



SLOVENSKI STANDARD SIST EN 62575-1:2016

01-april-2016

Radiofrekvenčni filtri (RF) za zelo visoke zvočne frekvence (BAW) določene kakovosti - 1. del: Splošna specifikacija

Radio frequency (RF) bulk acoustic wave (BAW) filters of assessed quality - Part 1: Generic specification

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **SIST EN 62575-1:2016** **EN 62575-1:2016**
<https://standards.iteh.ai/catalog/standards/sist/1a55823c-590c-4ad5-a38c-247a852193ef/sist-en-62575-1-2016>

ICS:

33.120.30 Radiofrekvenčni konektorji RF connectors
(RF)

SIST EN 62575-1:2016

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 62575-1:2016

<https://standards.iteh.ai/catalog/standards/sist/fa33823c-390c-4ad5-a38c-247a852193ef/sist-en-62575-1-2016>

EUROPEAN STANDARD

EN 62575-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2016

ICS 31.140

English Version

Radio frequency (RF) bulk acoustic wave (BAW) filters of
assessed quality - Part 1: Generic specification
(IEC 62575-1:2015)

Filtres radiofréquences (RF) à ondes acoustiques de
volume (OAV) sous assurance de la qualité -
Partie 1: Spécification générique
(IEC 62575-1:2015)

Volumenwellen-(BAW-)Filter mit bewerteter Qualität für
Hochfrequenz-(HF-)Anwendungen -
Teil 1: Fachgrundspezifikation
(IEC 62575-1:2015)

This European Standard was approved by CENELEC on 2015-12-03. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

SIST EN 62575-1:2016

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

EN 62575-1:2016**European foreword**

The text of document 49/1163/FDIS, future edition 1 of IEC 62575-1, prepared by IEC/TC 49 "Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62575-1:2016.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-09-03
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-12-03

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62575-1:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60368 Series	NOTE	Harmonized as EN 60368 Series.
IEC 60862-1:2015	NOTE	Harmonized as EN 60862-1:2015 (not modified).
IEC 61000-4-2	NOTE	Harmonized as EN 61000-4-2.
IEC 62604-1:2015	NOTE	Harmonized as EN 62604-1:2015 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60027	Series	Letter symbols to be used in electrical technology	EN 60027	Series
IEC 60050-561	-	International electrotechnical vocabulary (IEV) - Part 561: Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection	-	-
IEC 60068-1	2013	Environmental testing - Part 1: General and guidance	EN 60068-1	2014
IEC 60068-2-1	-	Environmental testing - Part 2-1: Tests - Test A: Cold	EN 60068-2-1	-
IEC 60068-2-2	-	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	-
IEC 60068-2-6	-	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	-
IEC 60068-2-7	-	Basic environmental testing procedures - Part 2-7: Tests - Test Ga and guidance: Acceleration, steady state	EN 60068-2-7	-
IEC 60068-2-13	-	Basic environmental testing procedures - Part 2-13: Tests - Test M: Low air pressure	EN 60068-2-13	-
IEC 60068-2-14	-	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-17	1994	Basic environmental testing procedures - Part 2-17: Tests - Test Q: Sealing	EN 60068-2-17	1994
IEC 60068-2-21	-	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	-
IEC 60068-2-27	-	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock	EN 60068-2-27	-
IEC 60068-2-30	-	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	-

EN 62575-1:2016

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-31	-	Environmental testing - Part 2-31: Tests - Test Ec: Rough handling shocks, primarily for equipment-type specimens	EN 60068-2-31	-
IEC 60068-2-45	-	Basic environmental testing procedures - Part 2-45: Tests - Test XA and guidance: Immersion in cleaning solvents	EN 60068-2-45	-
IEC 60068-2-52	-	Environmental testing - Part 2-52: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution)	EN 60068-2-52	-
IEC 60068-2-58	-	Environmental testing - Part 2-58: Tests - Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)	EN 60068-2-58	-
IEC 60068-2-64	-	Environmental testing - Part 2-64: Tests - Test Fh: Vibration, broadband random and guidance	EN 60068-2-64	-
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60122-1	-	Quartz crystal units of assessed quality - Part 1: Generic specification	EN 60122-1	-
IEC 60617-DB	-	Graphical symbols for diagrams	-	-
IEC 60642	-	Piezoelectric ceramic resonators and resonator units for frequency control and selection - Chapter I: Standard values and conditions - Chapter II: Measuring and test conditions	-	-
IEC 60695-11-5	-	Fire hazard testing - Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance	EN 60695-11-5	-
IEC 60749-28 ¹⁾	-	Semiconductor devices - Mechanical and climatic test methods - Part 28: Electrostatic Discharge (ESD) Sensitivity Testing Direct contact charged device model (DC-CDM)	EN 60749-28 ¹⁾	-
IEC 61340-3-1	-	Electrostatics - Part 3-1: Methods for simulation of electrostatic effects - Human body model (HBM) electrostatic discharge test waveforms	EN 61340-3-1	-
IEC 61340-3-2	-	Electrostatics - Part 3-2: Methods for simulation of electrostatic effects - Machine model (MM) electrostatic discharge test waveforms	EN 61340-3-2	-
ISO 80000-1	-	Quantities and units - Part 1: General	EN ISO 80000-1	-

