

Draft **ETSI EN 301 893** V1.7.2 (2014-07)



**Broadband Radio Access Networks (BRAN);
5 GHz high performance RLAN;
Harmonized EN covering the essential requirements
of article 3.2 of the R&TTE Directive**

Full Standard: https://standards.iteh.ai/catalog/standards/sic/8a32203-0c6b-4e84-9367-2b0e2ea7858e/etsi-en-301-893-v1-7-2-03

Reference

REN/BRAN-0060011

Keywords

access, 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>

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

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

http://portal.etsi.org/chaicor/ETSI_support.asp

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 2014.

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.

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

Contents

Intellectual Property Rights	7
Foreword.....	7
Modal verbs terminology.....	7
Introduction	7
1 Scope	8
2 References	8
2.1 Normative references	8
2.2 Informative references.....	9
3 Definitions, symbols and abbreviations	9
3.1 Definitions.....	9
3.2 Symbols.....	12
3.3 Abbreviations	12
4 Technical requirements specifications	13
4.1 Environmental profile.....	13
4.2 Centre frequencies	13
4.2.1 General.....	13
4.2.2 Definition.....	13
4.2.3 Limits.....	14
4.2.4 Conformance.....	14
4.3 Nominal Channel Bandwidth and Occupied Channel Bandwidth.....	14
4.3.1 Definition.....	14
4.3.2 Limits.....	14
4.3.3 Conformance.....	14
4.4 RF output power, Transmit Power Control (TPC) and power density	14
4.4.1 Definitions	14
4.4.1.1 RF Output Power	14
4.4.1.2 Transmit Power Control (TPC).....	14
4.4.1.3 Power Density	15
4.4.2 Limits.....	15
4.4.2.1 General	15
4.4.2.2 Limits for RF output power and power density at the highest power level.....	15
4.4.2.3 Limit for RF output power at the lowest power level of the TPC range	15
4.4.3 Conformance.....	15
4.5 Transmitter unwanted emissions	16
4.5.1 Transmitter unwanted emissions outside the 5 GHz RLAN bands.....	16
4.5.1.1 Definition	16
4.5.1.2 Limits.....	16
4.5.1.3 Conformance.....	16
4.5.2 Transmitter unwanted emissions within the 5 GHz RLAN bands	16
4.5.2.1 Definition	16
4.5.2.2 Limits.....	17
4.5.2.3 Conformance.....	17
4.6 Receiver spurious emissions.....	17
4.6.1 Definition.....	17
4.6.2 Limits.....	18
4.6.3 Conformance.....	18
4.7 Dynamic Frequency Selection (DFS).....	18
4.7.1 Introduction.....	18
4.7.1.1 General	18
4.7.1.2 Applicable frequency range	18
4.7.1.3 DFS operational modes	18
4.7.1.4 DFS operation	19
4.7.2 DFS technical requirements specifications.....	20

4.7.2.1	Applicability.....	20
4.7.2.2	Channel Availability Check	20
4.7.2.2.1	Definition.....	20
4.7.2.2.2	Limit	20
4.7.2.2.3	Conformance	21
4.7.2.3	Off-Channel CAC (Off-Channel Channel Availability Check)	21
4.7.2.3.1	Definition.....	21
4.7.2.3.2	Limit	21
4.7.2.3.3	Conformance	21
4.7.2.4	In-Service Monitoring.....	21
4.7.2.4.1	Definition.....	21
4.7.2.4.2	Limit	21
4.7.2.4.3	Conformance	21
4.7.2.5	Channel Shutdown	21
4.7.2.5.1	Definition.....	21
4.7.2.5.2	Limit	22
4.7.2.5.3	Conformance	22
4.7.2.6	Non-Occupancy Period	22
4.7.2.6.1	Definition.....	22
4.7.2.6.2	Limit	22
4.7.2.6.3	Conformance	22
4.7.2.7	Uniform Spreading.....	22
4.7.2.7.1	Definition.....	22
4.7.2.7.2	Limit	23
4.8	Adaptivity (Channel Access Mechanism)	23
4.8.1	Applicability	23
4.8.2	Definition.....	23
4.8.3	Requirements and limits	23
4.8.3.1	Frame Based Equipment	23
4.8.3.2	Load Based Equipment	24
4.8.3.3	Short Control Signalling Transmissions	25
4.8.3.3.1	Definition.....	25
4.8.3.3.2	Limits	25
4.8.4	Conformance.....	26
4.9	User Access Restrictions	26
4.9.1	Definition.....	26
4.9.2	Requirement.....	26
4.10	Auto-configuration	26
4.10.1	Definition.....	26
4.10.2	Requirements	26
5	Testing for compliance with technical requirements.....	27
5.1	Conditions for testing	27
5.1.1	Normal and extreme test conditions.....	27
5.1.2	Test sequences and traffic load	27
5.1.2.1	General test transmission sequences	27
5.1.2.2	Test transmission sequences for DFS tests.....	27
5.1.3	Test channels	27
5.1.4	Antennas	28
5.1.4.1	Integrated and dedicated antennas.....	28
5.1.4.2	Transmit operating modes.....	29
5.1.4.2.1	Operating mode 1 (single antenna).....	29
5.1.4.2.2	Operating mode 2 (multiple antennas, no beamforming)	29
5.1.4.2.3	Operating mode 3 (multiple antennas, with beamforming)	29
5.1.5	Presentation of equipment	29
5.1.5.1	Testing of host connected equipment and plug-in radio devices.....	29
5.1.5.1.1	The use of a host or test jig for testing plug-in radio devices	29
5.1.5.1.2	Testing of combinations	29
5.2	Interpretation of the measurement results	30
5.3	Essential radio test suites.....	31
5.3.1	Product information	31
5.3.2	Carrier frequencies.....	32

