

Australian Standard™

Environmental testing

**Part 3.8: Supporting documentation and
guidance—Selecting amongst vibration
tests**

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 3 May 2004 and published on 1 June 2004.

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Australian Chamber of Commerce and Industry
Australian Electrical and Electronic Manufacturer's Association
Electrical Compliance Testing Association
Electrical Regulatory Authorities Council
Energy 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 3.8 of that series.

This Standard is identical with, and has been reproduced from, IEC 60068-3-8:2003, *Environmental testing – Part 3-8: Supporting documentation and guidance—Selecting amongst vibration tests*.

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- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
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- requirements proper: in arial type;
- *test specifications: in italic type;*
- explanatory matter: in smaller arial type.

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INTRODUCTION

Components, equipment and other electrotechnical products, hereinafter called specimens, can be subjected to different kinds of vibration during manufacture, transportation or in service. In the IEC 60721-3 standards, those different vibration environments are tabulated into classes characterizing stationary and transient vibration conditions. The standards in the IEC 60068-2 series describe methods for testing with stationary or transient vibration. There will be three standards in the IEC 60068-2 series for environmental testing that specify test methods employing stationary vibration:

Part 2-6 Test Fc: Vibration (sinusoidal),

Part 2-64 Test Fh: Vibration, broad-band random (digital control) and guidance, and

Part 2-80 Test F-: Mixed mode testing¹

¹ Under consideration.

STANDARDS AUSTRALIA

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1 Scope

This part of IEC 60068 provides guidance for selecting amongst the IEC 60068-2 stationary vibration test methods Fc sinusoidal, Fh random and F(x) Mixed mode vibration. The different steady-state test methods and their aims are briefly described in Clause 4. Transient test methods are not included.

For vibration testing, the environmental conditions, especially the dynamic conditions for the specimen, should be known. This standard helps to collect information about the environmental conditions (Clause 5), to estimate or measure the dynamic conditions (Clause 6) and gives examples to enable decisions to be made on the most applicable environmental vibration test method. Starting from the condition, the method of selecting the appropriate test is given. Since real life vibration conditions are dominated by vibration of a random nature, random testing should be the commonly used method, see Table 1, Clause 7.

The methods included hereafter may be used to evaluate the vibration response of a specimen under test before, during and after vibration testing. The selection for the appropriate excitation method is described in Clause 8 and tabulated in Table 2.

In this standard specification, writers will find information concerning vibration test methods and guidance for their selection. For guidance on test parameters, or severities of one of the test methods, reference should be made to the normative references.

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, *Environmental testing – Part 1: General and guidance*

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

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

IEC 60068-2-80, *Environmental testing – Part 2-80: Tests – Test F-: Mixed mode testing*²

IEC 60721-3 (all parts), *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities*

IEC 60721-4 (all parts), *Classification of environmental conditions – Part 4: Guidance for the correlation and transformation of environmental condition classes of IEC 60721-3 to the environmental tests of IEC 60068-2*

IEC Guide 104:1997, The preparation of safety publications and the use of basic safety publications and group safety publications

² Under consideration.