¹⁾ At draft stage.



IEC 62575-1

Edition 1.0 2015-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Radio frequency (RF) bulk acoustic wave (BAW) filters of assessed quality –
Part 1: Generic specification**

**Filtres radiofréquences (RF) à ondes acoustiques de volume (OAV) sous
assurance de la qualité –
Partie 1: Spécification générique**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 31.140

ISBN 978-2-8322-2969-9

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references.....	8
3 Terms, definitions, units and symbols.....	9
3.1 Terms and definitions.....	9
3.2 Units and symbols.....	15
4 Preferred values for ratings and characteristics.....	15
4.1 General.....	15
4.2 Nominal frequencies.....	15
4.3 Operating temperature ranges, in degrees Celsius (°C).....	16
4.4 Climatic category.....	16
4.5 Bump severity.....	16
4.6 Vibration severity.....	17
4.7 Shock severity.....	17
4.8 Fine leak rate.....	17
5 Marking.....	18
5.1 Filter marking.....	18
5.2 Package marking.....	18
6 Quality assessment procedures.....	18
6.1 General.....	18
6.2 Primary stage of manufacture.....	18
6.3 Structurally similar components.....	18
6.4 Subcontracting.....	18
6.5 Incorporated components.....	18
6.6 Manufacturer's approval.....	19
6.7 Approval procedures.....	19
6.7.1 General.....	19
6.7.2 Capability approval.....	19
6.7.3 Qualification approval.....	19
6.8 Procedures for capability approval.....	19
6.8.1 General.....	19
6.8.2 Eligibility for capability approval.....	20
6.8.3 Application for capability approval.....	20
6.8.4 Granting of capability approval.....	20
6.8.5 Capability manual.....	20
6.9 Procedures for qualification approval.....	20
6.9.1 General.....	20
6.9.2 Eligibility for qualification approval.....	20
6.9.3 Application for qualification approval.....	20
6.9.4 Granting of qualification approval.....	20
6.9.5 Quality conformance inspection.....	20
6.10 Test procedures.....	20
6.11 Screening requirements.....	20
6.12 Rework and repair work.....	21
6.12.1 Rework.....	21

6.12.2	Repair work	21
6.13	Certified records of released lots	21
6.14	Validity of release	21
6.15	Release for delivery	21
6.16	Unchecked parameters	21
7	Test and measurement procedures	21
7.1	General	21
7.2	Test and measurement conditions	21
7.2.1	Standard conditions of testing	21
7.2.2	Precision of measurement	22
7.2.3	Precautions	22
7.2.4	Alternative test methods	22
7.3	Visual inspection	22
7.3.1	General	22
7.3.2	Visual test A	22
7.3.3	Visual test B	23
7.3.4	Visual test C	23
7.4	Dimensions and gauging procedures	23
7.4.1	Dimensions test A	23
7.4.2	Dimensions test B	23
7.5	Electrical test procedures	23
7.5.1	General	23
7.5.2	Insertion attenuation measurement	23
7.5.3	Return attenuation measurement	25
7.5.4	Intermodulation distortion measurement	27
7.5.5	Measurement of insertion attenuation characteristics at specified terminating impedances and at standard atmospheric conditions	28
7.5.6	Measurement of insertion attenuation characteristics as a function of temperature	28
7.5.7	Measurement of return attenuation at specified terminating impedance and at the standard atmospheric conditions	28
7.5.8	Measurement of intermodulation distortion at standard atmospheric conditions	28
7.5.9	Measurement method for the balanced type filter	29
7.5.10	Insulation resistance	30
7.5.11	Voltage proof	30
7.6	Mechanical and environmental test procedures	30
7.6.1	Robustness of terminations (destructive)	30
7.6.2	Sealing tests (non-destructive)	31
7.6.3	Soldering (solderability and resistance to soldering heat) (destructive)	31
7.6.4	Rapid change of temperature: severe shock by liquid immersion (non-destructive)	31
7.6.5	Rapid change of temperature with prescribed time of transition (non-destructive)	32
7.6.6	Bump (destructive)	32
7.6.7	Vibration (destructive)	32
7.6.8	Shock (destructive)	33
7.6.9	Free fall (destructive)	33
7.6.10	Acceleration, steady state (non-destructive)	33
7.6.11	Low air pressure (non-destructive)	33

