



**SLOVENSKI STANDARD**  
**SIST EN 303 753 V1.1.1:2024**

**01-oktober-2024**

---

**Širokopasovni sistemi za prenos podatkov (WDTS) za mobilno in fiksno radijsko opremo, ki delujejo v pasu od 57 GHz do 71 GHz - Harmonizirani standard za dostop do radijskega spektra**

Wideband Data Transmission Systems (WDTS) for Mobile and Fixed Radio Equipment operating in the 57 - 71 GHz band - Harmonised Standard for access to radio spectrum

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

**Ta slovenski standard je istoveten z: ETSI EN 303 753 V1.1.1 (2024-05)**

SIST EN 303 753 V1.1.1:2024

<https://standards.iteh.ai/catalog/standards/sist/12457966-d9f5-4ddd-8a3c-b6ee979205d1/sist-en-303-753-v1-1-1-2024>

**ICS:**

33.060.01	Radijske komunikacije na splošno	Radiocommunications in general
-----------	----------------------------------	--------------------------------

**SIST EN 303 753 V1.1.1:2024**

**en**



# ETSI EN 303 753 V1.1.1 (2024-05)



**Wideband Data Transmission Systems (WDTs)  
for Mobile and Fixed Radio Equipment  
operating in the 57 - 71 GHz band;  
Harmonised Standard for access to radio spectrum**

[SIST EN 303 753 V1.1.1:2024](https://standards.iteh.ai/catalog/standards/sist/12457966-d9f5-4ddd-8a3c-b6ee979205d1/sist-en-303-753-v1-1-1-2024)

<https://standards.iteh.ai/catalog/standards/sist/12457966-d9f5-4ddd-8a3c-b6ee979205d1/sist-en-303-753-v1-1-1-2024>

---

**Reference**

DEN/BRAN-230026

---

**Keywords**

60 GHz, access, broadband, radio, SRD

**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 - 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:

<https://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](http://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>

If you find a security vulnerability in the present document, please report it through our

Coordinated Vulnerability Disclosure Program:

<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

---

**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 2024.

All rights reserved.

# Contents

Intellectual Property Rights .....	6
Foreword.....	6
Modal verbs terminology.....	7
Introduction .....	7
1 Scope .....	8
2 References .....	8
2.1 Normative references .....	8
2.2 Informative references.....	8
3 Definition of terms, symbols and abbreviations.....	9
3.1 Terms.....	9
3.2 Symbols.....	10
3.3 Abbreviations .....	10
4 Technical requirements specifications .....	11
4.1 Environmental profile.....	11
4.2 Conformance requirements .....	11
4.2.1 Occupied channel bandwidth.....	11
4.2.1.1 Definition .....	11
4.2.1.2 Limit.....	11
4.2.1.3 Conformance.....	11
4.2.2 RF output power .....	11
4.2.2.1 Definition .....	11
4.2.2.2 Limit.....	11
4.2.2.3 Conformance.....	12
4.2.3 Power Spectral Density.....	12
4.2.3.1 Definition .....	12
4.2.3.2 Limit.....	12
4.2.3.3 Conformance.....	12
4.2.4 Transmitter unwanted emissions.....	12
4.2.4.1 Transmitter unwanted emissions in the out-of-band domain .....	12
4.2.4.1.1 Definition.....	12
4.2.4.1.2 Limit .....	12
4.2.4.1.3 Conformance .....	13
4.2.4.2 Transmitter unwanted emissions in the spurious domain.....	13
4.2.4.2.1 Definition.....	13
4.2.4.2.2 Limit .....	13
4.2.4.2.3 Conformance .....	14
4.2.5 Receiver spurious emissions .....	14
4.2.5.1 Definition .....	14
4.2.5.2 Limit.....	14
4.2.5.3 Conformance.....	14
4.2.6 Spectrum sharing mechanisms.....	14
4.2.6.0 General .....	14
4.2.6.1 Beamforming .....	15
4.2.6.1.1 Definition.....	15
4.2.6.1.2 Limit .....	15
4.2.6.1.3 Conformance .....	15
4.2.6.2 Automatic Transmit Power Control and Automatic Link Adaptation.....	15
4.2.6.2.1 Definition.....	15
4.2.6.2.2 Limit .....	15
4.2.6.2.3 Conformance .....	15
4.2.7 Receiver sensitivity.....	16
4.2.7.1 Definition .....	16
4.2.7.2 Performance Criteria .....	16
4.2.7.3 Limit.....	16

