SLOVENSKI STANDARD

SIST EN 60068-2-80:2005

december 2005

Okoljski preskusi – 2-80. del: Preskusi – Preskus Fi: vibracije – mešani način (IEC 60068-2-80:2005)

Environmental testing – Part 2-80: Tests – Test Fi: Vibration – Mixed mode (IEC 60068-2-80:2005)

ICS 19.040

Referenčna številka
SIST EN 60068-2-80:2005(en)

EUROPEAN STANDARD **EN 60068-2-80**

NORME EUROPÉENNE

EUROPÄISCHE NORM July 2005

ICS 19.040; 29.020

English version

Environmental testing
Part 2-80: Tests –
Test Fi: Vibration –
Mixed mode
(IEC 60068-2-80:2005)

Essais d'environnement
Partie 2-80: Essais –
Essai Fi: Vibration - Mode mixte
(CEI 60068-2-80:2005)

Umgebungseinflüsse
Teil 2-80: Prüfverfahren –
Prüfung Fi: Mixed-Mode Vibrationsprüfung
(IEC 60068-2-80:2005)

This European Standard was approved by CENELEC on 2005-06-01. 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, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, 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

Ref. No. EN 60068-2-80:2005 E

Foreword

The text of document 104/363/FDIS, future edition 1 of IEC 60068-2-80, prepared by IEC TC 104, Environmental conditions, classification and methods of test, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60068-2-80 on 2005-06-01.

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)	2006-03-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2008-06-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60068-2-80:2005 was approved by CENELEC as a European Standard without any modification.

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

ISO/IEC 17025	NOTE	Harmonized as EN ISO/IEC 17025:2000 (not modified).

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 Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60050-300	2001	International Electrotechnical Vocabulary - Electrical and electronic measurements and measuring instruments Part 311: General terms relating to measurements – Part 312: General terms relating to electrical measurements – Part 313: Types of electrical measuring instruments – Part 314: Specific terms according to the type of instrument	-	-
IEC 60068-1	1988	Environmental testing Part 1: General and guidance	EN 60068-1 [1)]	1994
IEC 60068-2-6 + corr. March	1995 1995	Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995
IEC 60068-2-47	1999	Part 2-47: Test methods - Mounting of components, equipment and other articles for vibration, impact and similar dynamic tests	EN 60068-2-47 [2)]	1999
IEC 60068-2-64 + corr. October	1993 1993	Part 2: Test methods - Test Fh: Vibration, broad-band random (digital control) and guidance	EN 60068-2-64	1994
IEC 60068-3-8	2003	Part 3-8: Supporting documentation and guidance - Selecting amongst vibration tests	EN 60068-3-8	2003
IEC 60068-5-2	1990	Part 5: Guide to drafting of test methods - Terms and definitions	EN 60068-5-2	1999
ISO 2041	1990	Vibration and shock - Vocabulary	-	-

1) EN 60068-1 includes corrigendum 1988 + A1:1992 to IEC 60068-1.

2) EN 60068-2-47:1999 is superseded by EN 60068-2-47:2005, which is based on IEC 60068-2-47:2005.

NORME INTERNATIONALE

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IEC
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BASIC SAFETY PUBLICATION
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Essais d'environnement –

Partie 2-80:
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Environmental testing –

Part 2-80:
Tests – Test Fi: Vibration – Mixed mode

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENVIRONMENTAL TESTING –

Part 2-80: Tests – Test Fi: Vibration – Mixed mode

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. 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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International Standard IEC 60068-2-80 has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test.

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

FDIS	Report on voting
104/363/FDIS	104/368/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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

It has the status of a basic safety publication in accordance with IEC Guide 104.

This standard forms Part 2-80 of IEC 60068 which consists of the following major parts, under the general title *Environmental testing:*

Part 1: General and guidance

Part 2: Tests

Part 3: Supporting documentation and guidance

Part 4: Information for specification writers

Part 5: Guide to drafting of test methods

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

INTRODUCTION

This method for mixed mode vibration testing requires the digital control of broadband random vibrations and techniques associated with the combination of sinusoidal vibration and/or specified narrowband random with a broadband random background.

This standard is intended for general application to components, equipment and other products, hereinafter referred to as ”specimens”, when simulation is required of broadband responses of a complex nature for the specimens.

The test method is based primarily on the use of an electrodynamic or a servo-hydraulic vibration generator with an associated computer based control system used as a vibration testing system.

It is emphasized that mixed mode testing always demands a certain degree of engineering judgement and both supplier and purchaser should be fully aware of this fact. The writer of the relevant specification is expected to select the testing procedure and the values of severity appropriate to the specimen and its use.

ENVIRONMENTAL TESTING –

Part 2-80: Tests – Test Fi: Vibration – Mixed mode

1 Scope

This part of IEC 60068 is intended for general application for testing specimens when simulation is required of vibration excitation of a complex and mixed nature.

The purpose of the test is to demonstrate the adequacy of the specimen to resist the specified mixed mode excitation without unacceptable degradation of its functional and/or structural performance. It is particularly useful for tailoring mixed mode environments where measured data are available for the real life environment.

The test also helps reveal the accumulated effects of stress induced by random vibration, mixed with sine and/or random, and the resulting mechanical weakness and degradation in specified performances, and to use this information, in conjunction with the relevant specification, to assess the acceptability of specimens. In some cases, this standard may also be used to demonstrate the mechanical robustness of specimens.

This standard is applicable to specimens which may be subjected to vibration of a random and/or a combination of random and deterministic nature resulting from transportation or real life environments, for example in aircraft, space vehicles and for items in their transportation container when the latter may be considered as part of the specimen itself.

Although primarily intended for electrotechnical specimens, this standard is not restricted to such specimens and may be used in other fields where desired.

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 60050(300):2001, *International Electrotechnical Vocabulary (IEV) – Electrical and electronic measurements and measuring instruments –*

Part 311: General terms relating to measurements
Part 312: General terms relating to electrical measurements
Part 313: Types of electrical measuring instruments
Part 314: Specific terms according to the type of instrument

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

IEC 60068-2-6:1995, *Environmental testing – Part 2-6: Tests -Test Fc: Vibration (sinusoidal)*

IEC 60068-2-47:1999, *Environmental testing – Part 2-47: Test methods – Mounting of components, equipment and other articles for vibration, impact and similar dynamic tests*