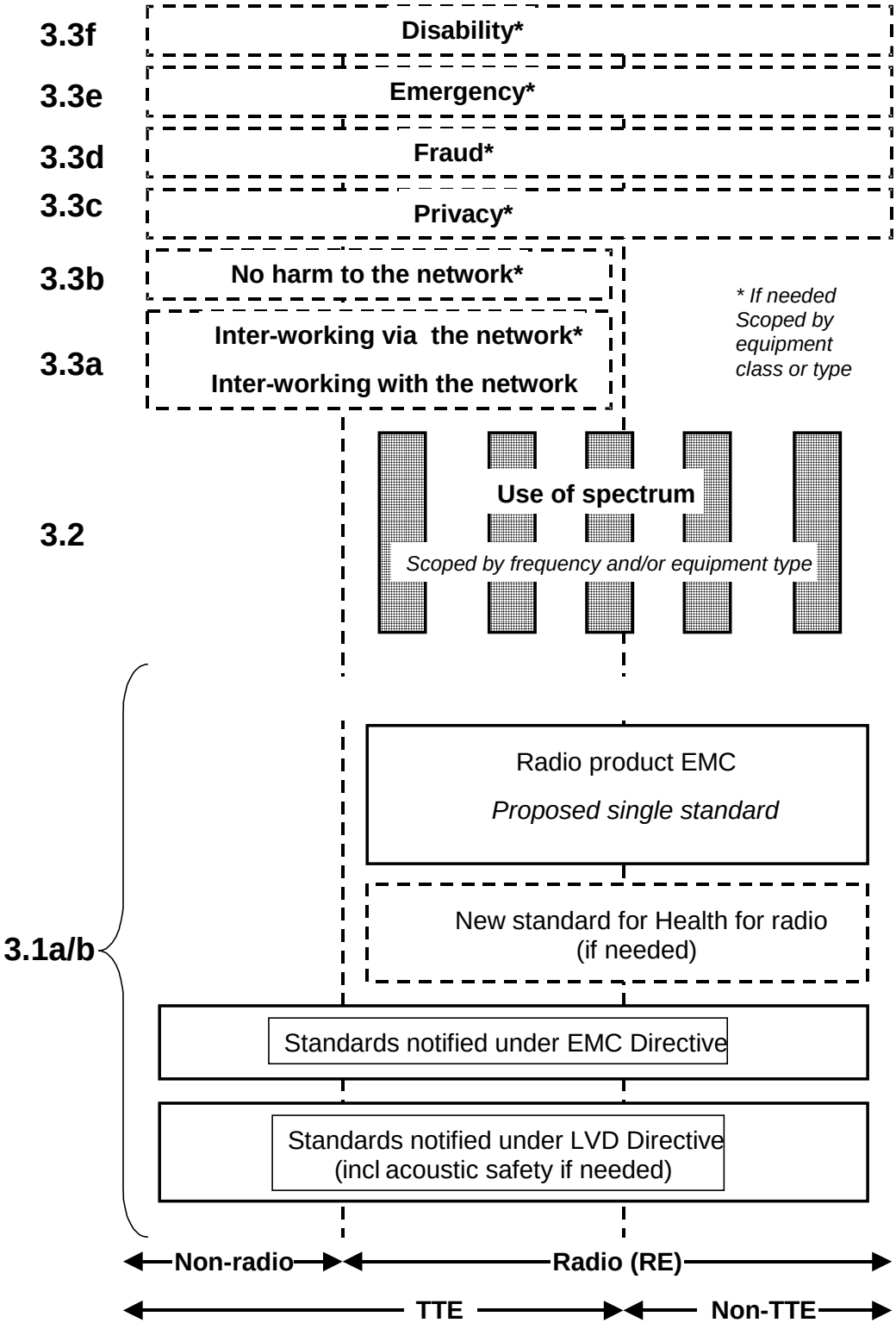


**Figure 1: Modular structure for the various standards used under the R&TTE Directive**

The left hand edge of the figure shows the different subclauses of Article 3 of the Directive.

The vertical boxes show the standards under article 3.2 for the use of the radio spectrum. 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 3.3 various horizontal boxes are shown. Their dotted lines indicate that 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 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. The General Standard will always apply to it, and 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 is adopted by the Commission and if the equipment in question lies within the scope of the corresponding standard. Thus, depending on the nature of the equipment, the essential requirements under the Directive may be covered in just the General Standard or in a set of standards that includes the General Standard.

