

Final draft **ETSI EN 300 296-2** V1.3.1 (2010-03)

*Harmonized European Standard (Telecommunications series)*

**Electromagnetic compatibility  
and Radio spectrum Matters (ERM);  
Land Mobile Service;  
Radio equipment using integral antennas  
intended primarily for analogue speech;  
Part 2: Harmonized EN covering essential requirements  
of article 3.2 of the R&TTE Directive**

iTeh STANDARD PREVIEW  
(standards.iteh.ai)  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/7099c5d5-2d3e-414b-ab4c-fe0104262c77/etsi-en-300-296-2-v1.3.1-2010-07>



---

Reference

REN/ERM-TGDMR-289-2

---

Keywords

analogue, mobile, PMR, radio, regulation, speech

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

---

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

iTeh STANDARD  
(Standards.itec.org)  
Full standard:  
<http://www.etsi.org/standards/standards/sist/289-285e>  
Catalog/<http://www.etsi.org/standards/standards/sist/289-285e>

---

**Important notice**

Individual copies of the present document can be downloaded from:  
<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

[http://portal.etsi.org/chaircor/ETSI\\_support.asp](http://portal.etsi.org/chaircor/ETSI_support.asp)

---

**Copyright Notification**

No part may be reproduced except as authorized by written permission.  
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2010.  
All rights reserved.

**DECT™, PLUGTESTS™, UMTS™, TIPHON™**, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

**3GPP™** is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

**LTE™** is a Trade Mark of ETSI currently being registered  
for the benefit of its Members and of the 3GPP Organizational Partners.

**GSM®** and the GSM logo are Trade Marks registered and owned by the GSM Association.

---

## Contents

Intellectual Property Rights .....	5
Foreword.....	5
Introduction .....	5
1    Scope .....	6
2    References .....	6
2.1    Normative references .....	6
2.2    Informative references.....	6
3    Definitions, symbols and abbreviations .....	7
3.1    Definitions .....	7
3.2    Symbols.....	7
3.3    Abbreviations .....	7
4    Technical specifications .....	7
4.1    Environmental profile.....	7
4.2    Transmitter requirements .....	7
4.2.1    Frequency error.....	7
4.2.1.1    Definition .....	7
4.2.1.2    Limit.....	7
4.2.1.3    Methods of measurement .....	7
4.2.2    Effective radiated power.....	8
4.2.2.1    Definition .....	8
4.2.2.2    Limit.....	8
4.2.2.3    Methods of measurement .....	8
4.2.3    Maximum permissible frequency deviation.....	8
4.2.3.1    Definition .....	8
4.2.3.2    Limit.....	8
4.2.3.3    Methods of measurement .....	8
4.2.4    Adjacent and alternate channel power.....	8
4.2.4.1    Definition .....	8
4.2.4.2    Limit.....	8
4.2.4.3    Methods of measurement.....	8
4.2.5    Radiated unwanted emissions in the spurious domain.....	8
4.2.5.1    Definition .....	8
4.2.5.2    Limit.....	8
4.2.5.3    Methods of measurement .....	8
4.3    Receiver requirements .....	9
4.3.1    Average usable sensitivity (field strength, speech).....	9
4.3.1.1    Definition .....	9
4.3.1.2    Limit.....	9
4.3.1.3    Method of measurement.....	9
4.3.2    Co-channel rejection .....	9
4.3.2.1    Definition .....	9
4.3.2.2    Limit.....	9
4.3.2.3    Method of measurement.....	9
4.3.3    Adjacent channel selectivity .....	9
4.3.3.1    Definition .....	9
4.3.3.2    Limit.....	9
4.3.3.3    Method of measurement.....	9
4.3.4    Spurious response rejection .....	9
4.3.4.1    Definition .....	9
4.3.4.2    Limit.....	9
4.3.4.3    Method of measurement.....	10
4.3.5    Intermodulation response rejection.....	10
4.3.5.1    Definition .....	10

4.3.5.2	Limit.....	10
4.3.5.3	Method of measurement.....	10
4.3.6	Blocking or desensitization.....	10
4.3.6.1	Definition .....	10
4.3.6.2	Limit.....	10
4.3.6.3	Method of measurement.....	10
4.3.7	Spurious radiations .....	10
4.3.7.1	Definition .....	10
4.3.7.2	Limit.....	10
4.3.7.3	Method of measurement.....	10
<b>5</b>	<b>Testing for compliance with technical requirements.....</b>	<b>11</b>
5.1	Environmental conditions for testing .....	11
5.1.1	Normal and extreme test-conditions .....	11
5.1.2	Test power source .....	11
5.1.3	Choice of samples for test suites.....	11
5.2	Interpretation of the measurement results .....	11
5.3	Essential radio test suites.....	11
5.3.1	Frequency error.....	11
5.3.2	Effective radiated power .....	11
5.3.3	Maximum frequency deviation.....	12
5.3.4	Adjacent and alternate channel power .....	12
5.3.5	Radiated unwanted emission in the spurious domain .....	12
5.3.6	Spurious radiations .....	12
5.4	Other test specifications .....	12
5.4.1	Average usable sensitivity (speech, field strength).....	12
5.4.2	Co-channel rejection .....	12
5.4.3	Adjacent channel selectivity .....	12
5.4.4	Spurious response rejection .....	12
5.4.5	Intermodulation response rejection.....	12
5.4.6	Blocking or desensitization.....	12
<b>Annex A (normative):</b>	<b>HS Requirements and conformance Test specifications Table (HS-RTT).....</b>	<b>13</b>
<b>Annex B (informative):</b>	<b>The EN title in the official languages .....</b>	<b>15</b>
<b>Annex C (informative):</b>	<b>Bibliography.....</b>	<b>16</b>
History .....	.....	17

---

## Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

---

## Foreword

This 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 has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations [i.2].

