

Environmental testing - Part 2-77: Tests - Test 77: Body strength and impact shock

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60068-2-77:2002 sisaldab Euroopa standardi EN 60068-2-77:1999 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 18.12.2002 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.04.1999.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 60068-2-77:2002 consists of the English text of the European standard EN 60068-2-77:1999.

This standard is ratified with the order of Estonian Centre for Standardisation dated 18.12.2002 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 01.04.1999.

The standard is available from Estonian standardisation organisation.

ICS 19.040, 31.190

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

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English version

Environmental testing
Part 2-77: Tests - Test 77: Body strength and impact shock
(IEC 60068-2-77:1999)

Essais d'environnement
Partie 2-77: Essais
Essai 77: Résistance du corps
et résistance au choc par impact
(CEI 60068-2-77:1999)

Umweltprüfungen
Teil 2-77: Prüfungen
Prüfung 77: Körperfestigkeit und
Schlagprüfung
(IEC 60068-2-77:1999)

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.

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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

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

Foreword

The text of document 91/155/FDIS, future edition 1 of IEC 60068-2-77, 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 60068-2-77 on 1999-04-01.

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.
Annexes designated "informative" are given for information only.
In this standard, annex ZA is normative and annex A is informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60068-2-77:1999 was approved by CENELEC as a European Standard without any modification.

In the official version, for annex A, Bibliography, the following note has to be added for the standard indicated:

IEC 60068-2-21 NOTE: Harmonized as EN 60068-2-21:1999 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 60194	-	Terms and definitions for printed circuits	-	-

INTERNATIONAL STANDARD

IEC
60068-2-77

First edition
1999-01

Environmental testing –

Part 2-77:

Tests – Test 77 – Body strength and impact shock

Essais d'environnement –

Partie 2-77:

Essais – Essai 77 – Résistance du corps et résistance au choc par impact



Reference number
IEC 60068-2-77:1999(E)

Numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series.

Consolidated publications

Consolidated versions of some IEC publications including amendments are available. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

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- **IEC web site***
- **Catalogue of IEC publications**
Published yearly with regular updates
(On-line catalogue)*
- **IEC Bulletin**
Available both at the IEC web site* and as a printed periodical

Terminology, graphical and letter symbols

For general terminology, readers are referred to IEC 60050: *International Electrotechnical Vocabulary* (IEV).

For graphical symbols, and letter symbols and signs approved by the IEC for general use, readers are referred to publications IEC 60027: *Letter symbols to be used in electrical technology*, IEC 60417: *Graphical symbols for use on equipment. Index, survey and compilation of the single sheets* and IEC 60617: *Graphical symbols for diagrams*.

* See web site address on title page.

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENVIRONMENTAL TESTING –

Part 2-77: Tests – Test 77: Body strength and impact shock

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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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- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
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International Standard IEC 60068-2-77 has been prepared by IEC technical committee 50: Environmental testing, and is published by IEC technical committee 91: Surface mounting technology.

The text of this standard is based on the following documents:

FDIS	Report on voting
91/155/FDIS	91/162/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

Annex A is for information only.

ENVIRONMENTAL TESTING –

Part 2-77: Tests – Test 77: Body strength and impact shock

1 Scope and object

This part of IEC 60068 provides test methods applicable to surface mounting devices (SMDs) made of glass or sintered materials such as capacitors, resistors and inductors incorporating ferrites. Two test methods exist: body strength and impact shock.

The object of both tests is to evaluate the mechanical stresses applied to SMDs during and after mounting; these tests look at different mechanical stresses. The relevant component specification shall specify which test method or methods are applicable.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of IEC 60068. At the time of publication, the edition indicated was 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 edition of the normative document indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60194:—, *Terms and definitions for printed circuits*

3 Terms and definitions

For the purpose of this part of IEC 60068, the terms and definitions given in IEC 60194 apply.

4 Test methods

4.1 Body strength

This test evaluates the strength of the body of the SMD against external static forces which are applied to them during mounting, in the direction perpendicular to the printed board on which the SMDs are mounted.

NOTE – The test evaluates the sturdiness of the body of the SMDs and not the adhesive strength at the interface between the termination and solder of the body. These latter tests are described in IEC 60068-2-21.

This test simulates the static force applied to SMDs during picking up and centering in a placement process with a rather slow speed mounting machine in which the forces are mainly of a static nature.

A static force can have a different influence on a device from that of a dynamic force, whose effects can be evaluated by a test separately described as an impact shock test. This simulates the mechanical stress applied to the SMDs, during and after mounting the SMDs on a printed board. This test shall be referred to in the relevant detail specification.