



**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**

ReferenceREN/ATTM-0450

Keywordsantenna, DFRS, digital, DRRS, FWA,
point-to-point, radio, regulation, transmission

ETSI650 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.

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	9
Foreword.....	9
Modal verbs terminology.....	10
Introduction	10
1 Scope	11
2 References	11
2.1 Normative references	11
2.2 Informative references.....	12
3 Definition of terms, symbols and abbreviations.....	15
3.1 Terms.....	15
3.2 Symbols.....	15
3.3 Abbreviations	15
4 Technical requirements specifications	15
4.0 Generality.....	15
4.0.1 The "Manufacturer declarations" concept.....	15
4.0.2 Basic understanding of all requirements.....	16
4.1 Framework for categorization of system.....	17
4.1.1 Introduction and equipment flexibility	17
4.1.2 Operating frequency bands and channel arrangements.....	18
4.1.3 Spectral efficiency classes.....	18
4.1.4 System alternatives	19
4.1.5 Channel arrangements and utilization.....	19
4.1.6 Specific requirements for frequency bands.....	20
4.1.7 Minimum RIC density for spectral efficiency class selection.....	21
4.1.8 System identification and traffic loading.....	22
4.1.9 Environmental profile.....	23
4.2 Transmitter requirements	23
4.2.0 General: system loading.....	23
4.2.1 Transmitter power and power environmental variation	24
4.2.1.1 Transmitter maximum power and EIRP.....	24
4.2.1.2 Transmitter combined nominal output power and EIRP limits.....	24
4.2.1.3 Transmitter output power environmental variation	25
4.2.2 Transmitter power and frequency control.....	25
4.2.2.1 Transmitter Power and Frequency Control (ATPC, RTPC and RFC)	25
4.2.2.1.0 General background.....	25
4.2.2.1.1 Automatic Transmit Power Control (ATPC).....	25
4.2.2.1.2 Remote Transmit Power Control (RTPC)	25
4.2.2.1.3 Transmitter Remote Frequency Control (RFC)	26
4.2.3 Transmitter Radio Frequency (RF) spectrum mask	26
4.2.3.1 Limits background	26
4.2.3.2 Limits	29
4.2.4 Transmitter discrete CW components exceeding the transmitter Radio Frequency spectrum mask limit.....	43
4.2.4.1 Transmitter discrete CW components at the symbol rate.....	43
4.2.4.2 Transmitter other discrete CW components exceeding the transmitter Radio Frequency spectrum mask limit.....	43
4.2.5 Transmitter unwanted emissions in the <i>spurious domain</i>	45
4.2.6 Transmitter dynamic Change of Modulation Order.....	46
4.2.7 Transmitter Frequency tolerance	47
4.2.8 Transmitter emission limitations outside the allocated band	47
4.3 Receiver requirements	47
4.3.0 General: System loading	47
4.3.1 Receiver unwanted emissions in the <i>spurious domain</i>	47
4.3.2 BER as a function of receiver input signal level RSL	48

