



SLOVENSKI STANDARD

SIST EN 300 162-3:2001

01-december-2001

9`Y_lfca U[bYfbUnXfi y`1j cgh]b`nUXYj Y`j `nj Yn]`n`fUX]`g_]a `gdY_lfca `f0FAŁ!
FUX]cH`YZ: bg_]`cXXU`b_]`]b`gdfY`Ya b_]`nUdca cfg_Y`a cV]`bY`gHcf]hj YZ_]`XYi `Y`c
j`dUgcj]\ `J<: `!` "XY.`<Ufa cb]n]fUb]`Yj fcdg_]`gHUbXUfX`f0BŁZ_]`nU`Ya UV]ghj YbY
nU H`j Y` `YbU` " `YX]fY_Hj Y`c`fUX]`g_]`]b`H`Y`_ca i b_]`UW`g_]`H`fa]bUg_]`cdfYa]
fF/ HH9Ł

Electromagnetic compatibility and Radio spectrum Matters (ERM); Radiotelephone transmitters and receivers for the maritime mobile service operating in VHF bands; Part 3: Harmonized EN covering essential requirements of article 3.3 (e) of the R&TTE Directive

[SIST EN 300 162-3:2001](https://standards.iteh.ai/catalog/standards/sist/10763a62-1603-48de-91a4-421007df2ee7/sist-en-300-162-3-2001)

<https://standards.iteh.ai/catalog/standards/sist/10763a62-1603-48de-91a4-421007df2ee7/sist-en-300-162-3-2001>

Ta slovenski standard je istoveten z: EN 300 162-3 Version 1.1.1

ICS:

33.060.20	Sprejemna in oddajna oprema	Receiving and transmitting equipment
33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general
47.020.70	Navigacijska in krmilna oprema	Navigation and control equipment

SIST EN 300 162-3:2001

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 300 162-3:2001

<https://standards.iteh.ai/catalog/standards/sist/10763a62-1603-48de-91a4-421007df2ee7/sist-en-300-162-3-2001>

ETSI EN 300 162-3 V1.1.1 (2001-05)

Candidate Harmonized European Standard (Telecommunications series)

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Radiotelephone transmitters and receivers
for the maritime mobile service operating in VHF bands;
Part 3: Harmonized EN covering essential requirements
of article 3.3 (e) of the R&TTE Directive**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 300 162-3:2001](https://standards.iteh.ai/catalog/standards/sist/10763a62-1603-48de-91a4-421007df2ee7/sist-en-300-162-3-2001)

<https://standards.iteh.ai/catalog/standards/sist/10763a62-1603-48de-91a4-421007df2ee7/sist-en-300-162-3-2001>



Reference

DEN/ERM-RP01-046-3

KeywordsEMC, GMDSS, maritime, radio, regulation,
telephony, VHF**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)

SIST EN 300 162-3:2001

<https://standards.iteh.ai/catalog/standards/sist/10763a62-1603-48de-91a4-421007df2ee7/sist-en-300-162-3-2001>

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the 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://www.etsi.org/tb/status/>

If you find errors in the present document, send your comment to:
editor@etsi.fr

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2001.
All rights reserved.

