

STN	RLAN 5 GHz Harmonizovaná norma pokrývajúca základné požiadavky článku 3.2 Smernice 2014/53/EU	STN EN 301 893 V2.1.1 87 1893
------------	--	---

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/18

Obsahuje: EN 301 893 V2.1.1:2017

127275

ETSI EN 301 893 V2.1.1 (2017-05)



**5 GHz RLAN;
Harmonised Standard covering the essential requirements
of article 3.2 of Directive 2014/53/EU**

ReferenceREN/BRAN-0060015

Keywordsaccess, broadband, LAN, layer 1, radio,
regulation, testing**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 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

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 only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

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/ETSI/DeliverableStatus.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>

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.

© European Telecommunications Standards Institute 2017.

All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

3GPP™ and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

oneM2M logo is protected for the benefit of its Members

GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	8
Foreword.....	8
Modal verbs terminology.....	8
Introduction	8
1 Scope	10
2 References	10
2.1 Normative references	10
2.2 Informative references.....	11
3 Definitions, symbols and abbreviations	12
3.1 Definitions	12
3.2 Symbols.....	14
3.3 Abbreviations	15
4 Technical requirements specifications	15
4.1 Environmental profile.....	15
4.2 Conformance requirements	16
4.2.1 Nominal Centre frequencies	16
4.2.1.1 General	16
4.2.1.2 Definition	16
4.2.1.3 Limits	16
4.2.1.4 Conformance.....	16
4.2.2 Nominal Channel Bandwidth and Occupied Channel Bandwidth	16
4.2.2.1 Definition	16
4.2.2.2 Limits	16
4.2.2.3 Conformance.....	17
4.2.3 RF output power, Transmit Power Control (TPC) and Power Density.....	17
4.2.3.1 Definitions.....	17
4.2.3.1.1 RF Output Power	17
4.2.3.1.2 Transmit Power Control (TPC)	17
4.2.3.1.3 Power Density	17
4.2.3.2 Limits	17
4.2.3.2.1 General	17
4.2.3.2.2 Limits for RF output power and Power Density at the highest power level	17
4.2.3.2.3 Limit for RF output power at the lowest power level (P_L) of the TPC range	18
4.2.3.3 Conformance.....	18
4.2.4 Transmitter unwanted emissions.....	18
4.2.4.1 Transmitter unwanted emissions outside the 5 GHz RLAN bands	18
4.2.4.1.1 Definition.....	18
4.2.4.1.2 Limits	18
4.2.4.1.3 Conformance	19
4.2.4.2 Transmitter unwanted emissions within the 5 GHz RLAN bands	19
4.2.4.2.1 Definition.....	19
4.2.4.2.2 Limits	19
4.2.4.2.3 Conformance	20
4.2.5 Receiver spurious emissions	20
4.2.5.1 Definition	20
4.2.5.2 Limits	20
4.2.5.3 Conformance.....	20
4.2.6 Dynamic Frequency Selection (DFS)	20
4.2.6.1 Introduction.....	20
4.2.6.1.1 General	20
4.2.6.1.2 DFS applicable frequency range.....	21
4.2.6.1.3 DFS operational modes	21
4.2.6.1.4 DFS operation.....	21
4.2.6.2 DFS technical requirements specifications	22

4.2.6.2.1	Applicability	22
4.2.6.2.2	Channel Availability Check.....	23
4.2.6.2.3	Off-Channel CAC (Off-Channel Channel Availability Check).....	23
4.2.6.2.4	In-Service Monitoring	23
4.2.6.2.5	Channel Shutdown.....	24
4.2.6.2.6	Non-Occupancy Period	24
4.2.6.2.7	Uniform Spreading	25
4.2.7	Adaptivity (Channel Access Mechanism).....	25
4.2.7.1	Applicability.....	25
4.2.7.2	Definition	25
4.2.7.3	Requirements and limits.....	26
4.2.7.3.1	Frame Based Equipment (FBE).....	26
4.2.7.3.2	Load Based Equipment (LBE)	28
4.2.7.3.3	Short Control Signalling Transmissions (FBE and LBE).....	33
4.2.7.4	Conformance.....	33
4.2.8	Receiver Blocking	33
4.2.8.1	Applicability.....	33
4.2.8.2	Definition	34
4.2.8.3	Performance Criteria	34
4.2.8.4	Limits	34
4.2.8.5	Conformance.....	34
4.2.9	User Access Restrictions	34
4.2.9.1	Definition	34
4.2.9.2	Requirement	34
4.2.10	Geo-location capability	35
4.2.10.1	Applicability.....	35
4.2.10.2	Definition	35
4.2.10.3	Requirements	35
4.2.10.4	Conformance.....	35
5	Testing for compliance with technical requirements.....	35
5.1	Environmental conditions for testing	35
5.1.1	Introduction.....	35
5.1.2	Normal test conditions	36
5.1.2.1	Normal temperature and humidity	36
5.1.2.2	Normal power source	36
5.1.3	Extreme test conditions.....	36
5.2	Interpretation of the measurement results	36
5.3	Definition of other test conditions.....	37
5.3.1	Test sequences and traffic load	37
5.3.1.1	General test transmission sequences	37
5.3.1.2	Test transmission sequences for DFS tests.....	37
5.3.2	Test channels	37
5.3.3	Antennas	38
5.3.3.1	Integrated and dedicated antennas.....	38
5.3.3.2	Transmit operating modes	38
5.3.3.2.1	Operating mode 1 (single antenna).....	38
5.3.3.2.2	Operating mode 2 (multiple antennas, no beamforming)	39
5.3.3.2.3	Operating mode 3 (multiple antennas, with beamforming).....	39
5.3.4	Presentation of equipment	39
5.3.5	Conducted measurements, radiated measurements, relative measurements	39
5.4	Essential radio test suites.....	39
5.4.1	Product information	39
5.4.2	Carrier frequencies.....	41
5.4.2.1	Test conditions	41
5.4.2.2	Test methods	42
5.4.2.2.1	Conducted measurement.....	42
5.4.2.2.2	Radiated measurement.....	42
5.4.3	Occupied Channel Bandwidth	42
5.4.3.1	Test conditions	42
5.4.3.2	Test method.....	43
5.4.3.2.1	Conducted measurement.....	43

