



Institut luxembourgeois de la normalisation  
de l'accréditation, de la sécurité et qualité  
des produits et services

**ILNAS-EN 302 326-3 V2.1.1  
(2021-09)**

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

## National Foreword

This European Standard EN 302 326-3 V2.1.1 (2021-09) was adopted as Luxembourgish Standard ILNAS-EN 302 326-3 V2.1.1 (2021-09).

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

<https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html>

### **THIS PUBLICATION IS COPYRIGHT PROTECTED**

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!



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

Reference
REN/ATTM-0440
Keywords
access, antenna, DFRS, FWA, multipoint, radio

***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 - APE 7112B  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° w061004871

***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 prevailing version of an ETSI deliverable is the one made publicly available in PDF format at [www.etsi.org/deliver](http://www.etsi.org/deliver).

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>

***Notice of disclaimer & limitation of liability***

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.  
In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

***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.

© ETSI 2021.  
All rights reserved.

# Contents

Intellectual Property Rights .....	5
Foreword.....	5
Modal verbs terminology.....	6
Introduction .....	6
1    Scope .....	7
1.1    General .....	7
1.2    Antenna types and operating frequency .....	7
1.3    Profiles .....	8
2    References .....	8
2.1    Normative references .....	8
2.2    Informative references.....	8
3    Definition of terms, symbols and abbreviations.....	9
3.1    Terms.....	9
3.2    Symbols.....	12
3.3    Abbreviations .....	13
4    Technical requirements specifications .....	13
4.1    Classification of antennas.....	13
4.2    Characteristics description.....	14
4.2.1    General.....	14
4.2.2    Radiation Pattern Envelope (RPE).....	14
4.2.3    Antenna Gain.....	15
4.3    Environmental specifications and test .....	15
4.4    Radiation Pattern Envelope (RPE) requirements .....	16
4.4.1    Directional antennas (DN): co-polar and cross-polar RPEs.....	16
4.4.1.1    Antenna classes defined in the present document .....	16
4.4.1.2    Bands from 1 GHz to 11 GHz and from 24,25 GHz to 40,5 GHz.....	16
4.4.1.3    Band 40,5 GHz to 43,5 GHz .....	20
4.4.1.4    Directional antennas conforming to ETSI EN 302 217-4 [2].....	22
4.4.2    Sected Single beam (SS) antennas.....	22
4.4.2.1    Radiation Pattern Envelope (RPE), azimuth: co-polar and cross-polar .....	22
4.4.2.2    Radiation Pattern Envelope (RPE), elevation .....	25
4.4.2.2.1    Symmetric elevation RPEs: co-polar and cross-polar .....	25
4.4.2.2.2    Asymmetric elevation RPEs: co-polar and cross-polar (bands 1 GHz to 11 GHz only) .....	26
4.4.3    Sected multi-beam antennas (MS) (bands from 3 GHz to 5,9 GHz only).....	26
4.4.3.1    General .....	26
4.4.3.2    Radiation Pattern Envelope (RPE), azimuth: co-polar and cross-polar .....	27
4.4.3.3    Radiation Pattern Envelope (RPE), elevation: co-polar and cross-polar.....	29
4.4.4    Omnidirectional antennas (OD and ODT) .....	29
4.4.4.1    General .....	29
4.4.4.2    CS Radiation Pattern Envelope (RPE), elevation.....	29
4.4.4.2.1    Symmetric elevation RPEs: co-polar and cross-polar .....	29
4.4.4.2.2    Asymmetric elevation RPEs: co-polar and cross-polar .....	30
4.4.4.3    TS Radiation Pattern Envelope (RPE) .....	31
4.5    Antenna gain requirements.....	31
4.5.1    General.....	31
4.5.2    Directional antennas .....	31
4.5.3    Sected single beam antennas .....	32
4.5.4    Sected multi-beam antennas (bands from 3 GHz to 5,9 GHz only) .....	32
4.5.5    Omnidirectional antennas .....	32
4.5.5.1    CS OmniDirectional (OD) .....	32
4.5.5.2    TS omnidirectional (ODT).....	33
5    Testing for conformance with technical requirements .....	33
5.1    Void.....	33

5.2	Wide radio-frequency band covering antennas specification and test.....	33
5.3	Environmental conditions for Testing .....	33
5.4	Radiation Pattern Envelope (RPE) .....	33
5.5	Antenna gain .....	34
<b>Annex A (informative):</b>	<b>Multipoint systems and Antenna profiles.....</b>	<b>35</b>
A.1	General .....	35
A.2	Equipment profiles .....	35
A.3	System profiles .....	35
A.4	Directional antennas .....	36
A.5	Sectorial and omnidirectional antennas.....	36
<b>Annex B (informative):</b>	<b>Bibliography.....</b>	<b>37</b>
	History .....	38