5.3.2.1	Test conditions	32
5.3.2.2	Test methods	33
5.3.2.2.1	Conducted measurement.....	33
5.3.2.2.2	Radiated measurement.....	33
5.3.3	Occupied Channel Bandwidth	33
5.3.3.1	Test conditions	33
5.3.3.2	Test method.....	34
5.3.3.2.1	Conducted measurement.....	34
5.3.3.2.2	Radiated measurement.....	34
5.3.4	RF output power, Transmit Power Control (TPC) and power density.....	34
5.3.4.1	Test conditions	34
5.3.4.2	Test method.....	35
5.3.4.2.1	Conducted measurement.....	35
5.3.4.2.2	Radiated measurement.....	45
5.3.5	Transmitter unwanted emissions outside the 5 GHz RLAN bands	45
5.3.5.1	Test conditions	45
5.3.5.2	Test method.....	46
5.3.5.2.1	Conducted measurement.....	46
5.3.5.2.2	Radiated measurement.....	48
5.3.6	Transmitter unwanted emissions within the 5 GHz RLAN bands	48
5.3.6.1	Test conditions	48
5.3.6.2	Test method.....	48
5.3.6.2.1	Conducted measurement.....	48
5.3.6.2.2	Radiated measurement.....	50
5.3.7	Receiver spurious emissions	50
5.3.7.1	Test conditions	50
5.3.7.2	Test method.....	50
5.3.7.2.1	Conducted measurement.....	50
5.3.7.2.2	Radiated measurement.....	52
5.3.8	Dynamic Frequency Selection (DFS)	52
5.3.8.1	Test conditions	52
5.3.8.1.1	General	52
5.3.8.1.2	Selection of radar test signals	52
5.3.8.1.3	Test set-ups	53
5.3.8.2	Test method.....	54
5.3.8.2.1	Conducted measurement.....	54
5.3.8.2.2	Radiated measurement.....	61
5.3.9	Adaptivity (channel access mechanism).....	61
5.3.9.1	Test conditions	61
5.3.9.2	Test method.....	61
5.3.9.2.1	Conducted measurements	61
5.3.9.2.2	Generic test procedure for measuring channel/frequency usage	63
5.3.9.2.3	Radiated measurements.....	64
Annex A (normative): HS Requirements and conformance Test specifications Table (HS-RTT).....		65
Annex B (normative): Test sites and arrangements for radiated measurements		67
B.1	Introduction	67
B.2	Radiation test sites.....	67
B.2.1	Open Area Test Site (OATS)	67
B.2.2	Semi Anechoic Room.....	68
B.2.3	Fully Anechoic Room (FAR)	69
B.2.4	Measurement Distance	70
B.3	Antennas.....	71
B.3.1	Introduction	71
B.3.2	Measurement antenna.....	71
B.3.3	Substitution antenna	71
B.4	Test fixture	71
B.4.1	Introduction	71

