

# ETSI EN 300 086-2 V1.2.1 (2008-09)

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*Harmonized European Standard (Telecommunications series)*

**Electromagnetic compatibility  
and Radio spectrum Matters (ERM);  
Land Mobile Service;  
Radio equipment with an internal or external RF  
connector intended primarily for analogue speech;  
Part 2: Harmonized EN covering essential requirements  
under article 3.2 of the R&TTE Directive**

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## Foreword

This Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC (as amended) [i.2] 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 [i.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").

Technical specifications relevant to Directive 1999/5/EC [i.1] are given in annex A.

The present document is part 2 of a multi-part deliverable covering the Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech, 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".**

### National transposition dates

Date of adoption of this EN:	23 September 2008
Date of latest announcement of this EN (doa):	31 December 2008
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 June 2009
Date of withdrawal of any conflicting National Standard (dow):	30 June 2010

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## Introduction

The present document is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio and telecommunications terminal equipment within the scope of the R&TTE Directive. The modular structure is shown in EG 201 399 [i.3].

# 1 Scope

The present document covers the technical requirements for radio transmitters and receivers used in stations in the Private Mobile Radio (PMR) service.

It applies to use in the land mobile service, operating on radio frequencies between 30 MHz and 1 GHz, with channel separations of 12,5 kHz, 20 kHz and 25 kHz, primarily intended for analogue speech.

**Table 1: Radiocommunications service frequency bands**

Radiocommunications service frequency bands	
Transmit	30 MHz to 1 000 MHz
Receive	30 MHz to 1 000 MHz

The equipment comprises a transmitter and associated modulator and/or a receiver and associated demodulator. The types of equipment covered by the present document are as follows:

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

Hand portable equipment without an external or internal RF connector and without the possibility of having a temporary internal 50  $\Omega$  RF connector is not covered by the present document.

NOTE: Hand portable equipment without an external or internal RF connector and without the possibility of having a temporary internal 50  $\Omega$  RF connector is not covered by the present document (integral antenna equipment is covered by EN 300 296 [i.4]).

# 2 References

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.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
  - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

For online referenced documents, information sufficient to identify and locate the source shall be provided. Preferably, the primary source of the referenced document should be cited, in order to ensure traceability. Furthermore, the reference should, as far as possible, remain valid for the expected life of the document. The reference shall include the method of access to the referenced document and the full network address, with the same punctuation and use of upper case and lower case letters.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

## 2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] ETSI EN 300 086-1 (V1.3.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech; Part 1: Technical characteristics and methods of measurement".
- [2] ETSI TR 100 028 (all parts) (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

## 2.2 Informative references

The following referenced documents are not essential to the use of the ETSI deliverable but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- [i.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).
- [i.2] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.
- [i.3] ETSI EG 201 399: "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".
- [i.4] ETSI EN 300 296 (all parts): "ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Land Mobile Service; Radio equipment using integral antennas intended primarily for analogue speech".

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# 3 Definitions, symbols and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 300 086-1 [1] apply.

## 3.2 Symbols

For the purposes of the present document, the symbols given in EN 300 086-1 [1] apply.

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 300 086-1 [1] apply.

## 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 declared by the manufacturer 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 declared operational environmental profile.

### 4.2 Transmitter requirements

#### 4.2.1 Frequency error

##### 4.2.1.1 Definition

The frequency error is defined in EN 300 086-1 [1], clause 7.1.1.

##### 4.2.1.2 Limit

The frequency error shall not exceed the limits in EN 300 086-1 [1], clause 7.1.3.

##### 4.2.1.3 Conformance

Conformance tests as defined in clause 5.3.1 shall be carried out.

#### 4.2.2 Transmitter power (conducted)

##### 4.2.2.1 Definition

The transmitter power (conducted) is defined in EN 300 086-1 [1], clause 7.2.1.

##### 4.2.2.2 Limit

The transmitter power (conducted) shall not exceed the limits in EN 300 086-1 [1], clause 7.2.3.

##### 4.2.2.3 Conformance

Conformance tests as defined in clause 5.3.2 shall be carried out.

#### 4.2.3 Maximum effective radiated power

##### 4.2.3.1 Definition

The maximum effective radiated power is defined in EN 300 086-1 [1], clause 7.3.1.

##### 4.2.3.2 Limit

The maximum effective radiated power shall not exceed the limits in EN 300 086-1 [1], clause 7.3.3.

##### 4.2.3.3 Conformance

Conformance tests as defined in clause 5.3.3 shall be carried out.



## 4.2.4 Adjacent and alternate channel power

### 4.2.4.1 Definition

The adjacent and alternate channel power is defined in EN 300 086-1 [1], clause 7.5.1.

### 4.2.4.2 Limit

The adjacent and alternate channel power shall not exceed the limits in EN 300 086-1 [1], clause 7.5.3.

### 4.2.4.3 Conformance

Conformance tests as defined in clause 5.3.4 shall be carried out.

## 4.2.5 Unwanted emissions in the spurious domain

### 4.2.5.1 Definition

The unwanted emissions in the spurious domain are defined in EN 300 086-1 [1], clause 7.6.1.

### 4.2.5.2 Limit

The unwanted emissions in the spurious domain shall not exceed the limits in EN 300 086-1 [1], clause 7.6.4.

### 4.2.5.3 Conformance

Conformance tests as defined in clause 5.3.5 shall be carried out.

## 4.2.6 Intermodulation attenuation

### 4.2.6.1 Definition

The intermodulation attenuation is defined in EN 300 086-1 [1], clause 7.7.1.

### 4.2.6.2 Limit

The intermodulation attenuation shall not exceed the limits in EN 300 086-1 [1], clause 7.7.3.

### 4.2.6.3 Conformance

Conformance tests as defined in clause 5.3.6 shall be carried out.

## 4.3 Receiver requirements

### 4.3.1 Maximum usable receiver sensitivity

#### 4.3.1.1 Definition

The maximum usable receiver sensitivity is defined in EN 300 086-1 [1], clause 8.1.1 (conducted) and clause 8.2.1 (field strength).

In addition, for duplex equipment (equipment providing simultaneous transmission and reception), the receiver desensitization is defined in EN 300 086-1 [1], clause 9.1.1.