4.3.3	Receiver selectivity.....	48
4.3.3.1	Introduction.....	48
4.3.3.2	Receiver co-channel, first and second adjacent channel interference sensitivity	49
4.3.3.2.1	Requirements basic.....	49
4.3.3.2.2	Limits for co-channel and first adjacent channel interference sensitivity.....	49
4.3.3.2.3	Limits for second adjacent channel interference sensitivity	50
4.3.3.3	Receiver Blocking (CW spurious interference sensitivity)	50
4.4	Antenna Characteristics.....	51
4.4.1	Integral antennas or dedicated antennas.....	51
4.4.1.1	Introduction.....	51
4.4.1.2	Radiation Pattern Envelope (Off-axis EIRP density)	51
4.4.1.3	Antenna gain	51
4.4.1.4	Antenna Cross-Polar Discrimination (XPD).....	51
4.4.2	Guidelines for <i>stand-alone</i> antennas.....	52
5	Testing for compliance with technical requirements.....	52
5.1	Environmental and other conditions for testing.....	52
5.1.1	Environmental conditions	52
5.1.1.1	Generality.....	52
5.1.1.2	Minimum profile for equipment indoor use	52
5.1.1.3	Minimum profile for equipment outdoor use	52
5.1.2	Other basic conditions	52
5.2	Test methods for the transmitter.....	53
5.2.0	General test summary	53
5.2.1	Transmitter power and power environmental variation	55
5.2.1.1	Transmitter maximum power and EIRP.....	55
5.2.1.2	Transmitter combined nominal output power and EIRP limits.....	55
5.2.1.3	Transmitter output power environmental variation	55
5.2.2	Transmitter power and frequency control.....	55
5.2.2.1	Transmitter Power and Frequency Control (ATPC, RTPC and RFC)	55
5.2.2.1.1	Automatic Transmit Power Control (ATPC).....	55
5.2.2.1.2	Remote Transmit Power Control (RTPC).....	56
5.2.2.1.3	Transmitter Remote Frequency Control (RFC).....	56
5.2.3	Transmitter Radio Frequency spectrum mask.....	56
5.2.4	Transmitter discrete CW components exceeding the transmitter Radio Frequency spectrum mask limit.....	57
5.2.5	Transmitter unwanted emissions in the spurious domain	57
5.2.6	Transmitter dynamic Change of Modulation Order.....	57
5.2.7	Transmitter Radio Frequency tolerance.....	57
5.2.8	Transmitter emission limitations outside the allocated band	58
5.3	Test methods for the receiver	58
5.3.0	General test summary	58
5.3.1	Receiver unwanted emissions in the spurious domain.....	59
5.3.2	BER as a function of Receiver input Signal Level (RSL).....	59
5.3.3	Receiver selectivity.....	60
5.3.3.1	Void.....	60
5.3.3.2	Receiver co-channel, first and second adjacent channel interference sensitivity	60
5.3.3.2.1	Void.....	60
5.3.3.2.2	Receiver co-channel and first adjacent channel.....	60
5.3.3.2.3	Receiver second adjacent channel	60
5.3.3.3	Receiver Blocking (CW spurious interference sensitivity)	60
5.4	Antenna test methods	61
5.4.1	Integral antennas or dedicated antenna	61
5.4.1.1	Summary	61
5.4.1.2	Radiation Pattern Envelope (Off-axis EIRP density)	61
5.4.1.3	Antenna gain	61
5.4.1.4	Antenna Cross-Polar Discrimination (XPD).....	61
5.4.2	Information on <i>stand-alone</i> antennas tests.....	61

Annex A (informative):	Relationship between the present document and the essential requirements of Directive 2014/53/EU	62
-------------------------------	---	-----------

Annex B (normative):	Frequency bands from 1,4 GHz to 2,6 GHz	64
B.1	Introduction	64
B.2	General characteristics	64
B.2.1	Frequency characteristics and channel arrangements	64
B.2.2	Transmission capacities	65
B.3	Transmitter	66
B.3.1	General requirements	66
B.3.2	Transmitter Radio Frequency spectrum masks options	66
B.4	Receiver	67
B.4.1	General requirements	67
B.4.2	BER as a function of Receiver input Signal Level (RSL)	67
B.4.3	Receiver co-channel, first and second adjacent channels interference sensitivity	68
Annex C (normative):	Frequency bands from 3,5 GHz to 11 GHz (channel separation up to 30 MHz, 56/60 MHz and 112 MHz).....	69
C.1	Introduction	69
C.2	General characteristics	69
C.2.1	Frequency characteristics and channel arrangements	69
C.2.2	Transmission capacities	71
C.3	Transmitter	71
C.3.1	General requirements	71
C.3.2	Transmitter Radio Frequency spectrum masks.....	71
C.4	Receiver	72
C.4.1	General requirements	72
C.4.2	BER as a function of Receiver input Signal Level (RSL)	72
C.4.3	Receiver co-channel and first adjacent channel interference sensitivity	74
Annex D (normative):	Frequency bands from 4 GHz to 11 GHz (channel separation 40 MHz and 80 MHz).....	76
D.1	Introduction	76
D.2	General characteristics	76
D.2.1	Frequency characteristics and channel arrangements	76
D.2.2	Transmission capacities	77
D.3	Transmitter	78
D.3.1	General requirements	78
D.3.2	Transmitter Radio Frequency spectrum masks.....	78
D.4	Receiver	78
D.4.1	General requirements	78
D.4.2	BER as a function of Receiver input Signal Level (RSL)	78
D.4.3	Receiver co-channel and first adjacent channel interference sensitivity	80
Annex E (normative):	Frequency bands 13 GHz, 15 GHz and 18 GHz.....	81
E.1	Introduction	81
E.2	General characteristics	81
E.2.1	Frequency characteristics and channel arrangements	81
E.2.2	Transmission capacities	82
E.3	Transmitter	82
E.3.1	General requirements	82
E.3.2	Transmitter Radio Frequency spectrum masks.....	83
E.4	Receiver	83
E.4.1	General requirements	83
E.4.2	BER as a function of Receiver input Signal Level (RSL)	83

