

**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
(ETSI EN 302 217-2 V3.3.1 (2021-10))**

Medieninhaber und Hersteller:

ÖVE Österreichischer Verband für Elektrotechnik
Austrian Standards Institute

Copyright © ÖVE/Austrian Standards Institute – 2022.

Alle Rechte vorbehalten! Nachdruck oder Vervielfältigung,
Aufnahme auf oder in sonstige Medien oder Datenträger nur
mit Zustimmung gestattet!

**Verkauf von in- und ausländischen Normen und
technischen Regelwerken durch**

Austrian Standards Institute
Heinestraße 38, 1020 Wien
E-Mail: sales@austrian-standards.at
Internet: www.austrian-standards.at
Webshop: www.austrian-standards.at/webshop
Tel.: +43 1 213 00-300
Fax: +43 1 213 00-818

Alle Regelwerke für die Elektrotechnik auch erhältlich bei
ÖVE Österreichischer Verband für Elektrotechnik
Eschenbachgasse 9, 1010 Wien
E-Mail: verkauf@ove.at
Internet: www.ove.at
Webshop: www.ove.at/shop
Tel.: +43 1 587 63 73

ICS 33.060.30; 33.120.40

Ident (IDT) mit ETSI EN 302 217-2 V3.3.1 (2021-10)

Ersatz für siehe nationales Vorwort

zuständig ÖVE/Komitee
TK IT-EG
Informationstechnologie, Telekommunikation und
Elektronik

Nationales Vorwort

Diese Europäische Norm EN 302 217-2 V3.3.1:2022 hat sowohl den Status einer nationalen elektrotechnischen Norm gemäß ETG 1992 als auch den einer nationalen Norm gemäß NormG 2016. Bei ihrer Anwendung ist dieses Nationale Vorwort zu berücksichtigen.

Für den Fall einer undatierten normativen Verweisung (Verweisung auf einen Standard ohne Angabe des Ausgabedatums und ohne Hinweis auf eine Abschnittsnummer, eine Tabelle, ein Bild usw.) bezieht sich die Verweisung auf die jeweils neueste Ausgabe dieses Standards.

Für den Fall einer datierten normativen Verweisung bezieht sich die Verweisung immer auf die in Bezug genommene Ausgabe des Standards.

Der Rechtsstatus dieser nationalen (elektrotechnischen) Norm ist den jeweils geltenden Verordnungen zum Elektrotechnikgesetz zu entnehmen.

Bei mittels Verordnungen zum Elektrotechnikgesetz verbindlich erklärten nationalen (elektrotechnischen) Normen ist zu beachten:

- Hinweise auf Veröffentlichungen beziehen sich, sofern nicht anders angegeben, auf den Stand zum Zeitpunkt der Herausgabe dieser nationalen (elektrotechnischen) Norm. Zum Zeitpunkt der Anwendung dieser nationalen (elektrotechnischen) Norm ist der durch die Verordnungen zum Elektrotechnikgesetz oder gegebenenfalls auf andere Weise festgelegte aktuelle Stand zu berücksichtigen.
- Informative Anhänge und Fußnoten sowie normative Verweise und Hinweise auf Fundstellen in anderen, nicht verbindlichen Texten werden von der Verbindlicherklärung nicht erfasst.

Europäische Normen (EN) von ETSI werden gemäß den „Gemeinsamen Regeln“ von CEN/CENELEC durch Veröffentlichung eines identen Titels und Textes in das Gesamtwerk der nationalen (elektrotechnischen) Normen übernommen, wobei der Nummerierung der Zusatz ÖVE/ÖNORM vorangestellt wird.

Der von ETSI übermittelte Normentext wird in englischer Sprache veröffentlicht, da davon ausgegangen werden kann, dass die Anwender der Norm über ausreichende englische Sprachkenntnisse verfügen.

Erläuterung zum Ersatzvermerk

Gemäß Vorwort zur EN wird das späteste Datum, zu dem nationale (elektrotechnische) Normen, die der vorliegenden Norm entgegenstehen, zurückgezogen werden müssen, mit dow (date of withdrawal) festgelegt. Bis zum Zurückziehungsdatum (dow) 2023-05-31 ist somit die Anwendung folgender Norm(en) noch erlaubt:

ÖVE/ÖNORM EN 302 217-2 V3.2.2:2020-06-01.

ETSI EN 302 217-2 V3.3.1 (2021-10)



**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	24
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)	25
4.2.3 Transmitter Radio Frequency (RF) spectrum mask	25
4.2.3.1 Limits background	25
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	59
5.3.3.1	Void	59
5.3.3.2	Receiver co-channel, first and second adjacent channel interference sensitivity	59
5.3.3.2.1	Void	59
5.3.3.2.2	Receiver co-channel and first adjacent channel	59
5.3.3.2.3	Receiver second adjacent channel	59
5.3.3.3	Receiver Blocking (CW spurious interference sensitivity)	60
5.4	Antenna test methods	60
5.4.1	Integral antennas or dedicated antenna	60
5.4.1.1	Summary	60
5.4.1.2	Radiation Pattern Envelope (Off-axis EIRP density)	60
5.4.1.3	Antenna gain	60
5.4.1.4	Antenna Cross-Polar Discrimination (XPD)	60
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	82
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.

Foreword

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

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].

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
Date of withdrawal of any conflicting National Standard (dow):	31 May 2023

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 (V3.3.1): "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".
- [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".