

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

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NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 60068-2-21:2021 sisaldab Euroopa standardi EN IEC 60068-2-21:2021 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 60068-2-21:2021 consists of the English text of the European standard EN IEC 60068-2-21:2021.
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EN IEC 60068-2-21

NORME EUROPÉENNE

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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)

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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.

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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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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	-

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

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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.

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- 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

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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*