

STN	Pevné rádiové systémy. Charakteristiky a požiadavky na zariadenia a antény bod-bod. Časť 2-1: Systémovo závislé požiadavky na digitálne systémy pracujúce vo frekvenčných pásmach, kde sa uplatňuje frekvenčná regulácia.	STN EN 302 217-2-1 V2.1.1 87 2217
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Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 2-1: System-dependent requirements for digital systems operating in frequency bands where frequency co-ordination is applied

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**Fixed Radio Systems;
Characteristics and requirements
for point-to-point equipment and antennas;
Part 2-1: System-dependent requirements
for digital systems operating in frequency bands
where frequency co-ordination is applied**

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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 2-1 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 [15].

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Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**may not**", "**need**", "**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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Introduction

The introduction of EN 302 217-1 [15] applies.

1 Scope

The present document summarizes all system-dependent requirements for Point-to-Point (P-P) equipment in applications deployed in bands where frequency co-ordination is generally applied. These requirements are introduced in two different clauses sub-sets:

- **Main requirements** are requirements that are also related to the "essential requirements" under article 3.2 of the R&TTE Directive [1] and further detailed in the Harmonized Standard EN 302 217-2-2 [16].
- **Complementary requirements** are requirements that are not related to essential requirements under article 3.2 of the R&TTE Directive [1]. Nevertheless they have been commonly agreed for proper system operation and deployment when specific deployment conditions or compatibility requirements are present. Compliance to all or some of these requirements is left to supplier decision.

Description and limits for parameters relevant to essential requirements under article 3.2 of R&TTE Directive [1] are given in the Harmonized Standard EN 302 217-2-2 [16].

For other system-dependent parameters where standardization is required but that do not affect the R&TTE Directive "essential requirements" mentioned above, description and limits are detailed in the present document in clause 6 and in the annex A, annex F and annex G.

The present document deals with Radio Frequency (RF) and base-band equipment characteristics; antenna system requirements are covered in EN 302 217-4-1 [i.9] and EN 302 217-4-2 [i.10].

The present document does not cover test procedures and test conditions which are set out in EN 301 126-1 [14].

As the maximum transmission rate in a given bandwidth depends on system spectral efficiency, equipment are subdivided in different spectral efficiency classes as defined in EN 302 217-2-2 [16].

The spectral efficiency classes are indicative only and do not imply any constraint to the actual modulation format, provided that all the requirements in the relevant parts of this Multi-part deliverable for the declared class are met.

Guidance on the definition of radio parameters relevant to the essential requirements under article 3.2 of R&TTE Directive [1] for DFRS may be found in TR 101 506 [i.6].

Technical background for most of the parameters and requirements referred to in this Multi-part deliverable may be found in TR 101 036-1 [i.5].

2 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 reference 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.

2.1 Normative references

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

- [1] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive).
- [2] CENELEC EN 122150: "Sectional Specification: Radio frequency coaxial connectors - Series EIA flange".

- [3] CEPT/ERC/DEC(00)07: "ERC Decision of 19 October 2000 on the shared use of the band 17.7 - 19.7 GHz by the fixed service and Earth stations of the fixed-satellite service (space-to-Earth)".
- [4] ETSI EN 300 019-1-0: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-0: Classification of environmental conditions; Introduction".
- [5] ETSI EN 300 019-1-1: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-1: Classification of environmental conditions; Storage".
- [6] ETSI EN 300 019-1-2: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-2: Classification of environmental conditions; Transportation".
- [7] ETSI EN 300 019-1-3: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-3: Classification of environmental conditions; Stationary use at weatherprotected locations".
- [8] ETSI EN 300 019-1-4: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-4: Classification of environmental conditions; Stationary use at non-weatherprotected locations".
- [9] ETSI EN 300 019-2-0: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 2-0: Specification of environmental tests; Introduction".
- [10] ETSI EN 300 019-2-1: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 2-1: Specification of environmental tests; Storage".
- [11] ETSI EN 300 019-2-2: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 2-2: Specification of environmental tests; Transportation".
- [12] ETSI EN 300 019-2-3: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 2-3: Specification of environmental tests; Stationary use at weatherprotected locations".
- [13] ETSI EN 300 019-2-4: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 2-4: Specification of environmental tests; Stationary use at non-weatherprotected locations".
- [14] ETSI EN 301 126-1: "Fixed Radio Systems; Conformance testing; Part 1: Point-to-Point equipment - Definitions, general requirements and test procedures".
- [15] ETSI EN 302 217-1: "Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 1: Overview and system-independent common characteristics".
- [16] ETSI EN 302 217-2-2: "Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 2-2: Digital systems operating in frequency bands where frequency co-ordination is applied; Harmonized EN covering the essential requirements of Article 3.2 of the R&TTE Directive".
- [17] IEC 60153-2: "Hollow metallic waveguides. Part 2: Relevant specifications for ordinary rectangular waveguides".
- [18] IEC 60154-2: "Flanges for waveguides. Part 2: Relevant specifications for flanges for ordinary rectangular waveguides".
- [19] IEC 60169-1: "Radio-frequency connectors. Part 1: General requirements and measuring methods".
- [20] IEC 60339 (all parts): "General purpose rigid coaxial transmission lines and their associated flange connectors".

