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Australian Standard™

Environmental testing
Part 3.1A: Background information—Section one: Cold and dry heat tests—First supplement

[IEC title: Environmental testing – Part 3: Background information –First supplement]

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 14 February 2003 and published on 15 April 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 3.1A of that series.

This Standard is identical with, and has been reproduced, from IEC 60068-3-1A:1978, *Environmental testing – Part 3: Background information – First supplement*.

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

Page

1 General 1
2 Testing precautions 1
2.1 General 1
2.2 Velocity of the air surrounding the test specimen 1
2.3 Conditioning 2

NOTES

STANDARDS AUSTRALIA

Australian Standard

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1 General

Certain equipment is used or stored under high or low temperature conditions only for periods shorter than the time for achieving temperature stability. A test of such equipment, according to Tests A and B where the duration of the test is counted from the time at which the specimen has reached temperature stability, may then overstress the equipment.

When such an overstress must be avoided, the procedures defined in Tests A and B may be used with the deviations and precautions given in clause 2 below.

Examples where this may be the case are certain aircraft and missile equipment.

Although equipment with large thermal time constants compared to diurnal temperature fluctuations are normally tested according to Tests A and B under temperature stability conditions, there are cases where a close simulation of the actual environment is desired. In such cases, a test without temperature stability of the specimen may be used.

Testing for a period shorter than the time for achieving temperature stability may be relevant also for the cases where a high or low temperature in a large equipment (e.g. power supply transformers and motors with high thermal time constant) is wanted to be obtained in a short time. In such cases, the test ambient temperature is chosen higher or lower than the ambient temperature which is expected in conditions where the equipment is to be used.

2 Testing precautions

2.1 General

In order to achieve reproducibility, the temperature test must be so designed that the hottest (coldest) temperature attained in a certain point of the specimen will be the same independent of the testing laboratory. For the design of a test with a short test duration compared to the time needed for the specimen to attain temperature stability, the following precautions must be taken into account.

2.2 Velocity of the air surrounding the test specimen

The efficiency of the heat exchange between the test chamber air and the test specimen depends on the air velocity.

A close simulation of air velocities connected with high (low) temperatures in the actual environment is desirable. Due to limited knowledge of the actual environment as well as difficulties in providing defined air velocities (including degree of turbulence, etc.) in testing chambers, such simulation is normally not feasible. Therefore, a "worst case" must normally be used for testing to cover all possibilities.