

Environmental testing —

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

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British Standard

ICS 19.040

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National foreword

This British Standard is the English language version of EN 60068-2-21:1997. It is identical with IEC 60068-2-21:1999. It supersedes BS EN 60068-2-21:1997 which will be withdrawn on 2002-01-01.

The UK participation in its preparation was entrusted to Technical Committee EPL/501, Electronic assembly technology, which has the responsibility to:

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Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement these international or European publications may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 24, an inside back cover and a back cover. This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been prepared under the direction of the Electrotechnical Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 June 1999

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English version

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

(IEC 60068-2-21:1999)

Essais d'environnement
Partie 2-21: Essais
Essai U: Robustesse des sorties et
des dispositifs de fixation
(CEI 60068-2-21:1999)

Umweltprüfungen
Teil 2-21: Prüfungen
Prüfgruppe U: Mechanische
Widerstandsfähigkeit der Anschlüsse
(IEC 60068-2-21:1999)

This European Standard was approved by CENELEC on 1999-04-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

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Foreword

The text of document 91/156/FDIS, future edition 5 of IEC 60068-2-21, prepared by IEC TC 50, Environmental testing and published by IEC TC 91, Surface mounting technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60068-2-21 on 1999-04-01.

This European Standard supersedes EN 60068-2-21:1997 and its amendments A2:1997 and A3:1997.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2000-01-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2002-01-01

Annexes designated “normative” are part of the body of the standard.

In this standard, Annex ZA is normative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60068-2-21:1999 was approved by CENELEC as a European Standard without any modification.

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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.

Table 1 provides details of the applicable tests.

Table 1 — Application

Test	Type	Component	Mounted/not mounted
Ua ₁	Tensile	Leaded devices	Not mounted
Ua ₂	Thrust	Leaded devices	Not mounted
Ub	Bending	Leaded devices	Not mounted
Uc	Torsion	Leaded devices	Not mounted
Ud	Torque	Threaded stud or screw termination	Not mounted
Ue ₁	Bending	Surface mounted devices	Mounted
Ue ₂	Pull/push	Surface mounted devices	Mounted
Ue ₃	Shear	Surface mounted devices	Mounted

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60068. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 60068 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60068-1:1988, *Environmental testing — Part 1: General and guidance*.

IEC 60068-2-20:1979, *Environmental testing — Part 2: Tests — Test T: Soldering*.

IEC 60068-2-61:1991, *Environmental testing — Part 2: Tests — Test Z/ABDM: Climatic sequence*.

IEC 60249-2-4:1987, *Base materials for printed circuits — Part 2: Specifications — Specification No. 4: Epoxy woven glass fibre copper-clad laminated sheet, general purpose grade*.

IEC 61191-2:—, *Printed board assemblies — Part 2: Sectional specification — Surface mount soldered assemblies*¹⁾.

ISO 31-3:1992, *Quantities and units — Part 3: Mechanics*.

ISO 272:1982, *Fasteners — Hexagon products — Widths across flats*.

ISO 9453:1990, *Soft solder alloys — Chemical compositions and forms*.

3 Test Ua₁: tensile

This test is applicable to all types of terminations.

3.1 Object

The purpose of this test is to verify that the terminations and attachment of the terminations to the body of the component will withstand such axial stresses as are likely to be applied during normal assembly or handling operations.

3.2 General description

With the termination in its normal position and the component held by its body, a force is applied to the termination in the direction of its axis and acting in a direction away from the body of the component. The force shall be applied progressively (without any shock) and then maintained for a period of 10 s ± 1 s.

3.3 Preconditioning

The method of preconditioning shall be as prescribed in the relevant specification.

¹⁾ To be published.