Contents

Intellectual Property Rights	6
Foreword	6
Introduction	7
1 Scope	9
2 References	9
3 Definitions and abbreviations	10
3.1 Definitions	10
3.2 Abbreviations	10
4 Technical requirements specifications	11
4.1 Environmental profile	11
4.2 General, operational and technical requirements	11
4.2.1 General and operational requirements	11
4.2.1.1 Construction	11
4.2.1.2 Controls and indicators	12
4.2.1.3 Safety precautions	12
4.2.1.4 Labelling	12
4.2.1.5 Warm up	13
4.2.2 Technical requirements	13
4.2.2.1 Switching time	13
4.2.2.2 Class of emission and modulation characteristics	13
4.2.2.3 Multiple watch facilities	13
4.2.2.3.1 Additional performance standards	13
4.2.2.3.2 Scanning characteristics	14
4.2.2.4 Interfaces	14
4.2.2.4.1 DSC controller interfaces	14
4.2.2.4.2 Operational interfaces	14
4.3 Environmental requirements	14
4.3.1 Vibration test	14
4.3.1.1 Definition	14
4.3.1.2 Requirement	14
4.3.1.3 Conformance	14
4.3.2 Temperature tests	15
4.3.2.1 Definition	15
4.3.2.2 Dry heat	15
4.3.2.2.1 Definition	15
4.3.2.2.2 Requirement	15
4.3.2.2.3 Conformance	15
4.3.2.3 Damp heat	15
4.3.2.3.1 Definition	15
4.3.2.3.2 Requirement	15
4.3.2.3.3 Conformance	15
4.3.2.4 Low temperature cycle	15
4.3.2.4.1 Definition	15
4.3.2.4.2 Requirement	15
4.3.2.4.3 Conformance	15
4.4 Conformance requirements	16
4.4.1 Transmitter carrier power, specific channels	16
4.4.1.1 Definition	16
4.4.1.2 Limit	16
4.4.1.3 Conformance	16
4.4.2 Sensitivity of the modulator, including microphone	16
4.4.2.1 Definition	16
4.4.2.2 Limit	16

4.4.2.3	Conformance.....	16
4.4.3	Audio frequency response.....	16
4.4.3.1	Definition.....	16
4.4.3.2	Limit.....	17
4.4.3.3	Conformance.....	17
4.4.4	Audio frequency harmonic distortion of the emission.....	17
4.4.4.1	Definition.....	17
4.4.4.2	Limit.....	17
4.4.4.3	Conformance.....	17
4.4.5	Residual modulation of the transmitter.....	18
4.4.5.1	Definition.....	18
4.4.5.2	Limit.....	18
4.4.5.3	Conformance.....	18
4.4.6	DSC audio input characteristics.....	18
4.4.6.1	Definition.....	18
4.4.6.2	Limit.....	18
4.4.6.3	Conformance.....	18
4.4.7	DSC audio input limitation.....	18
4.4.7.1	Definition.....	18
4.4.7.2	Limit.....	18
4.4.7.3	Conformance.....	18
4.4.8	Modulation attack time.....	18
4.4.8.1	Definition.....	18
4.4.8.2	Limit.....	19
4.4.8.3	Conformance.....	19
4.4.9	Harmonic distortion and rated audio frequency output power.....	19
4.4.9.1	Definition.....	19
4.4.9.2	Limit.....	19
4.4.9.3	Conformance.....	19
4.4.10	Audio frequency response.....	20
4.4.10.1	Definition.....	20
4.4.10.2	Limit.....	20
4.4.10.3	Conformance.....	20
4.4.11	Maximum usable sensitivity.....	20
4.4.11.1	Definition.....	20
4.4.11.2	Limit.....	21
4.4.11.3	Conformance.....	21
4.4.12	Receiver noise and hum level.....	21
4.4.12.1	Definition.....	21
4.4.12.2	Limit.....	21
4.4.12.3	Conformance.....	21
4.4.13	Squelch operation.....	21
4.4.13.1	Definition.....	21
4.4.13.2	Limit.....	21
4.4.13.3	Conformance.....	21
4.4.14	Squelch hysteresis.....	21
4.4.14.1	Definition.....	21
4.4.14.2	Limit.....	21
4.4.14.3	Conformance.....	22
4.4.15	DSC audio output characteristic.....	22
4.4.15.1	Definition.....	22
4.4.15.2	Limit.....	22
4.4.15.3	Conformance.....	22
5	Testing for compliance with technical requirements.....	22
5.1	Test conditions, power supply and ambient temperatures.....	22
5.1.1	Arrangements for test signals applied to the receiver input.....	22
5.1.2	Squelch.....	22
5.1.3	Normal test modulation.....	22
5.1.4	Artificial antenna.....	22
5.1.5	Arrangements for test signals applied to the transmitter input.....	22
5.1.6	Test channels.....	22