5.4.3.2.2	Radiated measurement.....	43
5.4.4	RF output power, Transmit Power Control (TPC) and Power Density.....	43
5.4.4.1	Test conditions	43
5.4.4.2	Test method.....	44
5.4.4.2.1	Conducted measurement.....	44
5.4.4.2.2	Radiated measurement.....	54
5.4.5	Transmitter unwanted emissions outside the 5 GHz RLAN bands.....	55
5.4.5.1	Test conditions	55
5.4.5.2	Test method.....	55
5.4.5.2.1	Conducted measurement.....	55
5.4.5.2.2	Radiated measurement.....	57
5.4.6	Transmitter unwanted emissions within the 5 GHz RLAN bands	57
5.4.6.1	Test conditions	57
5.4.6.2	Test method.....	58
5.4.6.2.1	Conducted measurement.....	58
5.4.6.2.2	Radiated measurement.....	59
5.4.7	Receiver spurious emissions	59
5.4.7.1	Test conditions	59
5.4.7.2	Test method.....	59
5.4.7.2.1	Conducted measurement.....	59
5.4.7.2.2	Radiated measurement.....	61
5.4.8	Dynamic Frequency Selection (DFS)	61
5.4.8.1	Test conditions	61
5.4.8.1.1	General	61
5.4.8.1.2	Selection of radar test signals	62
5.4.8.1.3	Test set-ups.....	62
5.4.8.2	Test method.....	63
5.4.8.2.1	Conducted measurement.....	63
5.4.8.2.2	Radiated measurement.....	71
5.4.9	Adaptivity (channel access mechanism).....	71
5.4.9.1	Test conditions	71
5.4.9.2	Test method for Frame Based Equipment.....	71
5.4.9.2.1	Additional test conditions	71
5.4.9.2.2	Conducted measurements	72
5.4.9.2.3	Generic test procedure for measuring channel/frequency usage	75
5.4.9.2.4	Radiated measurements	76
5.4.9.3	Test method for Load Based Equipment.....	76
5.4.9.3.1	Additional test conditions	76
5.4.9.3.2	Conducted measurements	77
5.4.9.3.3	Generic test procedure for measuring channel/frequency usage	84
5.4.9.3.4	Radiated measurements	85
5.4.10	Receiver Blocking	85
5.4.10.1	Test conditions	85
5.4.10.2	Test Method	86
5.4.10.2.1	Conducted measurements	86
5.4.10.2.2	Radiated measurements	87
Annex A (informative):	Relationship between the present document and the essential requirements of Directive 2014/53/EU	88
Annex B (normative):	Test sites and arrangements for radiated measurements.....	91
B.1	Introduction	91
B.2	Radiation test sites.....	91
B.2.1	Open Area Test Site (OATS)	91
B.2.2	Semi Anechoic Room.....	92
B.2.3	Fully Anechoic Room (FAR).....	93
B.2.4	Measurement Distance	94
B.3	Antennas.....	95
B.3.1	Introduction	95
B.3.2	Measurement antenna.....	95