4.2.7.4	Conformance .....	16
4.2.8	Receiver Adjacent Channel Selectivity.....	16
4.2.8.1	Definition .....	16
4.2.8.2	Limit.....	16
4.2.8.3	Conformance.....	16
5	Testing for compliance with technical requirements.....	17
5.1	Environmental conditions for testing .....	17
5.1.1	General.....	17
5.1.2	Normal test conditions .....	17
5.1.2.1	Normal temperature and humidity .....	17
5.1.2.2	Normal power source .....	17
5.1.3	Extreme test conditions.....	17
5.2	Interpretation of the measurement results .....	17
5.3	Test procedure for the essential radio test suites .....	17
5.3.0	General.....	17
5.3.0a	Product Information.....	18
5.3.0b	Test modulation, frequency and configuration .....	18
5.3.1	Occupied channel bandwidth.....	18
5.3.1.1	Test conditions .....	18
5.3.1.2	Test method.....	19
5.3.2	RF output power .....	19
5.3.2.1	Test conditions .....	19
5.3.2.2	Test method.....	19
5.3.3	Power Spectral Density.....	20
5.3.3.1	Test conditions .....	20
5.3.3.2	Test method.....	20
5.3.4	Transmitter unwanted emissions.....	21
5.3.4.1	Transmitter unwanted emissions in the out-of-band domain .....	21
5.3.4.1.1	Test conditions .....	21
5.3.4.1.2	Test method .....	21
5.3.4.2	Transmitter unwanted emissions in spurious domain .....	22
5.3.4.2.1	Test conditions .....	22
5.3.4.2.2	Test method (general).....	22
5.3.4.2.3	Pre-scan .....	22
5.3.4.2.4	Identified frequencies .....	23
5.3.5	Receiver spurious emissions .....	23
5.3.5.1	Test conditions .....	23
5.3.5.2	Test method.....	24
5.3.5.2.1	Pre-scan .....	24
5.3.5.2.2	Identified emissions.....	24
5.3.6	Spectrum sharing mechanism .....	25
5.3.6.1	Test conditions .....	25
5.3.6.2	Test method (beamforming).....	25
5.3.6.3	Test method (ATPC).....	25
5.3.6.4	Test method (ALA).....	26
5.3.7	Receiver sensitivity.....	27
5.3.7.1	Test conditions .....	27
5.3.7.2	Test method.....	28
5.3.8	Receiver Adjacent Channel Selectivity.....	28
5.3.8.1	Test conditions .....	28
5.3.8.2	Test method.....	28
<b>Annex A (informative):</b>	<b>Relationship between the present document and the essential requirements of Directive 2014/53/EU .....</b>	<b>30</b>
<b>Annex B (informative):</b>	<b>Maximum measurement uncertainty.....</b>	<b>32</b>
<b>Annex C (normative):</b>	<b>Test sites and arrangements for radiated measurements.....</b>	<b>33</b>
C.1	Test sites.....	33
C.1.0	General .....	33
C.1.1	Open air test sites .....	33

C.1.2	Anechoic chamber .....	34
C.1.2.1	General .....	34
C.1.2.2	Description .....	34
C.1.2.3	Influence of parasitic reflections .....	34
C.1.2.4	Calibration and mode of use .....	35
C.2	Test antenna .....	36
C.3	Substitution antenna .....	37
<b>Annex D (normative):    General description of measurement .....</b>		<b>38</b>
D.1	Radiated measurements .....	38
D.2	Substitution measurement .....	39
<b>Annex E (informative):    Measurements procedure for verification of maximum power limits.....</b>		<b>40</b>
E.0	Radiated metrics and compliance with the harmonised technical conditions .....	40
E.1	Metrics for radiated measurements .....	40
E.2	TRP estimation .....	41
E.2.1	General .....	41
E.2.2	Pre-scan .....	41
E.2.3	Methods based on spherical grid sampling .....	41
E.2.4	Beam-based directions .....	42
E.2.5	Peak method .....	42
E.2.6	Equal sector with peak average .....	42
<b>Annex F (informative):    Bibliography .....</b>		<b>43</b>
<b>Annex G (informative):    Change history .....</b>		<b>44</b>
History .....		45

[SIST EN 303 753 V1.1.1:2024](https://standards.iteh.ai/catalog/standards/sist/12457966-d9f5-4ddd-8a3c-b6ee979205d1/sist-en-303-753-v1-1-1-2024)

<https://standards.iteh.ai/catalog/standards/sist/12457966-d9f5-4ddd-8a3c-b6ee979205d1/sist-en-303-753-v1-1-1-2024>

# 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 Broadband Radio Access Networks (BRAN).

The present document has been prepared under the Commission Implementing Decision C(2015) 5376 final [i.1] 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.2].

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:	20 May 2024
Date of latest announcement of this EN (doa):	31 August 2024
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	28 February 2025
Date of withdrawal of any conflicting National Standard (dow):	28 February 2026



---

## 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

Radio equipment operating in the 60 GHz band are capable of supporting data rates of multiple-gigabit per second.

The spectrum usage conditions for this equipment are set in ERC Recommendation 70-03 [i.3], annex 3 frequency band c2, frequency band c3 and Commission Decision 2019/1345/EU [i.4] bands 75a and 75b.

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[SIST EN 303 753 V1.1.1:2024](#)

<https://standards.iteh.ai/catalog/standards/sist/12457966-d9f5-4ddd-8a3c-b6ee979205d1/sist-en-303-753-v1-1-1-2024>

# 1 Scope

The present document specifies technical characteristics and methods of measurements for Wideband Data Transmission Systems (WDTS) fixed equipment installations intended for mobile network applications and mobile equipment operating indoor and outdoor in the 57 GHz to 71 GHz frequency range.

