



BSI Standards Publication

Environmental testing

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

National foreword

This British Standard is the UK implementation of EN IEC 60068-2-21:2021. It is identical to IEC 60068-2-21:2021. It supersedes BS EN 60068-2-21:2006, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/501, Electronic Assembly Technology.

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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.

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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

European foreword

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-08-12

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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)

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IEC 61249-2-22 NOTE Harmonized as EN 61249-2-22

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

FOREWORD

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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*