B.4.2	Description of the test fixture	72
B.4.3	Using the test fixture for relative measurements	72
B.5	Guidance on the use of radiation test sites	72
B.5.1	Introduction	72
B.5.2	Power supplies for the battery powered UUT	72
B.5.3	Site preparation	73
B.6	Coupling of signals.....	73
B.6.1	General	73
B.6.2	Data Signals.....	73
B.7	Interference Signal used for Adaptivity Tests	73
Annex C (normative): Procedures for radiated measurements		75
C.1	Introduction	75
C.2	Radiated measurements in an OATS or SAR.....	75
C.3	Radiated measurements in a FAR	76
C.4	Substitution measurement	76
C.5	Guidance for testing technical requirements	76
C.5.1	Essential radio test suites and corresponding test sites.....	76
C.5.2	Guidance for testing Adaptivity (Channel Access Mechanism).....	77
C.5.2.1	Introduction.....	77
C.5.2.2	Measurement Set-up	77
C.5.2.3	Calibration of the measurement Set-up.....	77
C.5.2.4	Test method	78
Annex D (normative): DFS parameters.....		79
Annex E (informative): Guidance for testing IEEE 802.11™ Devices		82
E.1	Introduction	82
E.2	Possible Modulations	82
E.2.1	Most commonly used modulation types and channel widths	82
E.2.2	Guidance for Testing.....	82
E.2.2.1	Objective.....	82
E.2.2.2	Modulation Used for Conformance Testing	82
E.3	Possible Operating Modes.....	83
E.3.1	Most commonly used operating modes of Smart Antenna Systems.....	83
E.3.2	Guidance for Testing.....	83
Annex F (informative): Application form for testing.....		85
F.1	Introduction	85
F.2	Information as required by EN 301 893 (V1.8.1), clause 5.3.1.....	85
F.3	Additional information provided by the manufacturer.....	92
F.3.1	Modulation.....	92
F.3.2	Duty Cycle.....	92
F.3.3	About the UUT	93
F.3.4	List of ancillary and/or support equipment provided by the manufacturer.....	93
Annex G (informative): Bibliography.....		94
History	95

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 (<http://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 draft Harmonized European Standard (EN) has been produced by ETSI Technical Committee Broadband Radio Access Networks (BRAN), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document has been produced by ETSI in response to mandate M/284 issued from the European Commission under Directive 98/34/EC [i.3] as amended by Directive 98/48/EC [i.1].

The title and reference to the present document are intended to be included in the publication in the Official Journal of the European Union of titles and references of Harmonized Standard under the Directive 1999/5/EC [1].

The requirements relevant to Directive 1999/5/EC [1] are summarized in annex A.

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

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).

"must" and **"must not"** are **NOT** allowed in ETSI deliverables except when used in direct citation.

Introduction

The present document is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio and telecommunications terminal equipment within the scope of the R&TTE Directive [1]. The modular structure is shown in EG 201 399 [i.2].

1 Scope

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

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

5 GHz high performance wireless access systems (WAS) including RLAN equipment are further referred to as RLAN devices in the present document.

The spectrum usage conditions for this RLAN equipment are set in the ECC Decision (04)08 [5] and the Commission Decision 2005/513/EC [6] as amended by the Commission Decision 2007/90/EC [7].

The equipment is intended to operate in the frequency ranges 5 150 MHz to 5 350 MHz and 5 470 MHz to 5 725 MHz which have been allocated by WRC-03 to the *mobile service* on a primary basis for the implementation of WAS/RLANs covered by the present document.

The present document is intended to cover the provisions of article 3.2 of R&TTE Directive [1], which states that: "...radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference".

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 referenced 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] 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".
- [3] 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".
- [4] Void.
- [5] 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).
- [6] 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).

- [7] 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).
- [8] IEEE Std. 802.11™-2012: "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".
- [9] IEEE Std. 802.11ac™-2013: "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 - Amendment 4: Enhancements for Very High Throughput for Operation in Bands below 6 GHz".
- [10] 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".
- [11] 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".
- [12] 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".

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] Directive 98/48/EC of the European Parliament and of the Council of 20 July 1998 amending Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations.
- [i.2] ETSI EG 201 399 (V2.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".
- [i.3] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in the R&TTE Directive [1] and the following apply:

5 GHz RLAN bands: total frequency range that consists of the 5 150 MHz to 5 350 MHz and the 5 470 MHz to 5 725 MHz sub-bands

adaptive equipment: equipment operating in an adaptive mode

adaptive mode: mechanism by which equipment can adapt to its environment by identifying other transmissions present in the band

ad-hoc mode: operating mode in which an RLAN device establishes a temporary wireless connection with other RLAN devices without a controlling network infrastructure

antenna array: two or more antennas connected to a single device and operating simultaneously

antenna assembly: combination of the antenna (integral or dedicated), its coaxial cable and if applicable, its antenna connector and associated switching components

NOTE 1: This term (antenna assembly) refers to an antenna connected to one transmit chain.