B.3.3	Substitution antenna	95
B.4	Test fixture	95
B.4.1	Introduction	95
B.4.2	Description of the test fixture	96
B.4.3	Using the test fixture for relative measurements	96
B.5	Guidance on the use of radiation test sites	96
B.5.1	Introduction	96
B.5.2	Power supplies for the battery powered UUT	96
B.5.3	Site preparation	97
B.6	Coupling of signals.....	97
B.6.1	General	97
B.6.2	Data Signals.....	97
B.7	Interference Signals used for Adaptivity Tests	98
B.7.1	Additive white Gaussian noise (AWGN)	98
B.7.2	OFDM test signal	98
B.7.3	LTE test signal	98
B.7.4	Test procedure	98
B.7.5	Waveforms for test signals	99
Annex C (normative): Procedures for radiated measurements.....		100
C.1	Introduction	100
C.2	Radiated measurements in an OATS or SAR.....	100
C.3	Radiated measurements in a FAR	101
C.4	Substitution measurement	101
C.5	Guidance for testing technical requirements	101
C.5.1	Radio test suites and corresponding test sites.....	101
C.5.2	Guidance for testing Adaptivity (Channel Access Mechanism).....	102
C.5.2.1	Introduction.....	102
C.5.2.2	Measurement Set-up	102
C.5.2.3	Calibration of the measurement Set-up.....	102
C.5.2.4	Test method	103
C.5.3	Guidance for testing Receiver Blocking.....	103
C.5.3.1	Introduction.....	103
C.5.3.2	Measurement Set-up	103
C.5.3.3	Calibration of the measurement Set-up.....	103
C.5.3.4	Test method	104
Annex D (normative): DFS parameters		105
Annex E Void		108
Annex F (informative): Adaptivity Flowchart.....		109
Annex G (informative): Application form for testing.....		110
G.0	The right to copy	110
G.1	Introduction	110
G.2	Information as required by ETSI EN 301 893 (V2.1.1), clause 5.4.1	110
G.3	Additional information provided by the manufacturer.....	119
G.3.1	Modulation	119
G.3.2	Duty Cycle.....	119
G.3.3	About the UUT.....	119
G.3.4	List of ancillary and/or support equipment provided by the manufacturer.....	119
Annex H (informative): Bibliography.....		120

Annex I (informative):	Change history	121
History		122

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is 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 IPR Policy, no investigation, 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.

Foreword

This Harmonised European Standard (EN) has been produced by ETSI Technical Committee Broadband Radio Access Networks (BRAN).

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.4] 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.

National transposition dates	
Date of adoption of this EN:	23 May 2017
Date of latest announcement of this EN (doa):	31 August 2017
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	28 February 2018
Date of withdrawal of any conflicting National Standard (dow):	28 February 2019

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

5 GHz wireless access systems (WAS) including RLAN equipment are used in wireless local area networks which provide high speed data communications in between devices connected to the wireless infrastructure. The present document also addresses ad-hoc networking where devices communicate directly with each other, without the use of a wireless infrastructure.

The spectrum usage conditions for equipment within the scope of the present document are set in the ECC Decision (04)08 [i.8] and the Commission Decision 2005/513/EC [i.9] as amended by the Commission Decision 2007/90/EC [i.10].

1 Scope

The present document specifies technical characteristics and methods of measurements for 5 GHz wireless access systems (WAS) including RLAN equipment.

The present document also describes spectrum access requirements to facilitate spectrum sharing with other equipment.

These radio equipment are capable of operating in all or parts of the frequency bands given in table 1.

Table 1: Service frequency bands

	Service frequency bands
Transmit	5 150 MHz to 5 350 MHz
Receive	5 150 MHz to 5 350 MHz
Transmit	5 470 MHz to 5 725 MHz
Receive	5 470 MHz to 5 725 MHz

The present document covers the essential requirements of article 3.2 of Directive 2014/53/EU under the conditions identified in annex A.

2 References

2.1 Normative references

References are specific, identified by date of publication and/or edition number or version number. Only the cited version 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] Void.
- [2] Void.
- [3] Void.
- [4] Void.
- [5] Void.
- [6] Void.
- [7] Void.
- [8] ETSI TS 136 141 (V13.5.0) (10-2016): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) conformance testing (3GPP TS 36.141 version 13.5.0 Release 13)".
- [9] IEEE 802.11™-2016: "IEEE Standard for Information Technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications".

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] Void.
- [i.3] Void.
- [i.4] 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.
- [i.5] ETSI EG 203 367 (V1.1.1) (06-2016): "Guide to the application of harmonised standards covering articles 3.1b and 3.2 of the Directive 2014/53/EU (RED) to multi-radio and combined radio and non-radio equipment".
- [i.6] ETSI TR 100 028-1 (V1.4.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1".
- [i.7] ETSI TR 100 028-2 (V1.4.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2".
- [i.8] ECC/DEC/(04)08: "ECC Decision of 9 July 2004 on the harmonised use of the 5 GHz frequency bands for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs) (30/10/2009)".
- [i.9] Commission Decision 2005/513/EC of 11 July 2005 on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs).
- [i.10] Commission Decision 2007/90/EC of 12 February 2007 amending Decision 2005/513/EC on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs).
- [i.11] ETSI TR 102 273-2 (V1.2.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement on Radiated Methods of Measurement (using test site) and evaluation of the corresponding measurement uncertainties; Part 2: Anechoic chamber".
- [i.12] ETSI TR 102 273-3 (V1.2.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement on Radiated Methods of Measurement (using test site) and evaluation of the corresponding measurement uncertainties; Part 3: Anechoic chamber with a ground plane".
- [i.13] ETSI TR 102 273-4 (V1.2.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement on Radiated Methods of Measurement (using test site) and evaluation of the corresponding measurement uncertainties; Part 4: Open area test site".

koniec náhľadu – text ďalej pokračuje v platenej verzii STN