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") [1].

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 using integral antennas intended primarily for analogue speech, as identified below:

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

**Part 2: "Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive".**

<b>Proposed national transposition dates</b>	
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):	18 months after doa

---

## 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 [1]. The modular structure is shown in EG 201 399 [i.3].

---

## 1 Scope

The present document covers the minimum characteristics considered necessary in order to avoid harmful interference and to make acceptable use of the available frequencies.

The present document applies to equipment with integral antennas, used in angle modulation systems in the land mobile service, operating on radio frequencies between 30 MHz and 1 000 MHz, with channel separations of 12,5 kHz, 20 kHz and 25 kHz, and is intended primarily for analogue speech.

In the present document different requirements are given for the different radio frequency bands, channel separations, environmental conditions and types of equipment, where appropriate.

The present document is complementary to EN 300 086 [i.4], which covers radio equipment with an internal or external RF connector, for use in the land mobile service.

---

## 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>.

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 300 296-1 (V1.3.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment using integral antennas intended primarily for analogue speech; Part 1: Technical characteristics and methods of measurement".
- [2] ETSI TR 100 028 (V1.4.1) (all parts): "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 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 (V2.1.1): "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 300 086: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech".

---

## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in Directive 1999/5/EC [i.1] and EN 300 296-1 [1] apply.

### 3.2 Symbols

For the purposes of the present document, the symbols given in EN 300 296-1 [1] apply.

### 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 300 296-1 [1] apply.

---

## 4 Technical 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

The frequency error is defined in EN 300 296-1 [1], clause 7.1.1.

##### 4.2.1.2 Limit

The frequency error shall not exceed the limits in EN 300 296-1 [1], table 1, clause 7.1.3.

##### 4.2.1.3 Methods of measurement

The measurement as specified in EN 300 296-1 [1], clause 7.1.2, shall be carried out.

## 4.2.2 Effective radiated power

### 4.2.2.1 Definition

The effective radiated power is defined in EN 300 296-1 [1], clause 7.2.1.

### 4.2.2.2 Limit

The effective radiated power shall not exceed the limits in EN 300 296-1 [1], clause 7.2.3.

### 4.2.2.3 Methods of measurement

The measurement as specified in EN 300 296-1 [1], clause 7.2.2, shall be carried out.

## 4.2.3 Maximum permissible frequency deviation

### 4.2.3.1 Definition

The maximum permissible frequency deviation is defined in EN 300 296-1 [1], clause 7.3.1.

### 4.2.3.2 Limit

The maximum permissible frequency deviation shall not exceed the limits in EN 300 296-1 [1], clause 7.3.3.

### 4.2.3.3 Methods of measurement

The measurement as specified in EN 300 296-1 [1], clause 7.3.2, 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 300 296-1 [1], clause 7.4.1.

### 4.2.4.2 Limit

The adjacent and alternate channel power shall not exceed the limits in EN 300 296-1 [1], clause 7.4.3.

### 4.2.4.3 Methods of measurement

The measurement as specified in EN 300 296-1 [1], clause 7.4.2, shall be carried out.

## 4.2.5 Radiated unwanted emissions in the spurious domain

### 4.2.5.1 Definition

The spurious emissions are defined in EN 300 296-1 [1], clause 7.5.1.

### 4.2.5.2 Limit

The spurious emissions shall not exceed the limits in EN 300 296-1 [1], clause 7.5.3.

### 4.2.5.3 Methods of measurement

The measurement as specified in EN 300 296-1 [1], clause 7.5.2, shall be carried out.

## 4.3 Receiver requirements

### 4.3.1 Average usable sensitivity (field strength, speech)

#### 4.3.1.1 Definition

The average useable sensitivity (speech, field strength) is defined in EN 300 296-1 [1], clause 8.1.1.

#### 4.3.1.2 Limit

The average useable sensitivity (speech, field strength) shall not exceed the limits in EN 300 296-1 [1], clause 8.1.3.

#### 4.3.1.3 Method of measurement

The measurement as specified in EN 300 296-1 [1], clause 8.1.2, shall be carried out.

### 4.3.2 Co-channel rejection

#### 4.3.2.1 Definition

The co-channel rejection is defined in EN 300 296-1 [1], clause 8.3.1.

#### 4.3.2.2 Limit

The co-channel rejection shall not exceed the limits in EN 300 296-1 [1], clause 8.3.3.

#### 4.3.2.3 Method of measurement

The measurement as specified in EN 300 296-1 [1], clause 8.3.2, shall be carried out.

### 4.3.3 Adjacent channel selectivity

#### 4.3.3.1 Definition

The adjacent channel selectivity is defined in EN 300 296-1 [1], clause 8.4.1.

#### 4.3.3.2 Limit

The adjacent channel selectivity shall not exceed the limits in EN 300 296-1 [1], clause 8.4.3.

#### 4.3.3.3 Method of measurement

The measurement as specified in EN 300 296-1 [1], clause 8.4.2, shall be carried out.

### 4.3.4 Spurious response rejection

#### 4.3.4.1 Definition

The spurious response rejection is defined in EN 300 296-1 [1], clause 8.5.1.

#### 4.3.4.2 Limit

The spurious response rejection shall not exceed the limits in EN 300 296-1 [1], clause 8.5.3.