E.4.3	Receiver co-channel and first adjacent channel interference sensitivity	86
Annex F (normative): Frequency bands from 23 GHz to 42 GHz		87
F.1	Introduction	87
F.2	General characteristics	87
F.2.1	Frequency characteristics and channel arrangements	87
F.2.2	Transmission capacities.....	88
F.3	Transmitter	88
F.3.1	General requirements	88
F.3.2	Transmitter Radio Frequency spectrum masks.....	89
F.4	Receiver.....	89
F.4.1	General requirements	89
F.4.2	BER as a function of Receiver input Signal Level (RSL)	89
F.4.3	Receiver co-channel and first adjacent channel interference sensitivity	92
Annex G (normative): Frequency bands from 50 GHz to 55 GHz		93
G.1	Introduction	93
G.2	General characteristics	93
G.2.1	Frequency characteristics and channel arrangements	93
G.2.2	Transmission capacities.....	94
G.3	Transmitter	94
G.3.1	General requirements	94
G.3.2	Transmitter Radio Frequency spectrum masks.....	94
G.4	Receiver.....	95
G.4.1	General requirements	95
G.4.2	BER as a function of Receiver input Signal Level (RSL)	95
G.4.3	Receiver co-channel and first adjacent channel interference sensitivity	96
Annex H (normative): Frequency band 57 GHz to 66 GHz		97
H.1	Introduction	97
H.2	General characteristics	97
H.2.1	Frequency characteristics and channel arrangements	97
H.2.2	Transmission capacities.....	98
H.3	Transmitter	98
H.3.1	General requirements	98
H.3.2	Transmitter power and EIRP	99
H.3.2.1	Transmitter maximum power and EIRP	99
H.3.2.2	Transmitter Combined nominal output power and EIRP limits.....	99
H.3.2.2.0	Generality.....	99
H.3.2.2.1	Equipment without ATPC as permanent feature.....	99
H.3.2.2.2	Equipment implementing ATPC as permanent feature	100
H.3.3	Transmitter Radio Frequency spectrum masks.....	102
H.3.4	Transmitter emissions limitations outside the 57 GHz to 66 GHz range.....	102
H.4	Receiver.....	103
H.4.1	General requirements	103
H.4.2	BER as a function of Receiver input Signal Level (RSL)	103
H.4.3	Receiver co-channel and first adjacent channel interference sensitivity	104
H.5	Minimum antenna gain.....	104
Annex I (normative): Frequency band 64 GHz to 66 GHz		105
I.1	Introduction	105
I.2	General characteristics	105
I.2.1	Frequency characteristics and channel arrangements.....	105

I.2.2	Transmission capacities.....	106
I.2.2.1	Channel arrangement based on $N \times 50$ MHz.....	106
I.2.2.2	Channel arrangement based on $N \times 30$ MHz.....	106
I.3	Transmitter.....	107
I.3.1	General requirements.....	107
I.3.2	Transmitter power and EIRP limits.....	107
I.3.2.1	Transmitter maximum power and EIRP.....	107
I.3.2.2	Transmitter Combined nominal output power and EIRP limits.....	107
I.3.2.2.0	Generality.....	107
I.3.2.2.1	Equipment without ATPC as permanent feature.....	107
I.3.2.2.2	Equipment implementing ATPC as permanent feature.....	108
I.3.3	Transmitter Radio Frequency spectrum mask.....	110
I.3.4	Transmitter emissions limitations outside the 64 GHz to 66 GHz range.....	110
I.4	Receiver.....	111
I.4.1	General requirements.....	111
I.4.2	BER as a function of Receiver input Signal Level (RSL).....	111
I.4.2.1	Channel arrangement based on $N \times 50$ MHz.....	111
I.4.2.2	Channel arrangement based on $N \times 30$ MHz.....	111
I.4.3	Receiver co-channel and first adjacent channel interference sensitivity.....	112
I.4.3.1	Channel arrangement based on $N \times 50$ MHz.....	112
I.4.3.2	Channel arrangement based on $N \times 30$ MHz.....	113
I.5	Minimum antenna gain.....	113
Annex J (normative): Frequency bands from 71 GHz to 86 GHz.....		114
J.1	Introduction.....	114
J.2	General characteristics.....	114
J.2.1	Frequency characteristics and channel arrangements.....	114
J.2.2	Transmission capacities.....	115
J.3	Transmitter.....	116
J.3.1	General requirements.....	116
J.3.2	Transmitter power and EIRP limits.....	116
J.3.2.1	Transmitter maximum power and EIRP.....	116
J.3.2.2	Transmitter Combined nominal output power and EIRP limits.....	116
J.3.2.2.0	Generality.....	116
J.3.2.2.1	Equipment without ATPC as permanent feature.....	116
J.3.2.2.2	Equipment implementing ATPC as permanent feature.....	117
J.3.3	Transmitter Radio Frequency spectrum masks.....	119
J.3.4	Transmitter emissions limitations outside the 71 GHz to 76 GHz and 81 GHz to 86 GHz ranges.....	119
J.3.4.1	General requirement.....	119
J.3.4.2	Requirement for emissions above 86 GHz band edge.....	120
J.3.4.3	Conformance statement.....	120
J.4	Receiver.....	121
J.4.1	General requirements.....	121
J.4.2	BER as a function of Receiver input Signal Level (RSL).....	121
J.4.3	Receiver co-channel and first adjacent channel interference sensitivity.....	123
J.5	Minimum antenna gain.....	125
Annex K: Void.....		126
Annex L: Void.....		127
Annex M: Void.....		128
Annex N (normative): Definition of equivalent data rates for packet data, PDH/SDH and other signals on the traffic interface.....		129
N.1	Introduction.....	129

