ICS 31.180 SLOVENSKÁ TECHNICKÁ NORMA Júl 2021

STN	**Skúšobné metódy na elektrotechnické materiály, dosky s plošnými spojmi a iné spájacie štruktúry a zostavy Časť 5-502: Všeobecné skúšobné metódy na materiály a zostavy Skúšanie zostáv na odolnosť povrchovej izolácie (SIR)**	**STN EN IEC 61189-5-502** 34 6513

Test methods for electrical materials, printed board and other interconnection structures and assemblies - Part 5-502: General test methods for materials and assemblies - Surface insulation resistance (SIR) testing of assemblies

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. 06/21

Obsahuje: EN IEC 61189-5-502:2021, IEC 61189-5-502:2021

132889

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 61189-5-502

March 2021

ICS 31.180

English Version

Test methods for electrical materials, printed board and other interconnection structures and assemblies - Part 5-502: General test methods for materials and assemblies - Surface insulation resistance (SIR) testing of assemblies (IEC 61189-5-502:2021)

Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles - Partie 5-502: Méthodes d'essai générales pour les matériaux et les ensembles - Essais de résistance d'isolement en surface (RIS) des ensembles (IEC 61189-5-502:2021)

Prüfverfahren für Elektromaterialien, Leiterplatten und andere Verbindungsstrukturen und Baugruppen - Teil 5-502: Allgemeine Prüfverfahren für Materialien und Baugruppen - Prüfung des Oberflächenisolationswiderstands (SIR) von Baugruppen (IEC 61189-5-502:2021)

This European Standard was approved by CENELEC on 2021-03-10. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, 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: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 91/1646/CDV, future edition 1 of IEC 61189-5-502, prepared by IEC/TC 91 "Electronics assembly technology" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61189-5-502:2021.

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) 2021-12-10
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-03-10

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

Endorsement notice

The text of the International Standard IEC 61189-5-502:2021 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 61189-1	NOTE	Harmonized as EN 61189-1
IEC 61189-3	NOTE	Harmonized as EN 61189-3
IEC 61189-5 (series)	NOTE	Harmonized as EN IEC 61189-5 (series)
IEC 61189-6	NOTE	Harmonized as EN 61189-6
IEC 61190-1-1	NOTE	Harmonized as EN 61190-1-1
IEC 61190-1-2	NOTE	Harmonized as EN 61190-1-2
IEC 61249-2-7	NOTE	Harmonized as EN 61249-2-7
IEC 62137-4:2014	NOTE	Harmonized as EN 62137-4:2014 (not modified)
ISO 9001	NOTE	Harmonized as EN ISO 9001
ISO 9455-1	NOTE	Harmonized as EN 29455-1
ISO 9455-2	NOTE	Harmonized as EN ISO 9455-2

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where 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.

Publication	Year	Title	EN/HD	Year
IEC 60068-1	-	Environmental testing - Part 1: General and guidance	EN 60068-1	-
IEC 60068-2-20	-	Environmental testing - Part 2-20: Tests - Test T: Test methods for solderability and resistance to soldering heat of devices with leads	EN 60068-2-20	-
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 60068-2-67	-	Environmental testing - Part 2-67: Tests - Test Cy: Damp heat, steady state, accelerated test primarily intended for components	EN 60068-2-67	-
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60194	-	Printed board design, manufacture and assembly - Terms and definitions	-	-
IEC 61190-1-3	-	Attachment materials for electronic assembly - Part 1-3: Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solder for electronic soldering applications	EN IEC 61190-1-3	-

IEC 61189-5-502

Edition 1.0 2021-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Test methods for electrical materials, printed board and other interconnection structures and assemblies – Part 5-502: General test methods for materials and assemblies – Surface Insulation Resistance (SIR) testing of assemblies

Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles – Partie 5-502: Méthodes d'essai générales pour les matériaux et les ensembles – Essais de résistance d'isolement en surface (RIS) des ensembles

IEC 61189-5-502:2021-02(en-fr)

IEC 61189-5-502

Edition 1.0 2021-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Test methods for electrical materials, printed board and other interconnection structures and assemblies – Part 5-502: General test methods for materials and assemblies – Surface Insulation Resistance (SIR) testing of assemblies

Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles – Partie 5-502: Méthodes d'essai générales pour les matériaux et les ensembles – Essais de résistance d'isolement en surface (RIS) des ensembles

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 31.180 ISBN 978-2-8322-9290-7

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

TEST METHODS FOR ELECTRICAL MATERIALS, PRINTED BOARD AND OTHER INTERCONNECTION STRUCTURES AND ASSEMBLIES –

Part 5-502: General test methods for materials and assemblies – Surface Insulation Resistance (SIR) testing of assemblies

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.
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.

IEC 61189-5-502 has been prepared by IEC technical committee 91: Electronics assembly technology. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
91/1646/CDV	91/1673/RVC

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 61189 series, published under the general title *Test methods for electrical materials, printed board and other interconnection structures and assemblies*, can be found on the IEC website.

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

TEST METHODS FOR ELECTRICAL MATERIALS, PRINTED BOARD AND OTHER INTERCONNECTION STRUCTURES AND ASSEMBLIES –

Part 5-502: General test methods for materials and assemblies – Surface Insulation Resistance (SIR) testing of assemblies

1 Scope

This part of IEC 61189 is used for evaluating the changes to the surface insulation resistance of a pre-selected material set on a representative test coupon and quantifies the deleterious effects of improperly used materials and processes that can lead to decreases in electrical resistance.

An assembly process involves a number of different process materials including solder flux, solder paste, solder wire, underfill materials, adhesives, staking compounds, temporary masking materials, cleaning solvents, conformal coatings and more. The test employs two different test conditions of 85 °C and 85 % relative humidity (RH), preferred for a process that includes cleaning, or 40 °C and 90 % relative humidity (RH), preferred for processes where no cleaning is involved.

NOTE 40 °C and 93 % RH can be used as an alternative to 40 °C and 90 % RH. Additional information is provided in 5.4 and A.5.2.

Testing is material (set) and process / equipment specific. Qualifications are to be performed using the production intent equipment, processes and materials.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-1, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-20, *Environmental testing – Part 2-20: Tests – Test T: Test methods for solderability and resistance to soldering heat of devices with leads*

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)*

IEC 60068-2-67, *Environmental testing – Part 2-67: Tests – Test Cy: Damp heat, steady state, accelerated test primarily intended for components*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60194, *Printed board design, manufacture and assembly – Terms and definitions*

IEC 61190-1-3, *Attachment materials for electronic assembly – Part 1-3: Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solder for electronic soldering applications*