Draft ETSI EN 302 217-2 V3.3.0 (2021-06)

HARMONISED EUROPEAN STANDARD

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 for access to radio spectrum

Reference

REN/ATTM-0450

Keywords

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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
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Foreword

This draft Harmonised European Standard (EN) has been produced by ETSI Technical Committee Access, Terminals, Transmission and Multiplexing (ATTM), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.61] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU 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.1].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

The present document is part 2 of a multi-part deliverable covering 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 [5].

Proposed national transposition dates	
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

Major changes with respect to previously published versions are summarized in annex U.

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.

Introduction

The ETSI EN 302 217 series has been produced in order to rationalize a large number of previous ETSI ENs dealing with equipment and antennas for Point-to-Point (P-P) Fixed Service applications. For more details, see foreword in ETSI EN 302 217-1 [5].

In the present document the "*italic"* font is used for "terms" defined in clause 3.1 of ETSI EN 302 217-1 [5].

1 Scope

The present document specifies technical characteristics and methods of measurements for Point-to-point (P-P) Digital Fixed Radio Systems (DFRS) operating in frequency bands allocated to Fixed Service (FS) from 1 GHz to 86 GHz, corresponding to the appropriate frequency bands from 1,4 GHz to 86 GHz as described in annex B to annex J.

Systems in the scope of the present document are generally intended to operate in full Frequency Division Duplex (FDD) and cover also unidirectional applications. Time Division Duplex (TDD) applications, when possibly applicable in a specific band, are explicitly mentioned as appropriate in annex B through annex J.

Systems may be composed by equipment without antennas (see informative annex Q for background) or equipment including *integral* or *dedicated antenna*, both cases are in the scope of the present document.

The present document covers requirements to demonstrate that radio equipment both effectively uses and supports the efficient use of radio spectrum in order to avoid harmful interference

NOTE: The relationship between the present document and the essential requirements of article 3.2 of Directive 2014/53/EU [i.1] is given in annex A.

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 https://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 301 126-1 (V1.1.2) (09-1999): "Fixed Radio Systems; Conformance testing; Part 1: Point-to-point equipment - Definitions, general requirements and test procedures".

[2] ETSI EN 301 126-3-1 (V1.1.2) (12-2002): "Fixed Radio Systems; Conformance testing; Part 3-1: Point-to-Point antennas; Definitions, general requirements and test procedures".

[3] CEPT/ERC/REC 74-01 (May 2019): "Unwanted emissions in the spurious domain".

[4] ETSI EN 301 390 (V1.3.1) (08-2013): "Fixed Radio Systems; Point-to-point and Multipoint Systems; Unwanted emissions in the spurious domain and receiver immunity limits at equipment/antenna port of Digital Fixed Radio Systems".

[5] ETSI EN 302 217-1 (V3.3.0): "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".

NOTE: This revised version of ETSI EN 302 217-1 is included in the same EN AP together with the present document.

[6] ETSI EN 302 217-4 (V2.1.1) (05-2017): "Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 4: Antennas".

[7] Recommendation ITU-T O.151 (10-1992)/Corrigendum 1 (05-2002): "Error performance measuring equipment operating at the primary rate and above".

[8] Recommendation ITU-T O.181 (05-2002): "Equipment to assess error performance on STM-N interfaces".

[9] Recommendation ITU-T O.191 (02-2000): "Equipment to measure the cell transfer performance of ATM connections".

[10] IEEE 802.3™-2018: "IEEE Standard for Ethernet".

[11] ITU Radio Regulations (2020).

[12] ITU-R Resolution 750 (REV.WRC-19): "Compatibility between the Earth exploration-satellite service (passive) and relevant active services".

[13] ETSI EN 300 019-1-3 (V2.4.1) (04-2014): "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-3: Classification of environmental conditions; Stationary use at weatherprotected locations".

[14] ETSI EN 300 019-1-4 (V2.2.1) (04-2014): "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-4: Classification of environmental conditions; Stationary use at non-weatherprotected locations".

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] 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 EG 203 336 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".

[i.3] CEPT/ERC/REC (01)02 (2019): "Preferred channel arrangement for digital fixed service systems operating in the frequency band 31.8 - 33.4 GHz".

[i.4] CEPT/ERC/REC 12-02 (2007): "Harmonized radio frequency channel arrangements for analogue and digital terrestrial fixed systems operating in the band 12.75 GHz to 13.25 GHz".

[i.5] CEPT/ERC/REC 12-03 (2019): "Harmonized radio frequency channel arrangements for digital terrestrial fixed systems operating in the band 17.7 GHz to 19.7 GHz".

[i.6] CEPT/ERC/REC 12-05 (2007): "Harmonized radio frequency channel arrangements for digital terrestrial fixed systems operating in the band 10.0 - 10.68 GHz".

