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Miljötålighetsprovning – Del 2-80: Provningsmetoder – Fi: Kombinerade sinus- och brusvibrationer

*Environmental testing –
Part 2-80: Tests –
Test Fi: Mixed mode*

Som svensk standard gäller europastandarden EN 60068-2-80:2005. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60068-2-80:2005.

Nationellt förord

Europastandarden EN 60068-2-80:2005^{*)}

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60068-2-80, First edition, 2005 - Environmental testing - Part 2-80: Tests - Test Fi: Mixed mode**

utarbetad inom International Electrotechnical Commission, IEC.

^{*)} EN 60068-2-80:2005 ikraftsattes 2005-09-26 som SS-EN 60068-2-80 genom offentliggörande, d v s utan utgivning av något svenskt dokument.

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EUROPEAN STANDARD

EN 60068-2-80

NORME EUROPÉENNE

EUROPÄISCHE NORM

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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

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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.

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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*

IEC 60068-2-64:1993, *Environmental testing – Part 2-64: Test methods – Test Fh: Vibration, broadband random (digital control) and guidance*

IEC 60068-3-8:2003, *Environmental testing – Part 3-8: Supporting documentation and guidance – Selecting amongst vibration tests*

IEC 60068-5-2:1990, *Environmental testing – Part 5-2: Guide to drafting of test methods – Terms and definitions*

ISO 2041:1990, *Vibration and shock – Vocabulary*