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IEC 60068-3-3:1991

Australian Standard™

Environmental testing

Part 3.3: Guidance—Seismic test methods for equipment

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 28 February 2003 and published on 8 May 2003.

The following are represented on Committee EL-026:

Australian Chamber of Commerce and Industry

Australian Electrical and Electronic Manufacturers Association

Electrical Compliance Testing Authorities

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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 3.3 of that series.

This Standard is identical with, and has been reproduced from, IEC 60068-3-3:1991, *Environmental testing– Part 3: Guidance – Seismic test methods for equipment*.

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.

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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).

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INTRODUCTION

Guidance is included in each of the three test methods referred to in this standard but it is specific to the test method. The guidance in this standard is directed towards choosing the appropriate test method and applying it to seismic testing.

This standard is to be used in conjunction with IEC 60068-1.

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SECTION ONE – GENERAL

1 Object

This guide applies primarily to electrotechnical equipments but its application can be extended to other equipments and to components.

The verification of the performance of an equipment by analysis or by a combination of testing and analysis may be acceptable but is outside the scope of this guide which is restricted to verification based entirely upon data from dynamic testing.

This guide deals solely with the seismic testing of a full-size equipment which can be tested on a vibration table. The seismic testing of an equipment is intended to demonstrate its ability to perform its required function during and/or after the time it is subjected to the stresses and displacements resulting from an earthquake.

The object of this guide is to present a range of methods of testing which, when prescribed by the relevant specification, can be applied to demonstrate the performance of equipments for which seismic testing is required with the main aim of achieving qualification.

NOTE – Qualification by so-called "fragility-testing" is not considered to be within the scope of this guide which has been prepared to give generally applicable guidance on seismic testing and specifically on the use of IEC 60068-2 test methods.

The choice of the method of testing can be made according to the criteria described in this guide. The methods themselves are directly based on published IEC test methods.

This guide is intended for use by manufacturers to substantiate, or by users to evaluate and verify, the performance of an equipment.

2 General considerations

Two seismic classes have been established: a general seismic class and a specific seismic class. Neither of these classes can be considered to be more demanding than the other. The difference between the two classes lies in the availability of and/or the accuracy in defining the characteristics of the seismic environment. When high reliability safety equipment for a specified environment is required, such as safety related equipment in nuclear power plants, the use of precise data is necessary and, therefore, the specific seismic class is applicable and not the general seismic class. Annex A contains a flow chart for the selection of the test class (general seismic class or specific seismic class) and four flow charts (A.1 to A.4) covering the possibilities discussed in this guide. To obtain the maximum advantage from this guide it is strongly recommended that the flow charts be studied very thoroughly.

2.1 General seismic class

This class covers equipments for which the relevant seismic motion does not result from a specific study taking into account the characteristics of the geographic location and of the supporting structure or building.