[i.7] CEPT/ERC/REC 12-06 (2019): "Harmonized radio frequency channel arrangements for digital terrestrial fixed systems operating in the band 10.7 GHz to 11.7 GHz".

[i.8] CEPT/ERC/REC 12-07 (1996): "Harmonized radio frequency channel arrangements for digital terrestrial fixed systems operating in the band 14.5 - 14.62 GHz paired with 15.23 - 15.35 GHz".

[i.9] CEPT/ERC/REC 12-08 (1998): "Harmonized radio frequency channel arrangements and block allocations for low, medium and high capacity systems in the band 3600 MHz to 4200 MHz".

[i.10] CEPT/ERC/REC 12-11 (2015): "Radio frequency channel arrangement for fixed service systems operating in the bands 48.5-50.2 GHz and 50.9-52.6 GHz".

[i.11] CEPT/ERC/REC 12-12 (2015): "Radio frequency channel arrangement for fixed service systems operating in the band 55.78-57.0 GHz".

[i.12] CEPT/ERC/REC 14-01 (2014): "Radio-frequency channel arrangements for high capacity analogue and digital radio-relay systems operating in the band 5925 MHz - 6425 MHz".

[i.13] CEPT/ERC/REC 14-02 (2014): "Radio-frequency channel arrangements for medium and high capacity analogue or high capacity digital radio-relay systems operating in the band 6425 MHz - 7125 MHz".

[i.14] CEPT/ERC/REC 14-03 (1997): "Harmonized radio frequency channel arrangements for low and medium capacity systems in the band 3400 MHz to 3600 MHz".

[i.15] CEPT/ERC/REC T/R 12-01 (2019): "Preferred channel arrangements for fixed service systems operating in the band 37-39.5 GHz".

[i.16] CEPT/ERC/REC T/R 13-01 (2010): "Preferred channel arrangements for fixed services systems operating in the frequency range 1-2.3 GHz".

[i.17] CEPT/ERC/REC T/R 13-02 (2010): "Preferred channel arrangements for fixed services systems in the frequency range 22.0 - 29.5 GHz".

[i.18] CEPT ECC/REC (01)04 (2014): "Recommended guidelines for the accommodation and assignment of Fixed Multimedia Wireless Systems (MWS) and Point-to-point (P-P) Fixed Wireless Systems in the frequency band 40.5-43.5 GHz".

[i.19] ECC Report 198: "Adaptive modulation and ATPC operations in fixed point-to-point systems - Guideline on coordination procedures".

[i.20] CEPT ECC/REC (02)02 (2010): "Channel arrangement for digital fixed service systems (point-to-point and point-to-multipoint) operating in the frequency band 31 - 31.3 GHz".

[i.21] CEPT ECC/REC (02)06 (2015): "Preferred channel arrangements for digital fixed service systems operating in the frequency range 7125-8500 MHz".

[i.22] CEPT ECC/REC (05)02 (2009): "Use of the 64 - 66 GHz frequency band for Fixed Service".

[i.23] CEPT ECC/REC(05)07 (2013): "Radio frequency channel arrangements for fixed service systems operating in the bands 71-76 GHz and 81-86 GHz".

[i.24] CEPT ECC/REC(09)01 (2009): "Use of the 57 - 64 GHz frequency band for point-to-point Fixed Wireless Systems".

[i.25] CEPT ECC/REC(14)06 (2015): "Implementation of Fixed Service Point-to-Point narrow channels (3.5 MHz, 1.75 MHz, 0.5 MHz, 0.25 MHz, 0.025 MHz) in the guard bands and centre gaps of the lower 6 GHz (5925 to 6425 MHz) and upper 6 GHz (6425 to 7125 MHz) bands".

[i.26] ETSI TR 100 028 (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

[i.27] 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.28] ETSI TR 101 854: "Fixed Radio Systems; Point-to-point equipment; Derivation of receiver interference parameters useful for planning fixed service point-to-point systems operating different equipment classes and/or capacities".

[i.29] ETSI TR 102 215: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Recommended approach, and possible limits for measurement uncertainty for the measurement of radiated electromagnetic fields above 1 GHz".

[i.30] ETSI TR 102 243-1: "Fixed Radio Systems; Representative values for transmitter power and antenna gain to support inter- and intra-compatibility and sharing analysis; Part 1: Digital point-to-point systems".

[i.31] ETSI TR 102 565: "Fixed Radio Systems (FRS); Point-to-point systems; Requirements and bit rates of PtP Fixed Radio Systems with packet data interfaces, effects of flexible system parameters, use of mixed interfaces and implications on IP/ATM networks".

[i.32] ETSI TR 103 103: "Fixed Radio Systems; Point-to-point systems; ATPC, RTPC, Adaptive Modulation (mixed-mode) and Bandwidth Adaptive functionalities; Technical background and impact on deployment, link design and coordination".

[i.33] Recommendation ITU-R F.382-8: "Radio-frequency channel arrangements for fixed wireless systems operating in the 2 and 4 GHz bands".

