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

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Part 4: Antennas**

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Contents

Intellectual Property Rights	5
Foreword.....	5
Modal verbs terminology.....	5
1 Scope	6
2 References	6
2.1 Normative references	6
2.2 Informative references.....	7
3 Definition of terms, symbols and abbreviations.....	7
3.1 Terms.....	7
3.2 Symbols.....	7
3.3 Abbreviations	8
4 Technical requirements specifications	8
4.1 Introduction	8
4.2 Templates for definition of Radiation Pattern Envelope (RPE) classes	8
4.3 Environmental profile.....	11
4.4 Radiation Pattern Envelope (RPE).....	11
4.4.1 Introduction.....	11
4.4.2 Frequency range 0: 1 GHz to 3 GHz	12
4.4.3 Frequency range 1: 3 GHz to 14 GHz	16
4.4.4 Frequency range 2: 14 GHz to 20 GHz.....	19
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.....	26
4.4.8 Frequency range 6: 47 GHz to 71 GHz.....	30
4.4.9 Frequency range 7: 71 GHz to 86 GHz.....	32
4.4.10 Frequency range 8: 92 GHz to 114,25 GHz.....	35
4.4.11 Frequency range 9: 130 GHz to 175,8 GHz.....	36
4.5 Cross-Polar Discrimination (XPD).....	37
4.5.1 XPD categories	37
4.5.2 XPD category 1.....	37
4.5.3 XPD categories 2 and 3	37
4.5.3.1 Frequency range 1 GHz to 3 GHz.....	37
4.5.3.2 Frequency range 3 GHz to 174,8 GHz.....	38
4.6 Antenna gain	39
5 Testing for compliance with technical requirements.....	40
5.1 Environmental conditions for testing	40
5.2 General test prescription.....	40
5.2.1 Wide radio-frequency band covering antennas specification and tests.....	40
5.2.2 <i>Self-alignment tracking</i> antennas	40
Annex A (informative): Additional information.....	41
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 port connectors.....	41
A.3 Return loss at the port connectors	42
A.3.1 Background	42
A.3.2 Typical RL guidelines	42
A.4 Inter-port isolation.....	42
A.5 Antenna labelling	42

Annex B (informative):	Antenna gain and radiation pattern information	43
B.1	Impact of antenna gain on the frequency planning	43
B.2	Typical Gain and Radiation Pattern for circular-symmetric antennas	43
B.2.1	Introduction	43
B.2.2	Gain	44
B.2.3	Radiation pattern	44
Annex C (informative):	Change history	45
History		46

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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 part 1 [2].

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Date of adoption of this EN:	2 July 2025
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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).

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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 174,8 GHz falling within the scope (see note) of ETSI EN 302 217-2 [i.2].

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 71 GHz;
Range 7:	71 GHz to 86 GHz;
Range 8:	92 GHz to 114,25 GHz;
Range 9:	130 GHz to 174,8 GHz.

The present document is applicable to fixed radio equipment with *integral* (see note) or *dedicated antennas*.

NOTE: For information, ETSI EN 302 217-2 [i.2] includes in its scope only the use of *detachable integral antennas*; *undetachable integral antennas* are not considered due to the present lack of radiated test procedures for the radio equipment parameters.

The present document also applies to *stand-alone antennas*, placed separately on the market. In this case the present document is to be used by radio equipment manufacturers to provide guidance as to the information for the user, as required by article 10 paragraph 8 of Directive 2014/53/EU [i.1], regarding the antenna characteristics required so as the radio equipment, supplied without antenna, can operate as intended in its *technical documentation*.

The present document is applicable to fixed beam antennas, as well as to "*self-alignment tracking*" antenna, with limited tracking range, so that all requirements in the present document are respected throughout the *tracking angle* indicated in the *technical documentation*.

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.

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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 \(V3.4.1\)](#): "Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 1: Overview, common characteristics and requirements not related to access to radio spectrum".
- [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

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- [i.1] [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.2] ETSI EN 302 217-2 (V3.4.1): "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 174,8 GHz; Harmonised Standard for access to radio spectrum".
- [i.3] 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 86 GHz".
- [i.4] Recommendation ITU-R F.1245: "Mathematical model of average and related radiation patterns for point-to-point fixed wireless system antennas for use in interference assessment in the frequency range from 1 GHz to 86 GHz".

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