5.1.7	Test conditions, power sources and ambient temperatures	23
5.1.7.1	Normal and extreme test conditions	23
5.1.7.2	Test power source.....	23
5.1.8	Normal test conditions	23
5.1.8.1	Normal temperature and humidity.....	23
5.1.8.2	Normal power sources	23
5.1.8.2.1	Mains voltage and frequency	23
5.1.8.2.2	Battery power source.....	23
5.1.8.2.3	Other power sources.....	23
5.1.9	Extreme test conditions	23
5.1.9.1	Extreme temperatures	23
5.1.9.2	Extreme values of test power sources	24
5.1.9.2.1	Mains voltage.....	24
5.1.9.2.2	Battery power source.....	24
5.1.9.2.3	Other power sources.....	24
5.1.10	Procedure for tests at extreme temperatures	24
5.1.11	Substitution antenna.....	24
5.2	Interpretation of the measurement results	25
5.3	Essential radio test suites	25
5.3.1	Environmental tests.....	25
5.3.1.1	Introduction.....	25
5.3.1.2	Procedure	25
5.3.1.3	Performance check	26
5.3.1.4	Vibration test.....	26
5.3.1.5	Temperature tests.....	27
5.3.1.5.1	Dry heat.....	27
5.3.1.5.2	Damp heat.....	27
5.3.1.5.3	Low temperature cycle	27
5.3.2	Transmitter carrier power, specific channels.....	27
5.3.3	Sensitivity of the modulator, including microphone	28
5.3.4	Audio frequency response	28
5.3.5	Audio frequency harmonic distortion of the emission.....	28
5.3.5.1	Method.....	28
5.3.5.2	Normal test conditions	28
5.3.5.3	Extreme test conditions.....	28
5.3.6	Residual modulation of the transmitter	28
5.3.7	DSC audio input characteristics.....	29
5.3.8	DSC audio input limitation.....	29
5.3.9	Modulation attack time.....	29
5.4	Other test specifications.....	30
5.4.1	General.....	30
5.4.2	Harmonic distortion and rated audio frequency output power.....	30
5.4.3	Audio frequency response	30
5.4.4	Maximum usable sensitivity	31
5.4.5	Receiver noise and hum level	31
5.4.6	Squelch operation	31
5.4.7	Squelch hysteresis.....	32
5.4.8	DSC audio output characteristic	32
Annex A (normative):	The EN Requirements Table (EN-RT).....	33
Annex B (informative):	The EN title in the official languages.....	35
Annex C (informative):	Bibliography.....	36
History		37

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://www.etsi.org/ipr>).

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 Candidate Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document is part 3, of a multi-part deliverable covering the radiotelephone transmitters and receivers for the maritime mobile service operating in VHF bands, as identified below:

- Part 1: "Technical characteristics and methods of measurement";
- Part 2: "Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive";
- Part 3: "Harmonized EN covering essential requirements of article 3.3 (e) of the R&TTE Directive".**

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations and following Commission Decision 2000/638/EC of 22 September 2000.

The present document is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the 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 ("the R&TTE Directive") [1].

National transposition dates

Date of adoption of this EN:	27 April 2001
Date of latest announcement of this EN (doa):	31 July 2001
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 2003
Date of withdrawal of any conflicting National Standard (dow):	31 January 2003

Introduction

The present document is part of a set of standards designed to fit in a modular structure to cover all radio and telecommunications terminal equipment under the R&TTE Directive [1]. Each standard is a module in the structure. The modular structure is shown in figure 1.