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 under articles 3.2 and 3.3 to be added when new frequency bands are agreed or when the Commission takes decisions under article 3 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 constant envelope angle modulation systems for use in the land mobile service, using the available bandwidth, operating on radio frequencies between 30 MHz and 1 GHz, with channel separations of 12,5 kHz, 20 kHz and 25 kHz, intended for data transmissions. It applies to digital and combined analogue and digital radio equipment with an internal or external antenna connector intended for the transmission of data and/or speech.

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

- base station (equipment fitted with an antenna socket, intended for use in a fixed location);
- mobile station (equipment fitted with an antenna socket, normally used in a vehicle or as a transportable);
- and those handportable stations:
  a) fitted with an antenna socket; or
  b) without an external antenna socket (integral antenna equipment), but fitted with a permanent internal or a temporary internal 50 Ω Radio Frequency (RF) connector which allows access to the transmitter output and the receiver input.

Handportable equipment without an external or internal RF connector and without the possibility of having a temporary internal 50 Ω RF connector is not covered by the present document.

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.

# 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] EN 300 113-1 (1999): "Electronic compatibility and Radio spectrum Matters (ERM); Land Mobile Service (RP 02); radio equipment intended for the transmission of data (and speech) and having an antenna connector; Part 1: Technical characteristics and methods of measurement".

# 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 300 113-1 [2] apply.

## 3.2 Symbols

For the purposes of the present document, the symbols defined in EN 300 113-1 [2] apply.

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations defined in EN 300 113-1 [2] apply.

# 4 Technical requirements specifications

## 4.1 Transmitter requirements

### 4.1.1 Frequency error

The frequency error, as defined in EN 300 113-1 [2] subclause 8.1.1, shall not exceed the limits in EN 300 113-1 [2], table 1.

### 4.1.2 Carrier power (conducted)

The carrier power (conducted), as defined in EN 300 113-1 [2] subclause 8.2.1, shall not exceed the limits in EN 300 113-1 [2], subclause 5.1.2.

### 4.1.3 Effective radiated power

The effective radiated power, as defined in EN 300 113-1 [2] subclause 8.3.1, shall not exceed the limits in EN 300 113-1 [2], subclause 5.1.3.

### 4.1.4 Adjacent channel power

The adjacent channel power, as defined in EN 300 113-1 [2] subclause 8.5.1, shall not exceed the limits in EN 300 113-1 [2], subclause 5.1.4.

### 4.1.5 Spurious emissions

The spurious emissions, as defined in EN 300 113-1 [2] subclause 8.6.1, shall not exceed the limits in EN 300 113-1 [2], tables 2 and 3.

### 4.1.6 Intermodulation attenuation

The intermodulation attenuation, as defined in EN 300 113-1 [2] subclause 8.7.1, shall not exceed the limits in EN 300 113-1 [2], subclause 5.1.6.

### 4.1.7 Transmitter attack time

The transmitter attack time, as defined in EN 300 113-1 [2] subclause 8.8.1, shall not exceed the limits in EN 300 113-1 [2], subclause 5.1.7.

### 4.1.8 Transmitter release time

The transient periods, as defined in EN 300 113-1 [2] subclause 8.9.1, shall not exceed the limits in EN 300 113-1 [2], subclause 5.1.8.

### 4.1.9 Transient frequency behaviour of the transmitter

The transient frequency behaviour of the transmitter, as defined in EN 300 113-1 [2] subclause 8.10, shall not exceed the limits in EN 300 113-1 [2], subclause 5.1.9.1 and 5.1.9.2.

## 4.2 Receiver parameters

### 4.2.1 Sensitivity

The sensitivity, as defined in EN 300 113-1 [2] subclause 9.1.1 (conducted) and subclause 9.2 (radiated), shall not exceed the limits in EN 300 113-1 [2], subclause 5.2.1 (conducted) and subclause 5.2.2 (radiated).

### 4.2.2 Co-channel rejection

The co-channel rejection, as defined in EN 300 113-1 [2] subclause 9.5.1, shall not exceed the limits in EN 300 113-1 [2], subclause 5.2.4.

### 4.2.3 Adjacent channel selectivity

The adjacent channel selectivity, as defined in EN 300 113-1 [2] subclause 9.6.1, shall not exceed the limits in EN 300 113-1 [2], table 4.

### 4.2.4 Spurious response rejection

The spurious response rejection, as defined in EN 300 113-1 [2] subclause 9.7.1, shall not exceed the limits in EN 300 113-1 [2], subclause 5.2.6.