7.6.12	Dry heat (non-destructive).....	33
7.6.13	Damp heat, cyclic (destructive).....	33
7.6.14	Cold (non-destructive).....	34
7.6.15	Climatic sequence (destructive).....	34
7.6.16	Damp heat, steady state (destructive).....	34
7.6.17	Salt mist cyclic (destructive).....	34
7.6.18	Immersion in cleaning solvents (non-destructive).....	34
7.6.19	Flammability test (destructive).....	34
7.6.20	Electrostatic discharge (ESD) sensitivity test (destructive).....	34
7.7	Endurance test procedure	35
	Bibliography	36
	Figure 1 – FBAR configuration	10
	Figure 2 – SMR configuration	11
	Figure 3 – Frequency response of RF BAW filters.....	15
	Figure 4 – Insertion attenuation measurement	24
	Figure 5 – Return attenuation measurement	25
	Figure 6 – Intermodulation distortion measurement.....	28
	Figure 7 – Four-port network analyser measurement for balanced-balanced-connection filter	29
	Figure 8 – Three-port network analyser measurement for unbalanced-balanced-connection filter	30
	Table 1 – Frequency allocation of typical UMTS bands	16

INTERNATIONAL ELECTROTECHNICAL COMMISSION

RADIO FREQUENCY (RF) BULK ACOUSTIC WAVE (BAW) FILTERS OF ASSESSED QUALITY –

Part 1: Generic specification

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
<https://standards.iteh.ai/catalog/standards/sist/fa33823c-390c-4ad5-a38c-247a852193ef/sist-en-62575-1-2016>
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62575-1 has been prepared by IEC technical committee 49: Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection.

The text of this standard is based on the following documents:

FDIS	Report on voting
49/1163/FDIS	49/1169/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62575, published under the general title *Radio frequency (RF) bulk acoustic wave (BAW) filters of assessed quality*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 62575-1:2016

<https://standards.iteh.ai/catalog/standards/sist/fa33823c-390c-4ad5-a38c-247a852193ef/sist-en-62575-1-2016>

INTRODUCTION

RF BAW filters are now widely used in mobile communications. While the RF BAW filters have various specifications, many of them can be classified within a few fundamental categories.

Standard specifications, given in the IEC 62575 series, and national specifications or detail specifications issued by manufacturers, define the available combinations of nominal frequency pass bandwidth, ripple, shape factor, terminating impedance, etc. These specifications are compiled to include a wide range of RF BAW filters with standardized performances. It cannot be over-emphasized that the user should, wherever possible, select his RF BAW filters from these specifications, when available, even if it may lead to making small modifications to his circuit to enable standard filters to be used. This applies particularly to the selection of the nominal frequency.

This standard has been compiled in response to a generally expressed desire on the part of both users and manufacturers for guidance on the use of RF BAW filters, so that the filters may be used to their best advantage. To this end, general and fundamental characteristics have been explained in this part of IEC 62575.

It is not the aim of this standard to explain theory, nor to attempt to cover all the eventualities which may arise in practical circumstances. This standard draws attention to some of the more fundamental questions, which should be considered by the user before he places an order for an RF BAW filter for a new application. Such a procedure will be the user's insurance against unsatisfactory performance.

iteh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 62575-1:2016

<https://standards.iteh.ai/catalog/standards/sist/fa33823c-390c-4ad5-a38c-247a852193ef/sist-en-62575-1-2016>