[i.34] Recommendation ITU-R F.383-9: "Radio-frequency channel arrangements for high capacity fixed wireless systems operating in the lower 6 GHz (5 925 to 6 425 MHz) band".

[i.35] Recommendation ITU-R F.384-11: "Radio-frequency channel arrangements for medium and high capacity digital fixed wireless systems operating in the 6 425-7 125 MHz band".

[i.36] Recommendation ITU-R F.385-10: "Radio-frequency channel arrangements for fixed wireless systems operating in the 7 110-7 900 MHz band".

[i.37] Recommendation ITU-R F.386-9: "Radio-frequency channel arrangements for fixed wireless systems operating in the 8 GHz (7 725 to 8 500 MHz) band".

[i.38] Recommendation ITU-R F.387-12: "Radio-frequency channel arrangements for fixed wireless systems operating in the 10.7-11.7 GHz band".

[i.39] Recommendation ITU-R F.497-7: "Radio-frequency channel arrangements for fixed wireless systems operating in the 13 GHz (12.75-13.25 GHz) frequency band".

[i.40] Recommendation ITU-R F.595-10: "Radio-frequency channel arrangements for fixed wireless systems operating in the 17.7-19.7 GHz band".

[i.41] Recommendation ITU-R F.635-7: "Radio-frequency channel arrangements based on a homogeneous pattern for fixed wireless systems operating in the 4 GHz band".

[i.42] Recommendation ITU-R F.636-4: "Radio-frequency channel arrangements for fixed wireless systems operating in the 14.4-15.35 GHz band".

[i.43] Recommendation ITU-R F.637-4: "Radio-frequency channel arrangements for fixed wireless systems operating in the 21.2-23.6 GHz band".

[i.44] Recommendation ITU-R F.746-10: "Radio-frequency arrangements for fixed service systems".

[i.45] Recommendation ITU-R F.747-1: "Radio-frequency channel arrangements for fixed wireless systems operating in the 10-10.68 GHz band".

[i.46] Recommendation ITU-R F.748-4: "Radio-frequency arrangements for systems of the fixed service operating in the 25, 26 and 28 GHz bands".

[i.47] Recommendation ITU-R F.749-3: "Radio-frequency arrangements for systems of the fixed service operating in sub-bands in the 36-40.5 GHz band".

[i.48] Recommendation ITU-R F.1098-1: "Radio-frequency channel arrangements for fixed wireless systems in the 1 900 - 2 300 MHz band".

[i.49] Recommendation ITU-R F.1099-5: "Radio-frequency channel arrangements for high and medium capacity digital fixed wireless systems in the upper 4 GHz (4 400-5 000 MHz) band".

[i.50] Void.

[i.51] Recommendation ITU-R F.1191-3: "Necessary and occupied bandwidths and unwanted emissions of digital fixed service systems".

[i.52] Recommendation ITU-R F.1242-0: "Radio-frequency channel arrangements for digital radio systems operating in the range 1 350 MHz to 1 530 MHz".

[i.53] Recommendation ITU-R F.1243-0: "Radio-frequency channel arrangements for digital radio systems operating in the range 2 290-2 670 MHz".

[i.54] Recommendation ITU-R F.1496-1: "Radio-frequency channel arrangements for fixed wireless systems operating in the band 51.4-52.6 GHz".

[i.55] Recommendation ITU-R F.1497-2: "Radio-frequency channel arrangements for fixed wireless systems operating in the band 55.78-66 GHz".

[i.56] Recommendation ITU-R F.1520-3: "Radio-frequency arrangements for systems in the fixed service operating in the band 31.8-33.4 GHz".

[i.57] Recommendation ITU-R F.2005-0: "Radio-frequency channel and block arrangements for fixed wireless systems operating in the 42 GHz (40.5 to 43.5 GHz) band".

[i.58] Recommendation ITU-R F.2006-0: "Radio-frequency channel and block arrangements for fixed wireless systems operating in the 71-76 and 81-86 GHz bands".

[i.59] Recommendation ITU-R SM.329-12: "Unwanted emissions in the spurious domain".

[i.60] Recommendation ITU-R SM.1539-1: "Variation of the boundary between the out-of-band and spurious domains required for the application of Recommendations ITU-R SM.1541 and ITU-R SM.329".

[i.61] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI EN 302 217-1 [5] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in ETSI EN 302 217-1 [5] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI EN 302 217-1 [5] apply.

4 Technical requirements specifications

4.0 Generality

4.0.1 The "Manufacturer declarations" concept

Fixed radio systems in the scope of the present document, besides being implemented in a wide range of frequency . bands, are also designed for covering specific applications among a wide range of possible operational options.

Therefore, provided that the technical requirements are tailored for those specific operational options, the manufacturer should univocally identify (declaration) those covered by its equipment design in order to apply the relevant requirements.