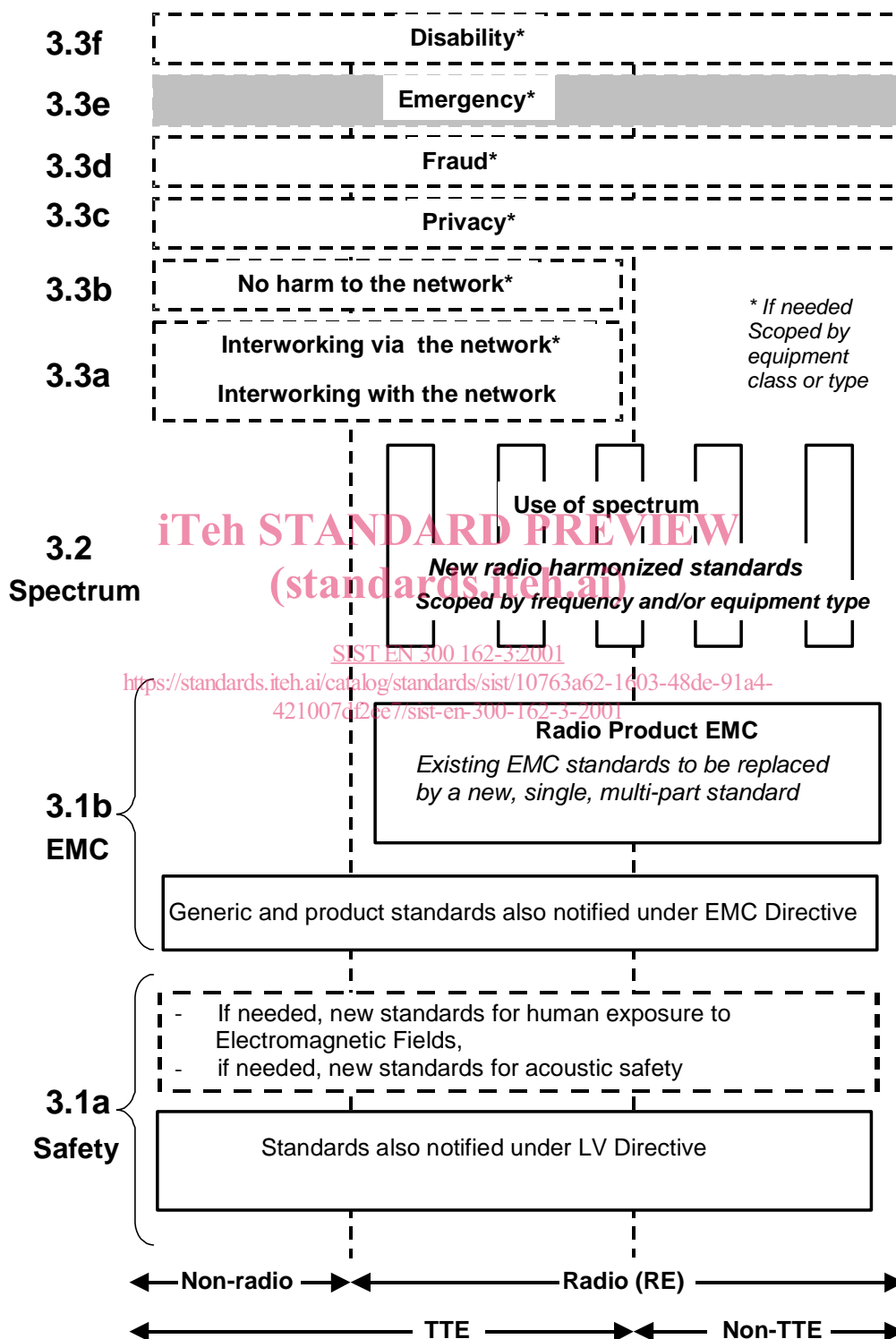


Figure 1: Modular structure for the various standards used under the R&TTE Directive [1]

The left hand edge of the figure 1 shows the different clauses of article 3 of the R&TTE Directive [1].

For article 3.3 various horizontal boxes are shown. Dotted lines indicate that at the time of publication of the present document essential requirements in these areas have to be adopted by the Commission. If such essential requirements are adopted, and as far and as long as they are applicable, they will justify individual standards whose scope is likely to be specified by function or interface type.

The vertical boxes show the standards under article 3.2 for the use of the radio spectrum by radio equipment. The scopes of these standards are specified either by frequency (normally in the case where frequency bands are harmonized) or by radio equipment type.

For article 3.1b the diagram shows the new single multi-part product EMC standard for radio, and the existing collection of generic and product standards currently used under the EMC Directive [2]. The parts of this new standard will become available in the second half of 2000, and the existing separate product EMC standards will be used until it is available.

For article 3.1a the diagram shows the existing safety standards currently used under the LV Directive [3] and new standards covering human exposure to electromagnetic fields. New standards covering acoustic safety may also be required.

The bottom of the figure shows the relationship of the standards to radio equipment and telecommunications terminal equipment. A particular equipment may be radio equipment, telecommunications terminal equipment or both. A radio spectrum standard will apply if it is radio equipment. An article 3.3 standard will apply as well only if the relevant essential requirement under the R&TTE Directive [1] is adopted by the Commission and if the equipment in question is covered by the scope of the corresponding standard. Thus, depending on the nature of the equipment, the essential requirements under the R&TTE Directive [1] may be covered in a set of standards.