N.2	General characteristics	129
N.2.1	Frequency characteristics and channel arrangements	129
N.2.2	Transmission capacities	129
N.3	System parameters	133
N.3.0	Introduction	133
N.3.1	Transmitter	133
N.3.2	Receiver	133
N.3.3	FER as a function of BER	133
Annex O (normative): Test report in relation to flexible systems applications		134
O.1	Wide radio-frequency band covering units	134
O.2	Multirate/multiformat and channel-aggregation equipment	136
O.2.0	Introduction and general principles	136
O.2.1	Generic required tests in the test report	137
O.2.2	Reduced set of required tests in the test report	137
O.2.2.0	Introduction	137
O.2.2.1	Reduced transmitter tests	137
O.2.2.2	Reduced receiver tests	138
O.2.3	Bandwidth adaptive test set requirements	139
O.3	Receiver BER and C/I measurement in <i>multi-channels</i> systems (including <i>channels-aggregation</i>) when common SDH or Ethernet single/multiple-interfaces payload is provided	140
O.3.0	Introduction	140
O.3.1	Case 1: multi-interfaces for two (or more) channels systems where each interface payload is transmitted on one channel only	140
O.3.2	Case 2: single interface or multi-interfaces for two (or more) channels system where each payload interface is transmitted equally split on more than one channel	143
O.4	Transmitter test provisions for <i>channels-aggregation</i> equipment	145
O.4.1	General requirement and test method	145
O.4.2	Limits combination for <i>multiple-channelsport</i> case	148
Annex P (informative): Technical background for receiver selectivity and C/I interference sensitivity evaluation		151
P.1	Receiver selectivity	151
P.1.1	Introduction	151
P.1.2	Graphical representation of WBSEL	152
P.2	C/I interference sensitivity	153
P.2.1	Introduction	153
P.2.2	Ideal selectivity and best case C/I value for 2 nd adjacent CS	154
Annex Q (informative): Guidelines for using <i>stand-alone antennas</i>		157
Annex R (informative): Payload flexibility		158
Annex S (informative): Test interpretation and measurement uncertainty		159
Annex T (informative): Bibliography		160
Annex U (informative): Change history		161
History		162

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

(standards.iteh.ai)

Foreword

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

<https://standards.iteh.ai/catalog/standards/sist/35721615-6a3c-4fcf-a1ca-447c4e7b9484/etsi-en-302-217-2-v3-3-0-2021-06>

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].

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ETSI EN 302 217-2 V3.3.0 \(2021-06\)](#)

<https://standards.iteh.ai/catalog/standards/sist/35721615-6a3c-4fcf-a1ca-42a7c94fc769/etsi-en-302-217-2-v3-3-0-2021-06>

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:standards.iteh.ai/catalog/standards/sist/35721615-6a3c-4fcf-a1ca-42a7c94fc769/etsi-en-302-217-2-v3-3-0-2021-06>

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.

iTeh STANDARD PREVIEW

3 Definition of terms, symbols and abbreviations

(standards.iteh.ai)

3.1 Terms <https://standards.iteh.ai/catalog/standards/sist/35721615-6a3c-4fcf-a1ca-42a7c94fc769/etsi-en-302-217-2-v3-3-0-2021-06>

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.