The scope of the present document includes equipment in this frequency range in compliance with ERC Recommendation 70-03 [i.3], annex 3 frequency band c2, frequency band c3 and Commission Decision 2019/1345/EU [i.4] bands 75a and 75b.

Radio equipment within the scope of the present document are capable of operating in all or any part of the frequency bands given in table 1.

**Table 1: Radiocommunications service frequency band**

Transmit/Receive	Radiocommunications service frequency band
Transmit	57 GHz to 71 GHz
Receive	57 GHz to 71 GHz

NOTE: The relationship between the present document and essential requirements of article 3.2 of Directive 2014/53/EU [i.2] 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.

Not applicable.

### 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] [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.2] [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.3] [ERC Recommendation 70-03 \(Tromsø 1997 and subsequent amendments\)](#): "Relating to the use of Short Range Devices (SRD)".
- [i.4] [Commission Implementing Decision \(EU\) 2019/1345 of 2 August 2019](#) amending Decision 2006/771/EC updating harmonised technical conditions in the area of radio spectrum use for short-range devices.
- [i.5] [ERC Recommendation 74-01 \(Approved 1998 and subsequent amendments\)](#): "Unwanted emissions in the spurious domain".
- [i.6] ETSI TS 138 141-2 (V16.10.0): "5G; NR; Base Station (BS) conformance testing; Part 2: Radiated conformance testing (3GPP TS 38.141-2 version 16.10.0 Release 16)".
- [i.7] [ECC Report 288 \(approved 25 January 2019\)](#): "Conditions for the coexistence between Fixed Service and other envisaged outdoor uses/applications in the 57 - 66 GHz range".
- [i.8] ETSI TS 138 521-2 (V17.3.0): "5G; NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 2: Range 2 standalone (3GPP TS 38.521-2 version 17.3.0 Release 17)".
- [i.9] ETSI TS 138 141-2 (V17.10.0): "5G; NR; Base Station (BS) conformance testing; Part 2: Radiated conformance testing (3GPP TS 38.141-2 version 17.10.0 Release 17)".
- [i.10] ETSI TR 138 903 (V17.2.0): "5G; NR; Derivation of test tolerances and measurement uncertainty for User Equipment (UE) conformance test cases (3GPP TR 38.903 version 17.2.0 Release 17)".

---

## 3 Definition of terms, symbols and abbreviations

### 3.1 Terms

For the purposes of the present document, the terms given in Directive 2014/53/EU [i.2] and the following apply:

**60 GHz band:** frequency range from 57 GHz to 71 GHz

**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 does not include the additional gain that may result out of beamforming.

**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.

**channel separation:** minimum separation (in MHz) between the centre frequencies of two adjacent channels in the channel plan of the radio equipment

**integral antenna:** antenna designed as a 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 1: In some cases, it may not be possible to remove an integral antenna or expose an antenna connector without changing the output characteristics of the radio equipment.

NOTE 2: Even with an integral antenna, it might still be possible to separate the antenna from the equipment using a special tool.

**mean power:** (transmitted or received) power averaged during the on-time of the signal

**nominal channel bandwidth:** bandwidth assigned to a single channel

NOTE: The nominal channel bandwidth is part of the product information as outlined in clause 5.3.0a.

**occupied bandwidth:** bandwidth of the signal containing 99 % of the transmitted mean power

NOTE: Both below the lower and above the upper frequency limits, the mean power emitted is equal to 0,5 % of the total mean power of the emission.

**smart antenna system:** equipment that combines multiple transmit and/or receive antenna elements with a signal processing function to increase its radiation and/or reception capabilities

## 3.2 Symbols

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

D	directivity
dB	decibel
dBc	decibels relative to the maximum power spectral density of the transmitted signal
dB <sub>i</sub>	decibels relative to the gain of an isotropic antenna
dB <sub>m</sub>	decibel relative to one milliwatt
dB <sub>r</sub>	decibel relative to a given maximum power level
G	gain of the antenna assembly
GHz	gigahertz
kHz	kilohertz
MHz	megahertz
$\eta$	antenna efficiency
$\mu$ s	microsecond
W	watt

## 3.3 Abbreviations

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

AAS	Active Antenna Systems
ACM	Adaptive Code and Modulation
ALA	Automatic Link Adaptation
ATPC	Automatic Transmit Power Control
BW	BandWidth
CATR	Compact Antenna Test Range
CW	Continuous Wave
DC	Duty Cycle
EFTA	European Free Trade Association
EIRP	Equivalent Isotropically Radiated Power
EIRP <sub>0</sub>	Equivalent Isotropically Radiated Power spectral density
EUT	Equipment Under Test
$f_c$	nominal centre frequency of the transmission
FER	Frame Error Rate
MCS	Modulation and Coding Scheme
OTA	Over The Air
PSD	Power Spectral Density
RF	Radio Frequency
RMS	Root Mean Square
SRD	Short Range Devices
TP	ThroughPut
TRP	Total Radiated Power
UUT	Unit Under Test
WDTS	Wideband Data Transmission Systems