

<b>STN</b>	<b>Pevné rádiové systémy Charakteristiky a požiadavky na zariadenia a antény bod-bod Časť 4: Antény</b>	<b>STN EN 302 217-4 V2.1.1</b>  87 2217
------------	---	---

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/18

Obsahuje: EN 302 217-4 V2.1.1:2017

**127268**

# ETSI EN 302 217-4 V2.1.1 (2017-05)



**Fixed Radio Systems;  
Characteristics and requirements  
for point-to-point equipment and antennas;  
Part 4: Antennas**

---

**Reference**

DEN/ATTM-0435

---

**Keywords**antenna, DFRS, DRRS, FWA, point-to-point,  
radio, regulation, transmission**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

---

**Important notice**The present document can be downloaded from:  
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (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  
<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:  
<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

---

**Copyright Notification**

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.  
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2017.  
All rights reserved.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.  
**3GPP™** and **LTE™** are Trade Marks of ETSI 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 .....	4
Foreword.....	4
Modal verbs terminology.....	4
1 Scope .....	5
2 References .....	5
2.1 Normative references .....	5
2.2 Informative references.....	6
3 Definitions, symbols and abbreviations .....	6
3.1 Definitions .....	6
3.2 Symbols.....	6
3.3 Abbreviations .....	6
4 Technical requirements specifications .....	7
4.1 Introduction .....	7
4.2 Templates for definition of Radiation Pattern Envelope (RPE) classes .....	7
4.3 Environmental profile.....	10
4.4 Radiation Pattern Envelope (RPE).....	10
4.4.1 Introduction.....	10
4.4.2 Frequency range 0: 1 GHz to 3 GHz .....	11
4.4.3 Frequency range 1: 3 GHz to 14 GHz .....	15
4.4.4 Frequency range 2: 14 GHz to 20 GHz.....	18
4.4.5 Frequency range 3: 20 GHz to 24 GHz.....	21
4.4.6 Frequency range 4: 24 GHz to 30 GHz.....	24
4.4.7 Frequency range 5: 30 GHz to 47 GHz.....	27
4.4.8 Frequency range 6: 47 GHz to 66 GHz.....	31
4.4.9 Frequency range 7: 66 GHz to 86 GHz.....	34
4.5 Cross-Polar Discrimination (XPD).....	37
4.5.1 XPD categories .....	37
4.5.2 XPD category 1.....	38
4.5.3 XPD categories 2 and 3 .....	38
4.5.3.1 Frequency range 1 GHz to 3 GHz .....	38
4.5.3.2 Frequency range 3 GHz to 86 GHz.....	38
4.6 Antenna gain .....	40
5 Testing for compliance with technical requirements.....	40
5.1 Environmental conditions for testing .....	40
5.2 Wide radio-frequency band covering antennas specification and tests .....	40
<b>Annex A (informative): Additional information.....</b>	<b>41</b>
A.1 Mechanical characteristics .....	41
A.1.1 Environmental characteristics .....	41
A.1.2 Wind ratings .....	41
A.1.3 Antenna stability .....	41
A.2 Antenna input connectors.....	42
A.3 Return loss at the input ports.....	42
A.4 Inter-port isolation.....	42
A.5 Antenna labelling .....	42
<b>Annex B (informative): Antenna gain and radiation pattern information .....</b>	<b>43</b>
B.1 Impact of antenna gain on the frequency planning .....	43
B.2 Gain and typical radiation pattern for circular-symmetric antennas .....	43
History .....	45

---

## 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 (<https://ipr.etsi.org/>).

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 European Standard (EN) has been produced by ETSI Technical Committee Access, Terminals, Transmission and Multiplexing (ATTM).

The present document is part 4 of a multi-part deliverable covering the Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas. Full details of the entire series can be found in ETSI EN 302 217-1 [2].

<b>National transposition dates</b>	
Date of adoption of this EN:	15 September 2016
Date of latest announcement of this EN (doa):	31 December 2016
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 June 2017
Date of withdrawal of any conflicting National Standard (dow):	30 June 2018

---

## Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

---

# 1 Scope

The present document defines the characteristics and requirements of antennas for point-to-point radio equipment operating in the frequency range from 1 GHz to 86 GHz falling within the scope of ETSI EN 302 217-2 [i.4].

For technical commonalities that range is here divided into sub-ranges as follows:

Range 0:	1 GHz to 3 GHz;
Range 1:	3 GHz to 14 GHz;
Range 2:	14 GHz to 20 GHz;
Range 3:	20 GHz to 24 GHz;
Range 4:	24 GHz to 30 GHz;
Range 5:	30 GHz to 47 GHz;
Range 6:	47 GHz to 66 GHz;
Range 7:	66 GHz to 86 GHz.

The present document is applicable to fixed radio equipment with *integral* or *dedicated antennas*, and to *stand-alone antennas*. In the latter case the present document may be used to provide guidance as to the information to be supplied by a manufacturer as required by article 10 paragraph 8 of Directive 2014/53/EU [i.2].

The main body of the present document specifies the characteristics that define the various antenna classes, whilst the annexes provide additional information that is useful to both antenna manufacturers and user/installers.

---

## 2 References

### 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI EN 301 126-3-1 (V1.1.2): "Fixed Radio Systems; Conformance testing; Part 3-1: Point-to-Point antennas; Definitions, general requirements and test procedures".
- [2] ETSI EN 302 217-1 (V3.1.1): "Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 1: Overview, common characteristics and system-independent requirements".
- [3] IEC 60154-1: "Flanges for waveguides. Part 1: General requirements".
- [4] IEC 60154-2: "Flanges for waveguides. Part 2: Relevant specifications for flanges for ordinary rectangular waveguides".
- [5] IEC 60169-1: "Radio-frequency connectors. Part 1: General requirements and measuring methods".

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] Void.
- [i.2] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.
- [i.3] Void.
- [i.4] ETSI EN 302 217-2 (V3.1.1): "Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 2: Digital systems operating in frequency bands from 1 GHz to 86 GHz; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU".
- [i.5] Void.
- [i.6] ETSI EN 301 126-1: "Fixed Radio Systems; Conformance testing; Part 1: Point-to-point equipment - Definitions, general requirements and test procedures".
- [i.7] Recommendation ITU-R F.699: "Reference radiation patterns for fixed wireless system antennas for use in coordination studies and interference assessment in the frequency range from 100 MHz to about 70 GHz".

---

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**