SVENSK STANDARD SS-EN IEC 60068-2-21

Fastställd	Utgåva	Sida	Ansvarig kommitté
2021-11-17	3	1 (1+45)	SEK Elektro-tekniska rådet

Miljötålighetsprovning – Del 2-21: Provningsmetoder – U: Hållfasthet hos anslutningar och fästdetaljer

Environmental testing –
Part 2-21: Tests –
Test U: Robustness of terminations and integral mounting devices

Som svensk standard gäller europastandarden EN IEC 60068-2-21:2021. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 60068-2-21:2021.

Nationellt förord

Europastandarden EN IEC 60068-2-21:2021

består av:

- **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
- **IEC 60068-2-21, Seventh edition, 2021 - Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60068-2-21, utgåva 2, 2006, gäller ej fr o m 2024-08-12.

ICS 19.040.00; 31.190.00

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Box 1284
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN IEC 60068-2-21

September 2021

ICS 19.040; 31.190

Supersedes EN 60068-2-21:2006, EN 60068-2-77:1999 and all of its amendments and corrigenda (if any)

English Version

Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices (IEC 60068-2-21:2021)

Essais d'environnement - Partie 2-21: Essais - Essai U: Robustesse des sorties et des dispositifs de montage incorporés
(IEC 60068-2-21:2021)

Umgebungseinflüsse - Teil 2-21: Tests - Test U: Widerstandsfähigkeit der Anschlüsse und integrierter Befestigungsmittel
(IEC 60068-2-21:2021)

This European Standard was approved by CENELEC on 2021-08-12. 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.

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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

Ref. No. EN IEC 60068-2-21:2021 E

European foreword

The text of document 91/1732/FDIS, future edition 7 of IEC 60068-2-21, prepared by IEC/TC 91 “Electronics assembly technology” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60068-2-21:2021.

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)	2022–05–12
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2024–08–12

This document supersedes EN 60068-2-21:2006 and EN 60068-2-77:1999 and all of its amendments and corrigenda (if any).

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.

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60068-2-21:2021 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 60068-2-61	NOTE Harmonized as EN 60068-2-61
IEC 60068-2-77:1999	NOTE Harmonized as EN 60068-2-77:1999 (not modified)
IEC 61190-1-3:2017	NOTE Harmonized as EN IEC 61190-1-3:2018 (not modified)
IEC 61249-2-22	NOTE Harmonized as EN 61249-2-22
IEC 61249-2-35	NOTE Harmonized as EN 61249-2-35

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	2013	Environmental testing - Part 1: General and guidance	EN 60068-1	2014
IEC 60068-2-58	2015	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	2015
IEC 60194-2	-	Printed boards design, manufacture and assembly - Vocabulary - Part 2: Common usage in electronic technologies as well as printed board and electronic assembly technologies	-	-
IEC 61191-2	-	Printed board assemblies - Part 2: Sectional specification - Requirements for surface mount soldered assemblies	EN 61191-2	-

IEC 60068-2-21

Edition 7.0 2021-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Environmental testing –
Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices

Essais d'environnement –
Partie 2-21: Essais – Essai U: Robustesse des sorties et des dispositifs de montage incorporés

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENVIRONMENTAL TESTING –

Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices

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.
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International Standard IEC 60068-2-21 has been prepared by IEC technical committee 91: Electronics assembly technology.

This seventh edition cancels and replaces the sixth edition, published in 2006, and IEC 60068-2-77:1999. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) integration of parts of IEC 60068-2-77 (see Annex X); IEC 60068-2-77 is withdrawn with the publication of this document;
b) Annex X is added to show the correlation of the clauses and subclauses in this edition of IEC 60068-2-21 with the clauses in IEC 60068-2-21:2006 and IEC 60068-2-77:1999.

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

FDIS	Report on voting
91/1732/FDIS	91/1742/RVD

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 complete list of all parts comprising the IEC 60068 series, under the general title *Environmental testing*, 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 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.

ENVIRONMENTAL TESTING –

Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices

1 Scope

This part of IEC 60068 is applicable to all electrical and electronic components whose terminations or integral mounting devices are liable to be submitted to stresses during normal assembly or handling operations and is also applicable to surface mount devices (SMDs).

The recommended test methods suitable for specific terminations/lead of devices are shown in Table 1.

Table 1 – Selection of test methods suitable for specific terminations/leads

Test method		Component	Mounted/not mounted	See Clause
Test	**Type**			
Ua_1	Tensile	Leaded devices	Not mounted	Clause 4
Ua_2	Thrust	Leaded devices	Not mounted	Clause 4
Ub	Bending	Leaded devices	Not mounted	Clause 5
Uc	Torsion	Leaded devices	Not mounted	Clause 6
Ud	Torque	Threaded stud, screw or other terminations	Not mounted	Clause 7
Ue_1	Substrate bending	Surface mount devices	Mounted	Clause 8
Ue_2	Pull/push	Surface mount devices	Mounted	Clause 8
Ue_3	Shear	Surface mount devices	Mounted	Clause 8
Uf_1	Body strength	Surface mount devices	Not mounted	Clause 9
Uf_2	Impact shock	Surface mount devices	Not mounted	Clause 9

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 60068-1:2013, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-58:2015, *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 60194-2, *Printed board design, manufacture and assembly – Vocabulary – Part 2: Common usage in electronic technologies as well as printed board and electronic assembly technologies*

IEC 61191-2, *Printed board assemblies – Part 2: Sectional specification – Requirements for surface mount soldered assemblies*