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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 60068-2-21:2006. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60068-2-21:2006.

Nationellt förord

Europastandarden EN 60068-2-21:2006^{*)}

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60068-2-21, Sixth edition, 2006 - Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices**

utarbetad inom International Electrotechnical Commission, IEC.

Standarden ska användas tillsammans med SS-EN 60068-1.

Tidigare fastställd svensk standard SS-EN 60068-2-21, utgåva 1, 2001, gäller ej fr o m 2009-07-01.

^{*)} EN 60068-2-21:2006 ikraftsattes 2006-11-20 som SS-EN 60068-2-21 genom offentliggörande, d v s utan utgivning av något svenskt dokument.

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English version

Environmental testing
Part 2-21: Tests -
Test U: Robustness of terminations and integral mounting devices
(IEC 60068-2-21:2006)

Essais d'environnement
Partie 2-21: Essais -
Essai U: Robustesse des sorties et
des dispositifs de montage incorporés
(CEI 60068-2-21:2006)

Umweltprüfungen
Teil 2-21: Prüfungen -
Prüfung U: Widerstandsfähigkeit der
Anschlüsse und integrierter
Befestigungsmittel
(IEC 60068-2-21:2006)

This European Standard was approved by CENELEC on 2006-07-01. 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, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 91/582/FDIS, future edition 6 of IEC 60068-2-21, prepared by IEC TC 91, Electronics assembly technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60068-2-21 on 2006-07-01.

This European Standard supersedes EN 60068-2-21:1999.

It includes the following significant technical changes with respect to EN 60068-2-21:1999

- addition of torque severity for nominal thread diameter of 8 mm in Test Ud: torque in accordance with IEC 60252-2 (see Table 5);
- modification of substrate specification and mounting method describing lead-free solder in Test Ue (see Figure 5 and 8.3.3 et al.);
- modification of test jig and test condition in Test Ue₁: substrate bending test (see Figure 7 et al.);
- change of pushing force from 10 N to 5 N in Test Ue₃: shear test (see 8.5.3.2).

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) | 2007-04-01 |
| – latest date by which the national standards conflicting
with the EN have to be withdrawn | (dow) | 2009-07-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60068-2-21:2006 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-1 + corr. October + A1	1988 1988 1992	Environmental testing Part 1: General and guidance	EN 60068-1	1994
IEC 60068-2-20 + A2	1979 1987	Environmental testing Part 2: Tests - Test T: Soldering	HD 323.2.20 S3	1988
IEC 60068-2-58	2004	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 + corr. December	2004 2004
IEC 60068-2-61	1991	Environmental testing Part 2: Test methods - Test Z/ABDM: Climatic sequence	EN 60068-2-61	1993
IEC 61249-2-7	2002	Materials for printed boards and other interconnecting structures Part 2-7: Reinforced base materials, clad and unclad - Epoxide woven E-glass laminated sheet of defined flammability (vertical burning test), copper-clad	EN 61249-2-7 + corr. September	2002 2005
IEC 61188-5	Series	Printed boards and printed board assemblies - Design and use	EN 61188-5	Series
IEC 61190-1-2	2002	Attachment materials for electronic assembly Part 1-2: Requirements for solder pastes for high-quality interconnections in electronics assembly	EN 61190-1-2	2002
IEC 61191-2	1998	Printed board assemblies Part 2: Sectional specification - Requirements for surface mount soldered assemblies	EN 61191-2	1998
ISO 272	1982	Fasteners - Hexagon Products - Width across - flats		-
ISO 9453	1990	Soft solder alloys - Chemical compositions and forms	EN 29453	1993

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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.

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 referenced documents are indispensable for the application 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 60068-1:1988, *Environmental testing – Part 1: General and guidance*
Amendment 1 (1992)

IEC 60068-2-20:1979, *Environmental testing – Part 2: Tests – Test T: Soldering*
Amendment 2 (1987)

IEC 60068-2-58:2004, *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 60068-2-61:1991, *Environmental testing – Part 2: Tests – Test Z/ABDM: Climatic sequence*

IEC 61249-2-7:2002, *Materials for printed boards and other interconnecting structures – Part 2-7: Reinforced base materials clad and unclad – Epoxide woven E-glass laminated sheet of defined flammability (vertical burning test), copper-clad*

IEC 61188-5 (all parts), *Printed boards and printed board assemblies – Design and use*

IEC 61190-1-2:2002, *Attachment materials for electronic assembly – Part 1-2: Requirements for soldering pastes for high quality interconnections in electronics assembly*

IEC 61191-2:1998, *Printed board assemblies – Part 2: Sectional specification – Requirements for surface mount soldered assemblies*

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

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