The modularity principle has been taken because:

- it minimizes the number of standards needed. Because equipment may, in fact, have multiple interfaces and functions it is not practicable to produce a single standard for each possible combination of functions that may occur in an equipment;
- it provides scope for standards to be added:
 - under article 3.2 when new frequency bands are agreed; or
 - under article 3.3 should the Commission take the necessary decisions
 without requiring alteration of standards that are already published;
- it clarifies, simplifies and promotes the usage of Harmonized Standards as the relevant means of conformity assessment.

1 Scope

The present document applies to shipborne Very High Frequency (VHF) transmitters and receivers capable of voice and Digital Selective Calling (DSC), radio equipment.

The present document lays down minimum requirements for VHF radio transmitters and receivers operating in all or any part of the 156,0 MHz to 174,0 MHz frequency band allocated to the maritime mobile service, utilizing class of emission G3E and G2B.

The present document is intended to cover the provisions of Directive 1999/5/EC (R&TTE Directive) [1].

Article 3.3 (e), which states that radio equipment within the scope of the present document shall be so constructed that: "it supports certain features ensuring access to emergency services".

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 R&TTE Directive [1] will apply to equipment within the scope of the present document.

NOTE: A list of such ENs is included on the web site <http://www.newapproach.org/>.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- iTeh STANDARD PREVIEW**
(standards.iteh.ai)
- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
 - For a specific reference, subsequent revisions do not apply.
 - For a non-specific reference, the latest version applies.

- <https://standards.iteh.ai/catalog/standards/sist/10763a62-1603-48de-91a4-421007df2ee7/sist-en-300-162-3-2001>
- SIST EN 300 162-3:2001
- [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] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive).
 - [3] Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (LV Directive).
 - [4] International Telecommunication Union; Radio Regulations (1998), Appendix S18: "Table of Transmitting Frequencies in the VHF maritime mobile band".
 - [5] ITU-R Recommendation M.493-10 (1997): "Digital selective-calling system for use in the maritime mobile service".
 - [6] ITU-R Recommendation M.541-8 (1997): "Operational procedures for the use of digital selective-calling (DSC) equipment in the maritime mobile service".
 - [7] ITU-T Recommendation E.161 (1993): "Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network".
 - [8] IMO Resolution A.803(19): "Performance Standards for Shipborne VHF Radio Installations capable of Voice Communications and Digital Selective Calling".

- [9] ETSI EN 300 338 (V1.2.1) (1999): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Technical characteristics and methods of measurement for equipment for generation, transmission and reception of Digital Selective Calling (DSC) in the maritime MF, MF/HF and/or VHF mobile service".
- [10] IEC 1162-1 (1995): "Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 1: Single talker and multiple listeners".
- [11] ITU-T Recommendation P.53 (1988): "Psophometer for use on telephone-type circuits".
- [12] ETSI ETR 028 (1994): "Radio Equipment and Systems (RES); Uncertainties in the measurement of mobile radio equipment characteristics".

3 Definitions 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.

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.

channel 16: frequency of 156,800 MHz.

G3E: phase-modulation (Frequency modulation with a pre-emphasis of 6 dB/octave) for speech.

G2B: phase-modulation with digital information, with a sub-carrier for Digital Selective Calling (DSC) operation.

modulation index: ratio between the frequency deviation and the modulation frequency.

performance check: a check of:

- the transmitter carrier power and frequency; and
- receiver sensitivity (see clause 5.3.1.3).

3.2 Abbreviations

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

EMC	Electro-Magnetic Compatibility
LV	Low Voltage
R&TTE	Radio and Telecommunications Terminal Equipment
RE	Radio Equipment
ad	amplitude difference
DSC	Digital Selective Calling
EUT	Equipment Under Test
fd	frequency difference
FSI	Frequency Set Information
RF	Radio Frequency
rms	root mean square
SFI	Scanning Frequency Information
SINAD	Signal + Noise + Distortion / Noise + Distortion
VHF	Very High Frequency