### 4.2.5 Intermodulation response rejection

The intermodulation response rejection, as defined in EN 300 113-1 [2] subclause 9.8.1, shall not exceed the limits in EN 300 113-1 [2], subclause 5.2.7.

### 4.2.6 Blocking or desensitization

The blocking or desensitization, as defined in EN 300 113-1 [2] subclause 9.9.1, shall not exceed the limits in EN 300 113-1 [2], subclause 5.2.8.

### 4.2.7 Spurious radiations

The spurious radiations, as defined in EN 300 113-1 [2] subclause 9.10.1, shall not exceed the limits in EN 300 113-1 [2], tables 5 and 6.

### 4.2.8 Desensitization and sensitivity (duplex)

The receiver desensitization and sensitivity, as defined in EN 300 113-1 [2] subclause 10.1.1, shall meet the requirements of EN 300 113-1 [2], subclause 5.3.1.

### 4.2.9 Spurious response rejection (duplex)

The spurious response rejection, as defined in EN 300 113-1 [2] subclause 10.2.1, shall not exceed the limits in EN 300 113-1 [2], subclause 5.3.2.

# 5 Testing for compliance with technical requirements

## 5.1 Essential radio test suites

### 5.1.1 Environmental conditions for testing

#### 5.1.1.1 Normal and extreme test-conditions

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

The test conditions and procedures shall be as specified in EN 300 113-1 [2] subclauses 6.3, 6.4 and 6.5.

#### 5.1.1.2 Test power source

The test power source shall meet the requirements of EN 300 113-1 [2] subclause 6.2.

### 5.1.2 Choice of samples for test suites

Measurement shall be performed, according to the present document, on samples of equipment defined in EN 300 113-1 [2], subclause 4.1.

### 5.1.3 Transmitter test suites

#### 5.1.3.1 Frequency error

The test specified in EN 300 113-1 [2], subclause 8.1.2 shall be carried out.

#### 5.1.3.2 Carrier power (conducted)

The test specified in EN 300 113-1 [2], subclause 8.2.2 shall be carried out.

#### 5.1.3.3 Effective radiated power

The tests specified in EN 300 113-1 [2], subclause 8.3.2 shall be carried out.

#### 5.1.3.4 Adjacent channel power

The tests specified in EN 300 113-1 [2], subclause 8.5.2 shall be carried out.

#### 5.1.3.5 Spurious emissions

The tests specified in EN 300 113-1 [2] subclause 8.6.1 and subclause 8.6.2 and subclause 8.6.3 shall be carried out.

#### 5.1.3.6 Intermodulation attenuation

The tests specified in EN 300 113-1 [2], subclause 8.7.2 shall be carried out.

#### 5.1.3.7 Transmitter attack time

The tests specified in EN 300 113-1 [2], subclause 8.8.2 shall be carried out.

#### 5.1.3.8 Transmitter release time

The tests specified in EN 300 113-1 [2], subclause 8.9.2 shall be carried out.

#### 5.1.3.9 Transient frequency behaviour of the transmitter

The tests specified in EN 300 113-1 [2], subclause 8.10.3 shall be carried out.

## 5.2 Other test specifications

The requirements in subclause 4.2 have been set on the assumption that the test specifications in table 1 will be used to verify the performance of equipment.

**Table 1: Receiver test specifications**

| Subclause | Performance requirement | Subclause on EN 300 113-1[2] containing the test method |
|---|---|---|
| 4.2.1 | Sensitivity | 9.1.2, 9.1.3 or 9.2 |
| 4.2.2 | Co-channel rejection | 9.5.2 or 9.5.3 |
| 4.2.3 | Adjacent channel selectivity | 9.6.2 or 9.6.3 |
| 4.2.4 | Spurious response rejection | 9.7.2, 9.7.3, 9.7.4 or 9.7.5 |
| 4.2.5 | Intermodulation response rejection | 9.8.2 or 9.8.3 |
| 4.2.6 | Blocking or desensitization | 9.9.2 or 9.9.3 |
| 4.2.7 | Spurious radiations | 9.10.2 or 9.10.3 |
| 4.2.8 | Desensitization and sensitivity (duplex) | 10.1.2 or 10.1.3 |
| 4.2.9 | Spurious response rejection (duplex) | 10.2.2 |

# History

| Document history | | | |
|---|---|---|---|
| V1.1.1 | February 2000 | Public Enquiry | PE 200023: 2000-02-09 to 2000-06-09 |
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