

<b>STN</b>	<b>Vysielače pozemného digitálneho televízneho vysielania</b> <b>Harmonizovaná norma pre prístup k rádiovému spektru</b>	<b>STN</b> <b>EN 302 296 V2.2.1</b>  87 2296
------------	---	---

Digital Terrestrial TV Transmitters; Harmonised Standard for access to radio spectrum

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. 09/21

Obsahuje: EN 302 296 V2.2.1:2021

**133656**

# ETSI EN 302 296 V2.2.1 (2021-06)



## **Digital Terrestrial TV Transmitters; Harmonised Standard for access to radio spectrum**

---

**Reference**

REN/ERM-TG17-162

---

**Keywords**broadcasting, digital, harmonised standard, radio,  
regulation, terrestrial, transmitter, TV, video**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:

<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](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>

---

**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 .....	5
Foreword.....	5
Modal verbs terminology.....	6
Introduction .....	6
1 Scope .....	7
2 References .....	7
2.1 Normative references .....	7
2.2 Informative references.....	8
3 Definition of terms, symbols and abbreviations.....	8
3.1 Terms.....	8
3.2 Symbols.....	10
3.3 Abbreviations .....	10
4 Technical requirements specifications .....	10
4.1 Environmental profile.....	10
4.2 Conformance requirements .....	11
4.2.1 Introduction.....	11
4.2.2 Spurious emissions .....	11
4.2.2.1 Definition .....	11
4.2.2.2 Limits .....	11
4.2.2.3 Conformance test .....	12
4.2.3 Out-of-band emissions.....	12
4.2.3.1 Definition .....	12
4.2.3.2 Classification of transmitters.....	13
4.2.3.3 Limits .....	13
4.2.3.4 Conformance test .....	17
5 Testing for compliance with technical requirements.....	17
5.1 Environmental conditions for testing .....	17
5.2 Void.....	17
5.3 Test conditions .....	17
5.3.1 Test frequency range.....	17
5.3.2 Test modulation signal.....	18
5.4 Essential radio test suites.....	18
5.4.1 Introduction.....	18
5.4.2 Spurious emissions .....	18
5.4.2.1 Measurement approaches .....	18
5.4.2.2 Initial conditions .....	18
5.4.2.3 Test procedure.....	19
5.4.2.4 Test requirements.....	19
5.4.2.5 Test arrangement.....	19
5.4.3 Out-of-band emissions.....	20
5.4.3.1 Initial conditions .....	20
5.4.3.2 Test procedure.....	20
5.4.3.3 Test requirements.....	20
5.4.3.4 Test arrangement.....	20
<b>Annex A (informative): Relationship between the present document and the essential requirements of Directive 2014/53/EU .....</b>	<b>21</b>
<b>Annex B (informative): Void .....</b>	<b>22</b>
<b>Annex C (informative): Practical measurement of spurious domain emissions for broadcast transmitters .....</b>	<b>23</b>
C.0 Introduction .....	23

C.1	Directional coupler issues .....	23
C.2	Spectrum analyser settings .....	25
C.3	Composite measurement of spurious emissions.....	25
<b>Annex D (informative): Practical Measurement of out-of-band Domain Emissions.....</b>		<b>26</b>
D.1	Composite measurement of out-of-band emissions .....	26
D.2	System considerations .....	27
D.3	Spectrum analyser settings for OOB measurements .....	28
D.4	OOB domain emissions - typical spectrum analyser traces .....	28
D.5	ACLR measurement.....	29
<b>Annex E (informative): Impact of ACLR of low power broadcast transmitters on adjacent DVB-T/T2 services for co-sited networks .....</b>		<b>30</b>
E.0	Introduction .....	30
E.1	Equipment Configuration .....	30
E.2	Results .....	31
E.3	Theoretical impact of MER on END.....	32
E.4	Conclusions .....	32
<b>Annex F (informative): Maximum measurement uncertainty.....</b>		<b>33</b>
<b>Annex G (informative): Bibliography.....</b>		<b>34</b>
<b>Annex H (informative): Change history .....</b>		<b>35</b>
History .....		36

# 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 Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.3] 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.

<b>National transposition dates</b>	
Date of adoption of this EN:	18 May 2021
Date of latest announcement of this EN (doa):	31 August 2021
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	28 February 2022
Date of withdrawal of any conflicting National Standard (dow):	28 February 2023

---

## 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 present document has been produced to update the existing ETSI EN 302 296 in line with the requirements of article 3.2 of Directive 2014/53/EU [i.2].

# 1 Scope

The present document specifies technical characteristics and methods of measurements for digital terrestrial television transmitters as defined in table 1.1 and in table 1.2. The power classification (table 1.1) and emission classification (table 1.2) are combined to define a transmitter category. For example, power classification H and emission classification 0 denote a high power transmitter (category H0) whose OOB emissions comply with a non-critical mask.

**Table 1.1: Transmitter power classification**

Power Class	Description	Notes
H	High power transmitter	Transmitter with an output power $\geq 25$ W operating in the VHF band (174 MHz to 230 MHz) or UHF band (470 MHz to 694 MHz).
L	Low power transmitter	Transmitter with an output power $< 25$ W operating in the VHF band (174 MHz to 230 MHz) or UHF band (470 MHz to 694 MHz).

**Table 1.2: Transmitter emission classification**

Emission Classification	Conformance approach	Notes
0	Non-critical mask	For high power transmitters, the mask defines the level of the OOB emissions relative to the channel power (dBc). For low power transmitters the mask defines the absolute power limit of the OOB emissions (dBm). The former approach is mandated by RRC-06 (non-critical case) [i.4] for transmitters subject to coordination.
1	Critical mask	A similar but more stringent approach based on ITU RRC-06 (sensitive case) [i.4].
2	Non-critical ACLR	A set of ACLR limits defining permitted relative emission levels into adjacent channels.
3	Critical ACLR	A set of more stringent ACLR limits defining permitted relative emission levels into adjacent channels.

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] ETSI TR 101 290 (V1.2.1) (05-2001): "Digital Video Broadcasting (DVB); Measurement guidelines for DVB systems".
- [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] 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.4] ITU RRC-06: "Final Acts of the Regional Radiocommunication Conference for planning of the digital terrestrial broadcasting service in parts of Regions 1 and 3, in the frequency bands 174-230 MHz and 470-862 MHz", Geneva, 15 May - 16 June 2006.
- [i.5] ETSI EN 300 744 (V1.6.2) (10-2015): "Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for digital terrestrial television".
- [i.6] ETSI EN 302 755 (V1.4.1) (07-2015): "Digital Video Broadcasting (DVB); Frame structure channel coding and modulation for a second generation digital terrestrial television broadcasting system (DVB-T2)".
- [i.7] ETSI TR 100 028 (all parts) (V1.4.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".
- [i.8] 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.9] EN 55016-4-2:2011/A1:2014: "Specification for radio disturbance and immunity measuring apparatus and methods. Part 4-2: Uncertainties, statistics and limit modelling - Measurement instrumentation uncertainty", produced by CENELEC.
- [i.10] Recommendation ITU-R SM.329-12 (09/2012): "Unwanted emissions in the spurious domain".

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**