SLOVENSKI STANDARD
SIST EN 302 617 V2.2.1:2018

01-januar-2018

Talni UHF radijski oddajniki, sprejemniki in sprejemniki-oddajniki za UHF aeronavtično mobilno storitev, ki uporablja amplitudno modulacijo - Harmonizirani standard, ki zajema bistvene zahteve člena 3.2 direktive 2014/53/EU

Ground-based UHF radio transmitters, receivers and transceivers for the UHF aeronautical mobile service using amplitude modulation - Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/e10c03dc-c8e8-43e6-8812-c90fc92d09bd/sist-en-302-617-v2-2-1-2018

Ta slovenski standard je istoveten z: **ETSI EN 302 617 V2.2.1 (2017-11)**

ICS:

33.060.20	Sprejemna in oddajna oprema	Receiving and transmitting equipment
49.090	Oprema in instrumenti v zračnih in vesoljskih plovilih	On-board equipment and instruments

SIST EN 302 617 V2.2.1:2018 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

SIST EN 302 617 V2.2.1:2018

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/e10c03dc-c8e8-43e6-8812-c90fc92d09bd/sist-en-302-617-v2-2-1-2018

SIST EN 302 617 V2.2.1:2018

ETSI EN 302 617 V2.2.1 (2017-11)

Ground-based UHF radio transmitters, receivers and transceivers for the UHF aeronautical mobile service using amplitude modulation; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/
c90fc92d09bd/sist-en-302-617-v2-2-1-2018

SIST EN 302 617 V2.2.1:2018

Reference
REN/ERM-TGAERO-50

Keywords
aeronautical, AM, DSB, harmonised standard,
radio, testing, UHF

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Important notice

SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/e10c03dc-c8e8-43e6-8812-e9ae97d09bd9/sist-en-302-617-v2.2.1-2018

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/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/CommiteeSupportStaff.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.

© ETSI 2017.
All rights reserved.

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 protected for the benefit of its Members.
GSM® and the GSM logo are trademarks registered and owned by the GSM Association.

SIST EN 302 617 V2.2.1:2018

Contents

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/e10c03dc-c8e8-43e6-8812-c90fc92d09bd/sist-en-302-617-v2-2-1-2018

SIST EN 302 617 V2.2.1:2018

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/e10c03dc-c8e8-43e6-8812-c90fc92d09bd/sist-en-302-617-v2-2-1-2018

SIST EN 302 617 V2.2.1:2018

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/e10c03dc-c8e8-43e6-8812-c90fc92d09bd/sist-en-302-617-v2-2-1-2018

SIST EN 302 617 V2.2.1:2018

Intellectual Property Rights

Essential patents

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.

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.

Foreword

This Harmonised European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

iTeh STANDARD PREVIEW
(standards.iteh.ai)

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.7] 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].

SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/e10c03dc-c8e8-43e6-8812-c90fc92d09bd/sist-en-302-617-v2-2-1-2018

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:	21 August 2017
Date of latest announcement of this EN (doa):	30 November 2017
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2018
Date of withdrawal of any conflicting National Standard (dow):	31 May 2018

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.

SIST EN 302 617 V2.2.1:2018

1 Scope

The present document specifies technical characteristics and methods of measurements for DSB AM ground based transmitters, receivers and transceivers operating in all or any part of the aeronautical frequency band between 225 MHz and 399,975 MHz.

The present document covers the essential requirements of article 3.2 of Directive 2014/53/EU [i.1] under the conditions identified in annex A.

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements under other parts of article 3 of the Directive 2014/53/EU [i.1] as well as essential requirements under the Single European Sky (SES) Interoperability Regulation No 552/2004 [i.3] and related implementing rules and/or essential requirements under the EASA basic Regulation No 216/2008 [i.5] as amended by Regulation No 1108/2009 [i.6] may apply to equipment within the scope of the present document.

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/.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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.

SIST EN 302 617 V2.2.1:2018

[1] ETSI EN 300 113-1 (V1.7.1) (11-2011): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Part 1: Technical characteristics and methods of measurement".

[2] Recommendation ITU-T O.41 (10/1994): "Psophometer for use on telephone-type circuits".

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] ETSI TR 100 028 (all parts) (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

[i.3] Regulation (EC) 552/2004 of the European Parliament and Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (the interoperability Regulation), OJEU L96, 31.03.2004, p. 26-42 as amended by Regulation (EC) 1070/2009 of the European Parliament and of the Council of 21 October 2009, OJEU L300/34, 14/11/2009.

SIST EN 302 617 V2.2.1:2018

[i.4] ETSI TR 100 028-2 (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2".

[i.5] Regulation (EC) 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC.

[i.6] Regulation (EC) No 1108/2009 of the European Parliament and of the Council of 21 October 2009 amending Regulation (EC) No 216/2008 in the field of aerodromes, air traffic management and air navigation services and repealing Directive 2006/23/EC.

[i.7] 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.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

aeronautical mobile service: mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate

iTeh STANDARD PREVIEW
(standards.iteh.ai)

conducted measurements: measurements which are made using a direct RF connection to the equipment under test

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

SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/e10c03dc-c8e8-43e6-8812-c90fc92d09bd/sist-en-302-617-v2-2-1-2018

ground base station: aeronautical station equipment, in the aeronautical mobile service, for use with an external antenna and intended for use at a fixed location

radiated measurements: measurements which involve the measurement of a radiated field

3.2 Abbreviations

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

AM	Amplitude Modulation
dB	decibel
DSB	Double Side Band
RE	Radio Equipment
RF	Radio Frequency

4 General requirements

4.1 Frequency control

25 kHz equipment shall be able to operate on the frequencies 225,000 MHz to 399,975 MHz.

