AS 60068.2.64—2003
IEC 60068-2-64:1993

Australian Standard™

Environmental testing

Part 2.64: Tests—Test Fh: Vibration, broad-band random (digital control) and guidance

[IEC title: Environmental testing – Part 2-64: Test methods—Test Fh: Vibration, broad-band random (digital control) and guidance]

Standards Australia

This Australian Standard was prepared by Committee EL-026, Protective Enclosures and Environmental Testing for Electrical/Electronic Equipment. It was approved on behalf of the Council of Standards Australia on 23 April 2003 and published on 19 June 2003.

The following are represented on Committee EL-026:

Australian Chamber of Commerce and Industry

Australian Electrical and Electronic Manufacturer's Association

Electrical Compliance Testing Association

Electrical Regulatory Authorities Council

Electricity Supply Association of Australia

Testing Interests (Australia)

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PREFACE

This Standard was prepared by the Standards Australia Committee EL-026, Protective Enclosures and Environmental Testing for Electrical/Electronic Equipment.

The objective of this Standard is to provide the electrotechnology industry with a complete set of environmental test procedures published as a series under AS 60068 *Environmental testing*. This Standard is Part 2.64 of that series.

This Standard is identical with, and has been reproduced from, IEC 60068-2-64:1993, *Environmental testing – Part 2-64: Test methods—Test Fh: Vibration, broad-band random (digital control) and guidance* including its Corrigendum 1:1993.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text 'this international standard' should read 'this Australian Standard'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

(d) Any French text on figures should be ignored.

In this Standard, the following print types are used:

– requirements proper: in arial type;

– *test specifications: in italic type;*

– explanatory matter: in smaller arial type.

Any international Standard referenced should be replaced by an equivalent Australian Standard when one is available. The availability of equivalent Australian Standards can be determined either from the Standards Australia catalogue or from the Standards Australia website (www.standards.com.au).

The terms 'normative' and 'informative' are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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INTRODUCTION

This standard for broad-band random vibration testing is intended for general application to specimens of electrotechnical products that may be subjected to vibrations of a stochastic nature. The methods and techniques in this standard are based on digital control of random vibration. It permits the introduction of variations to suit individual cases, if these are prescribed by the relevant specification. The standard provides an alternative to the established analogue versions of the random vibration wide-band tests (Test Fd, IEC 60068-2-34 to IEC 60068-2-37).

It should be noted that random vibration testing is a complex subject requiring both a good basic understanding of the philosophy of the test and the exercise of considerable engineering judgement.

Compared with most other tests, Test Fh is not based on deterministic but on statistical techniques. Broad-band random vibration testing is therefore described in terms of probability and statistical averages.

Annex A is a normative annex giving the requirements for the vibration response investigation.

Specification writers will find in clause 11 a list of details to be considered for inclusion in specifications, and in annex B (informative), the guidance.

Annex C is an informative annex, cross-referenced to the relevant clauses, giving the conversion between the quoted values (in dB or percentages) and the values with the alternative magnitudes.

NOTES

STANDARDS AUSTRALIA

Australian Standard

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1 Object

The object of this International Standard is to provide two standard test methods (Method 1 and Method 2) for determining the ability of a specimen to withstand specified severities of broad-band random vibration. Neither test method can be considered more severe than the other, the difference being primarily that Method 2 provides more information to quantify the applied test, and is therefore more reproducible.

It is also to reveal the accumulated effects of stress induced by random vibration, and the resulting mechanical weakness and degradation in specified performance 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 and/or to study their dynamic behaviour.

This standard is applicable to specimens which may be subjected to vibration of a stochastic nature resulting from transportation or operational environments, for example in aircraft, space vehicles and land vehicles. It is primarily intended for unpackaged specimens, and for items in their transportation container when the latter may be considered as part of the specimen itself.

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

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 listed below. Members of IEC and ISO maintain registers of current valid International Standards.

IEC 60050(301, 302, 303): 1983, *International Electrotechnical Vocabulary (IEV)*
Chapter 301: *General terms on measurements in electricity*
Chapter 302: *Electrical measuring instruments*
Chapter 303: *Electronic measuring instruments* (Advance edition)

IEC 60068, *Environmental testing*

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

IEC 60068-2, *Environmental testing – Part 2: Tests*

IEC 60068-2-6: 1982, *Environmental testing – Part 2: Tests – Test Fc and guidance: Vibration (sinusoidal)*