NOTE 2: The gain of an antenna assembly G in dBi, does not include the additional gain that may result out of beamforming.

available channel: channel identified as available for immediate use as an *Operating Channel*

NOTE: *Usable Channels* whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz can be considered as *Available Channels* without further testing.

beamforming gain: additional (antenna) gain realized by using beamforming techniques in smart antenna systems

NOTE: Beamforming gain as used in the present document does not include the gain of the antenna assembly.

burst: period during which radio waves are intentionally transmitted, preceded and succeeded by periods during which no intentional transmission is made

channel: minimum amount of spectrum used by a single RLAN device

NOTE: An RLAN device is permitted to operate (transmit/receive) in one or more adjacent or non-adjacent channels simultaneously.

EXAMPLE: For the purpose of the present document, an IEEE 802.11™ [8] device operating in a 40 MHz mode may be considered as operating in 2 adjacent 20 MHz channels simultaneously.

channel plan: combination of the centre frequencies and for each of the centre frequencies, the declared nominal bandwidth(s)

clear channel assessment: mechanism used by an equipment to identify other transmissions in the channel

combined equipment: any combination of non-radio equipment that requires a plug-in radio device to offer full functionality

dedicated antenna: antenna external to the equipment, using an antenna connector with a cable or a wave-guide and which has been designed or developed for one or more specific types of equipment

NOTE: It is the combination of dedicated antenna and radio equipment that is expected to be compliant with the regulations.

energy detect: mechanism used by an adaptive system to determine the presence of another device operating on the channel based on detecting the signal level of that other device

environmental profile: range of environmental conditions under which equipment within the scope of the present document is required to comply with the provisions of the present document

Frame Based Equipment (FBE): equipment where the transmit/receive structure is not directly demand-driven but has fixed timing

NOTE: I.e. it may be altered by configuration changes but there is always a minimum Idle Period following a transmit period.

host equipment: any equipment which has complete user functionality when not connected to the radio equipment part and to which the radio equipment part provides additional functionality and to which connection is necessary for the radio equipment part to offer functionality

integral antenna: antenna designed as a fixed part of the equipment (without the use of an external connector) which cannot be disconnected from the equipment by a user with the intent to connect another antenna

NOTE: An integral antenna may be fitted internally or externally. In the case where the antenna is external, a non-detachable cable or wave-guide can be used.

Listen Before Talk (LBT): mechanism by which an equipment applies clear channel assessment (CCA) before using the channel

Load Based Equipment (LBE): equipment where the transmit/receive structure is not fixed in time but demand-driven

manufacturer: company that has manufactured the equipment and who submits it for test

NOTE: Alternatively, the importer or any other person or entity that submits the equipment for test can be considered as the manufacturer for the purpose of the present document.

master mode: mode which relates to the DFS functionality where the RLAN device uses a Radar Interference Detection function and controls the transmissions of RLAN devices operating in slave mode

NOTE: In this mode it is able to select a channel and initiate a network by sending enabling signals to other RLAN devices. An RLAN network always has at least one RLAN device operating in master mode when operating in the bands 5 250 MHz to 5 350 MHz and 5 470 MHz to 5 725 MHz.

multi-radio equipment: radio, host or combined equipment using more than one radio transceiver

operating channel: *Available Channel* on which the RLAN has started transmissions

NOTE: An *Operating Channel* becomes again an *Available Channel* if the RLAN stopped all transmissions on that channel and no radar signal was detected by the *In-Service Monitoring*.

plug-in radio device: radio equipment module intended to be used with or within host, combined or multi-radio equipment, using their control functions and power supply

receive chain: receiver circuit with an associated antenna

NOTE: Two or more receive chains are combined in a smart antenna system.

