

Australian Standard™

Environmental testing

**Part 3.5: Supporting documentation and
guidance—Confirmation of the
performance of temperature chambers**

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
Electrical Regulatory Authorities Council
Electricity Supply Association of Australia
Testing Interests (Australia)

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Australia web site at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Australian Standard*, has a full listing of revisions and amendments published each month.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.com.au, or write to the Chief Executive, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001.

Australian Standard™

Environmental testing

Part 3.5: Supporting documentation and guidance—Confirmation of the performance of temperature chambers

First published as AS 60068.3.5—2003.

COPYRIGHT

© Standards Australia International

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

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

ISBN 0 7337 5154 7

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 3.5 of that series.

This Standard is identical with, and has been reproduced from, IEC 60068-3-5:2001, *Environmental testing– Part 3-5: Supporting documentation and guidance – Confirmation of the performance of temperature chambers*.

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).

CONTENTS

	<i>Page</i>
Introduction.....	iv
1 Scope.....	1
2 Normative references	1
3 Definitions	1
4 Measuring chamber performances.....	3
4.1 Test area environment.....	3
4.2 Temperature measurement system.....	4
4.3 Temperature chamber test load	4
4.4 Installation of temperature sensors.....	4
4.5 Determination of temperature performance.....	5
4.5.1 Achieved temperature, temperature fluctuation, temperature variation in space, temperature gradient	5
4.5.2 Temperature rate of change	5
5 Standard temperature sequence.....	6
6 Evaluation criteria.....	6
7 Information to be given in the performance test report.....	7
Figure 1 – Working space	2
Figure 2 – Example of temperature differences	3
Figure 3 – Location of air temperature sensors for temperature chambers up to 2000 l.....	4
Figure 4 – Location of minimal additional air temperature sensors for temperature chambers over 2000 l	5
Figure 5 – Temperature rate of change for heating and cooling of a test chamber.....	6

INTRODUCTION

IEC 60068 contains fundamental information on environmental testing procedures and severities.

The expression "environmental conditioning" or "environmental testing" covers the natural and artificial environments to which components or equipment may be exposed so that an assessment can be made of their performance under conditions of use, transport and storage to which they may be exposed in practice.

Temperature chambers used for "environmental conditioning" or "environmental testing" are not described in any publication, although the method of maintaining and measuring temperature and/or humidity has a great influence on test results. The physical characteristics of temperature chambers can also influence test results.

STANDARDS AUSTRALIA

Australian Standard**Environmental testing****Part 3.5: Supporting documentation and guidance—Confirmation of the performance of temperature chambers**

1 Scope

This part of IEC 60068 provides a uniform and reproducible method of confirming that temperature test chambers, without load, conform to the requirements specified in climatic test procedures of IEC 60068-2 and other standards. This standard is intended for users when conducting regular chamber performance monitoring.

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 (all parts), *Environmental testing – Part 2: Tests*

IEC 60068-3-6, *Environmental testing – Part 3-6: Supporting documentation and guidance – Confirmation of the performance of temperature/humidity chambers*

IEC 60068-3-7, *Environmental testing – Part 3-7: Supporting documentation and guidance – Measurements in temperature chambers for test A and test B (with load)*

IEC 60584-1, *Thermocouples – Part 1: Reference tables*

IEC 60751, *Industrial platinum resistance thermometer sensors*

ISO 10012-1, *Quality assurance requirements for measuring equipment – Part 1: Metrological confirmation system for measuring equipment*

ISO 10012-2, *Quality assurance for measuring equipment – Part 2: Guidelines for control of measurement processes*

3 Definitions

For the purpose of this part of IEC 60068, the following definitions apply.

3.1**temperature test chamber**

enclosure or space in some parts of which the temperature conditions, specified in IEC 60068-2, can be achieved

3.2**temperature setpoint**

desired temperature as set by the chamber controls