- [21] IEC 60835-2-4: "Methods of measurement for equipment used in digital microwave radio transmission systems - Part 2: Measurements on terrestrial radio-relay systems - Section 4: Transmitter/receiver including modulator/demodulator".
- [22] IEC 60835-2-8: "Methods of measurement for equipment used in digital microwave radio transmission systems - Part 2: Measurements on terrestrial radio-relay systems - Section 8: Adaptive equalizer".
- [23] IEEE 802.3-2005: "IEEE Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications".
- [24] IEEE 1802.3-2001: "IEEE Conformance Test Methodology for IEEE Standards for Local and Metropolitan Area Networks - Specific Requirements - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications".
- [25] Void.
- [26] Recommendation ITU-R F.1093-2: "Effects of multipath propagation on the design and operation of line-of-sight digital fixed wireless systems".
- [27] Void.
- [28] Recommendation ITU-T O.151: "Error performance measuring equipment operating at the primary rate and above".
- [29] Recommendation ITU-T O.181: "Equipment to assess error performance on STM-N interfaces".
- [30] Recommendation ITU-T O.191: "Equipment to measure the cell transfer performance of ATM connections".

2.2 Informative references

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] ECC/REC(02)06: "Channel arrangements for digital Fixed Service Systems operating in the frequency range 7125-8500 MHz".
- [i.2] ERC/REC 12-03: "Harmonised radio frequency channel arrangements for digital terrestrial fixed systems operating in the band 17.7 GHz TO 19.7 GHz".
- [i.3] ERC/REC 14-01: "Radio-frequency channel arrangements for high capacity analogue and digital radio-relay systems operating in the band 5925 MHz - 6425 MHz".
- [i.4] ERC/REC 14-02: "Radio-frequency channel arrangements for high, medium and low capacity digital fixed service systems operating in the band 6425-7125 MHz".
- [i.5] ETSI TR 101 036-1: "Fixed Radio Systems; Generic wordings for standards on DFRS (Digital Fixed Radio Systems) characteristics; Part 1: General aspects and point-to-point equipment parameters".
- [i.6] ETSI TR 101 506: "Fixed Radio Systems; Generic definitions, terminology and applicability of essential requirements under the article 3.2 of 1999/05/EC Directive to Fixed Radio Systems".
- [i.7] 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.8] 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.9] ETSI EN 302 217-4-1: "Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 4-1: System-dependent requirements for antennas".
- [i.10] ETSI EN 302 217-4-2: "Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 4-2: Antennas; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive".
- [i.11] 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.12] 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.13] 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.14] Recommendation ITU-R F.385-10: "Radio-frequency channel arrangements for fixed wireless systems operating in the 7 110-7 900 MHz band".
- [i.15] Recommendation ITU-R F.595-10: "Radio-frequency channel arrangements for fixed wireless systems operating in the 17.7-19.7 GHz frequency band".
- [i.16] Recommendation ITU-R P.530-15: "Propagation data and prediction methods required for the design of terrestrial line-of-sight systems".
- [i.17] J. Redd: "Calculating Statistical Confidence Levels for Error-Probability Estimates" Lightwave Magazine, pp. 110-114, April 2000.

NOTE: Available on the web at <http://www.lightwaveonline.com/>.

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