RLAN devices: 5 GHz high performance wireless access systems (WAS) including RLAN equipment

simulated radar burst: series of periodic radio wave pulses for test purposes

slave mode: mode which relates to the DFS functionality where the transmissions of the RLAN are under control of an RLAN device operating in master mode

NOTE: An RLAN device in slave mode may use a Radar Interference Detection function.

smart antenna systems: equipment that combines multiple transmit and/or receive chains with a signal processing function to increase the throughput and/or to optimize its radiation and/or reception capabilities

NOTE: These are techniques such as spatial multiplexing, beamforming, cyclic delay diversity, MIMO, etc.

stand-alone radio equipment: equipment that is intended primarily as communications equipment and that is normally used on a stand-alone basis

sub-band: portion of the 5 GHz RLAN bands

NOTE: See definition for "5 GHz RLAN bands".

total occupied bandwidth: total of the Nominal Channel Bandwidths in case of simultaneous transmissions in adjacent or non-adjacent channels

NOTE: The Total Occupied Bandwidth may change with time/payload.

transmit chain: transmitter circuit with an associated antenna

NOTE: Two or more transmit chains are combined in a smart antenna system.

Transmit Power Control (TPC): technique in which the transmitter output power is controlled resulting in reduced interference to other systems

unavailable channel: channel which cannot be considered by the RLAN device for a certain period of time (*Non Occupancy Period*) after a radar signal was detected on that channel

unusable channel: channel from the declared channel plan which may be declared as permanently unavailable due to one or more radar detections on the channel

usable channel: any channel from the declared channel plan, which may be considered by the RLAN for possible use

3.2 Symbols

For the purposes of the present document, the following symbols apply:

A	Measured power output
AC	Alternating Current
T_{ch}	Number of active transmit chains
B	Radar burst period
Ch_r	Channel in which radar test signals are inserted to simulate the presence of a radar
D	Measured power density
dBm	dB relative to 1 milliwatt
DC	Direct Current
E	Field strength
E_o	Reference field strength
f_c	Carrier frequency
G	Antenna gain
GHz	GigaHertz
Hz	Hertz
kHz	kiloHertz
L	Radar burst length
MHz	MegaHertz
ms	millisecond
MS/s	Mega Samples per second
mW	milliWatt
n	Number of channels
P_H	Calculated e.i.r.p. at highest power level
P_L	Calculated e.i.r.p. at lowest power level
P_{burst}	RMS (mean) power over the transmission burst
PD	Calculated power density
P_d	Detection Probability
R	Distance
R_{ch}	Number of active receive chains
R_o	Reference distance
S0	Signal power
T0	Time instant
T1	Time instant
T2	Time instant
T3	Time instant
W	Radar pulse width
x	Observed duty cycle
Y	Beamforming (antenna) gain

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACK	Acknowledgement
BIT	Burst Interval Time
BW	BandWidth
CAC	Channel Availability Check
CCA	Clear Channel Assessment

CSD	Cyclic Shift Diversity
DFS	Dynamic Frequency Selection
e.i.r.p.	equivalent isotropically radiated power
EMC	Electro-Magnetic Compatibility
FAR	Fully Anechoic Room
HT20	High Throughput in a 20 MHz channel
HT40	High Throughput in a 40 MHz channel
IEEE	Institute of Electrical and Electronic Engineers
LBT	Listen Before Talk
LPDA	Logarithmic Periodic Dipole Antenna
MCS	Modulation Coding Scheme
MIMO	Multiple Input, Multiple Output
NACK	Not Acknowledged
OATS	Open Area Test Site
PPB	Pulses Per Burst
ppm	parts per million
PPS	Pulses Per Second
PRF	Pulse Repetition Frequency
R&TTE	Radio and Telecommunications Terminal Equipment
RBW	Resolution Bandwidth
RF	Radio Frequency
RLAN	Radio Local Area Network
RMS	Root Mean Square
SAR	Semi Anechoic Room
TL	Threshold Level
TPC	Transmit Power Control
Tx	Transmit, Transmitter
UUT	Unit Under Test
VBW	Video Bandwidth
VSWR	Voltage Standing Wave Ratio
WAS	Wireless Access Systems
WRC-03	World Radiocommunications Conference 2003

4 Technical requirements specifications

4.1 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be stated by the manufacturer.

The equipment shall comply in any of the operating modes with all the technical requirements of the present document at all times when operating within the boundary limits of the stated operational environmental profile.

Where multiple combinations of radio equipment and antenna (antenna assemblies) are intended, each combination shall comply with all the technical requirements of the present document.

4.2 Centre frequencies

4.2.1 General

RLAN equipment typically operates on a fixed frequency. The equipment is allowed to change its normal operating frequency when interference is detected, or to prevent causing interference into other equipment or for frequency planning purposes.

4.2.2 Definition

The centre frequency is the centre of the channel declared by the manufacturer as part of the declared channel plan(s).