It shall not be possible to transmit while any frequency synthesizer used within the transmitter is out of lock.

It shall not be possible to transmit during channel switching operations.

SIST EN 302 617 V2.2.1:2018

4.2 Controls and indicators

The equipment shall have the following controls and indicators as a minimum:

- a visual indication that the device is switched on;
- a facility to disable the squelch for test purposes (by local or remote control);
- a visual indication that the carrier is being produced.

The equipment shall also meet the following requirements:

- the user shall not have access to any control which, if unintentionally set, might impair the operating parameters of the equipment.

4.3 Class of emission and modulation characteristics

The equipment shall use Double Side Band (DSB) Amplitude Modulation (AM) full carrier, 6K80A3EJN with 25 kHz channel spacing.

4.4 Warm up

After being switched on the equipment shall meet the requirements of the present document within one minute under normal test conditions (see clause 5.6).

If the equipment includes parts which require to be heated in order to operate correctly (e.g. crystal ovens) a warming-up period of 10 minutes of those parts shall be allowed.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

4.5 Protection of the transmitter

SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/e10c03dc-c8e8-43e6-8812-c90fc92d09bd/sist-en-302-617-v2-2-1-2018

4.5.1 Definition

The protection of the transmitter represents the ability of the transmitter to be protected against malfunction due to faults in the antenna system. This shall be the first test applied to a transmitter.

4.5.2 Method of measurement

While the transmitter is transmitting at the rated output power, the antenna port shall first be short-circuited and then open-circuited, in each case for a period of 1 minute. This test shall be performed on 312,5 MHz only.

4.5.3 Requirement

This test shall not result in any damage to the transmitter. After removal of the short-circuit and open-circuit conditions, the transmitter shall be able to operate normally when re-keyed.

5 General conditions of measurement

5.1 Transmitter test signal arrangement

5.1.1 Coaxial termination

When tests are carried out with a coaxial termination, this shall be a non-reactive, non radiating 50 Ω load.

SIST EN 302 617 V2.2.1:2018

5.1.2 Signal sources

The modulating signals shall be applied to the transmitter through the modulating audio input.

5.1.3 Normal test signal

The normal test signal shall be a 1 kHz sinewave at a level which produces a 30 % amplitude modulation depth, of the transmitter RF output, unless otherwise defined.

5.2 Receiver test signal arrangement

5.2.1 Test signal sources

Test signal sources shall be connected to the receiver input in such a way that the impedance presented to the receiver input is 50 Ω, irrespective of whether one or more test signals are applied to the receiver simultaneously.

5.2.2 Nominal frequency

The nominal frequency of the receiver is the carrier frequency of the selected channel.

5.2.3 Normal test signal

The normal test signal shall be a Double Side Band (DSB) signal with carrier, amplitude modulated with 1 kHz sinewave to a depth of 30 %.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

5.2.4 Squelch

Unless otherwise stated the receiver squelch facility shall be made inoperative for the duration of the tests.

SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/e10c03dc-c8e8-43e6-8812-c90fc92d09bd/sist-en-302-617-v2-2-1-2018

5.2.5 Normal audio output power

The rated audio frequency output power is the value stated by the manufacturer to be the maximum power available at the output, for which all the requirements of the present document are met.

The audio frequency output power shall be maintained at 50 % of the rated output in the presence of a desired signal unless otherwise defined.

5.2.6 Audio AGC

When an audio AGC function is provided, this shall be disabled (where possible) unless otherwise stated.

5.3 Test channels

Tests shall be carried out on three frequencies unless otherwise stated:

- 225,000 MHz;
- 312,500 MHz;
- 399,975 MHz.

SIST EN 302 617 V2.2.1:2018

5.4 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be declared by the manufacturer, but as a minimum, shall be that specified in the test conditions contained in the present document. The equipment shall comply with all the technical requirements of the present document which are identified as applicable in annex A at all times when operating within the boundary limits of the declared operational environmental profile.

Measurements shall be made under normal test conditions (see clause 5.6) and also, where stated, under extreme test conditions (see clauses 5.7).

5.5 Test power source

During testing, the equipment shall be supplied from a test power source capable of producing normal and extreme test voltages.

The internal impedance of the test power source shall be low enough for its effect on the test results to be negligible. For the purpose of testing the power source voltage shall be measured at the input terminals of the equipment.

During testing, the power source voltages shall be maintained within a tolerance of ±3 % relative to the voltage level at the beginning of each test.

5.6 Normal test conditions

5.6.1 Normal temperature and humidity

iTeh STANDARD PREVIEW
(standards.iteh.ai)

The normal temperature and humidity conditions for tests shall be a combination of temperature and humidity within the following ranges:

SIST EN 302 617 V2.2.1:2018
https://standards.iteh.ai/catalog/standards/sist/e10c03dc-c8e8-43e6-8812-0bfc92d09bd/sist-en-302-617-v2-2-1-2018

- temperature: +15 °C to +35 °C;
- relative humidity: 20 % to 75 %.

When it is impracticable to carry out the tests under these conditions, a note to this effect, stating the ambient temperature and relative humidity during the tests, shall be added to the test report.

5.6.2 Normal power sources

5.6.2.1 Mains voltage and frequency

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage.

For the purpose of the present document, the nominal voltage shall be the declared voltage or any of the declared voltages for which the equipment was designed.

The frequency of the test power source corresponding to the AC mains shall be between 49 Hz and 51 Hz.

5.6.2.2 Other power sources

For operation from other power sources or types of battery (primary or secondary), the normal test voltage shall be that declared by the equipment manufacturer.