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Fixed Radio Systems; Multipoint Equipment and Antennas; Part 3: Multipoint Antennas

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Foreword

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

This multi-part deliverable covers characteristics and requirements for fixed multipoint radio equipment and antennas, using a variety of access and duplex methods and operating at a variety of bit rates in frequency bands as specified in the present document.

The present document is part 3 of a multi-part deliverable covering the Fixed Radio Systems; Multipoint Equipment and Antennas, as identified below:

Part 1: "Overview and Requirements for Digital Multipoint Radio Systems";

Part 2: "Harmonised Standard for access to radio spectrum";

Part 3: "Multipoint Antennas".

NOTE: Part 1 is no longer maintained and referenced in other parts of the series.

The present document includes requirements for antennas whether they are *integral* or *non-integral* (i.e. *dedicated* or *stand-alone* antennas).

National transposition dates	
Date of adoption of this EN:	30 August 2021
Date of latest announcement of this EN (doa):	30 November 2021
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2022
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Modal verbs terminology

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Introduction

For the general background, rationale and structure of the present document see also the clause "Introduction" in ETSI EN 302 326-2 [i.4].

1 Scope

1.1 General

The present document is applicable to antennas (*stand-alone, dedicated* or *integral* antennas according to the definitions of terms in clause 3.1) used in MultiPoint (MP) Digital Fixed Radio Systems (DFRS) (see note 1) intended for use in the frequency bands identified in ETSI EN 302 326-2 [i.4].

NOTE 1: Applications intended for offering in the bands 3,4 GHz to 3,8 GHz the option of Nomadic Wireless Access (NWA), according to the NWA definition in Recommendation ITU-R F.1399 [i.3], are also considered in the scope of the present document.

For Multipoint Fixed Radio Systems, antenna characteristics are not considered relevant to essential requirements under article 3.2 of Directive 2014/53/EU [i.1] (see note 2). Antenna characteristics in the present document are considered applicable whenever they are considered appropriate for the associated multipoint radio system.

NOTE 2: Rationale can be found in ETSI TR 101 506 [i.2].

1.2 Antenna types and operating frequency

The present document is applicable to multipoint radio system antennas of both linear (single or dual) polarization and circular (single or dual) polarization. Linear polarization antennas may support either or both of two mutually perpendicular planes of polarization. These planes are frequently, though not always, horizontal and vertical. Circular polarization antennas may support either *right hand* or *left hand* polarization or, for dual polarization, both.

The RPE directional characteristics and polarization characteristics (co-polar and cross-polar and for either linear or circular polarized antennas) impact on the interference has to be considered in network planning. A number of antenna options are defined in the present document.

Table 1 outlines the multipoint antenna types and their operating frequencies described in the present document.

NOTE: Antenna characteristics are not standardized at frequencies below 1 GHz.

Table 1: Antenna Types

Frequency Range (see note)	Types	Polarization	Notes
1 GHz to 3 GHz	Directional Sectored single beam Omnidirectional	Linear	The sectored and omnidirectional antennas may have a symmetric or asymmetric radiation pattern in the <i>elevation plane</i> .
3 GHz to 5,9 GHz, 5,9 GHz to 8,5 GHz and 8,5 GHz to 11 GHz	Directional Sectored single beam Sectored multi-beam (up to 5,9 GHz only) Omnidirectional	Linear	The sectored single and omnidirectional antennas may have a symmetric or asymmetric radiation pattern in the <i>elevation plane</i> . The sectored multi-beam antennas have a symmetric radiation pattern only.
1 GHz to 11 GHz	Directional Sectored single beam Omnidirectional	Circular	The sectored and omnidirectional antennas may have a symmetric or asymmetric radiation pattern in the <i>elevation plane</i> .
24,25 GHz to 30 GHz	Directional Sectored single beam	Linear	
30 GHz to 40,5 GHz and 40,5 GHz to 43,5 GHz	Directional Sectored single beam Omnidirectional	Linear	The omnidirectional antennas may have a symmetric or asymmetric radiation pattern in the <i>elevation plane</i> .
NOTE: Attention is drawn to the fact that the specific operating bands are subject of CEPT or national licensing rules. Currently applicable Fixed Service bands and channel plans are described in ETSI EN 302 326-2 [i.4], although the applicability of these Fixed Service bands is at the discretion of the national administrations. Therefore, the present document applies only to those bands which are allocated to the Fixed Service and/or assigned by national regulations to MP applications on the date on which the EN was published.			

1.3 Profiles

The present document and associated ETSI EN 302 326-2 [i.4] for equipment and systems allows many distinct types of equipment, several different antenna types and several ways in which they might be interconnected to form a network. However, the applicability is limited to certain combinations of attributes and these combinations of attributes are called "profiles":

- Equipment profiles.
- Antenna profiles.
- System profiles.

Annex A discusses Equipment, Antennas and System Profiles for multipoint systems in the scope of this multi-part deliverable.

2 References

2.1 Normative references

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| [1] | ETSI EN 301 126-3-2: "Fixed Radio Systems; Conformance testing; Part 3-2: Point-to-Multipoint antennas - Definitions, general requirements and test procedures". |
| [2] | ETSI EN 302 217-4: "Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 4: Antennas". |
| [3] | Void. |
| [4] | Void. |

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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.

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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 TR 101 506 (V2.1.1): "Fixed Radio Systems; Generic definitions, terminology and applicability of essential requirements covering article 3.2 of Directive 2014/53/EU to Fixed Radio Systems".
- [i.3] Recommendation ITU-R F.1399: "Vocabulary of terms for wireless access".
- [i.4] ETSI EN 302 326-2 (V2.1.1): "Fixed Radio Systems; Multipoint Equipment and Antennas; Part 2: Harmonised Standard for access to radio spectrum".

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