AS 60068.2.27—2003
IEC 60068-2-27:1987

Australian Standard™

Environmental testing

Part 2.27: Tests—Test Ea and guidance: Shock

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 10 April 2003 and published on 16 May 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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This Standard was issued in draft form for comment as DR 02599.

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Part 2.27: Tests—Test Ea and guidance: Shock

Originated as AS 1099.2Ea—1971.
Previous edition AS 1099.2.27—1988.
Revised and redesignated as AS 60068.2.27—2003.

Published by Standards Australia International Ltd
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 5263 2

PREFACE

This Standard was prepared by the Standards Australia Committee EL-026, Protective Enclosures and Environmental Testing for Electrical/Electronic Equipment to supersede AS 1099.2.27—1988, *Basic environmental testing procedures for electrotechnology* Part 2.27: *Test Ea—Shock*.

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 1 of that series.

This Standard is identical with, and has been reproduced from, IEC 60068-2-27:1987, *Environmental testing—Part 2-27: Tests—Test Ea and guidance: Shock*.

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).

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INTRODUCTION

This test is applicable to components, equipments and other electrotechnical products, hereinafter referred to as “specimens”, which, during transportation or in use, may be subjected to conditions involving relatively infrequent non-repetitive shocks. The shock test may also be used as a means of establishing the satisfactory design of a specimen in so far as its structural integrity is concerned and as a means of quality control. It consists basically of subjecting a specimen to non-repetitive shocks of standard pulse shapes with specified peak acceleration and duration.

Specification writers will find in clause 11 a list of details to be considered for inclusion in specifications and in annex A the necessary guidance.

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Part 2.27: Tests—Test Ea and guidance: Shock

1 Scope

To provide a standard procedure for determining the ability of a specimen to withstand specified severities of shock.

2 General description

This standard is written in terms of prescribed pulse shapes. Guidance for the selection and application of these pulses is given in annex A and the characteristics of the different pulse shapes are discussed in annex B. Three types of pulse, namely the half-sine pulse, the final-peak saw-tooth pulse and the trapezoidal pulse are included in this standard. The choice of pulse shape depends on a number of factors, and the difficulties inherent in making such a choice preclude a preferred order being given in this standard (see clause A.3).

The purpose of the test is to reveal mechanical weakness and/or degradation in specified performance and to use this information, in conjunction with the relevant specification, to decide whether a specimen is acceptable or not. It may also be used, in some cases, to determine the structural integrity of specimens or as a means of quality control (see clause A.2).

This test is primarily intended for unpackaged specimens and for items in their transport case when the latter may be considered as part of the specimen itself.

The shocks are not intended to reproduce those encountered in practice. Wherever possible, the test severity and the shape of the shock pulse applied to the specimen should be such as to reproduce the effects of the actual transport or operational environment to which the specimen will be subjected, or to satisfy the design requirements if the object of the test is to assess structural integrity (see clauses A.2 and A.4).

For the purpose of this test the specimen is always fastened to the fixture or the table of the shock-testing machine during conditioning

In order to facilitate the use of this standard, references are given in the main part where the reader is invited to refer to annex A and also the clause numbers in the main part are referred to in annex A.

This standard is to be used in conjunction with IEC 60068-1: Basic environmental testing procedures – Part 1: General and guidance.

3 Definitions

The terms used are generally defined in ISO 2041 or IEC 60068-1.

The following additional terms and definitions are also applicable for the purposes of this standard.

3.1 Fixing point

Part of the specimen in contact with the fixture or the table of the shock-testing machine and which is normally used to fasten the specimen in service.