

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Environmental testing –  
Part 2-5: Tests – Test Sa: Simulated solar radiation at ground level and guidance  
for solar radiation testing**

**Essais d'environnement –  
Partie 2-5: Essais – Essai Sa: Rayonnement solaire simulé au niveau du sol et  
guide pour les essais de rayonnement solaire**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ENVIRONMENTAL TESTING –

**Part 2-5: Tests – Test Sa: Simulated solar radiation at ground level and guidance for solar radiation testing**

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International Standard IEC 60068-2-5 has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test.

This second edition cancels and replaces the first edition of IEC 60068-2-5, published in 1975, and IEC 60068-2-9, published in 1975, and constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

This second edition of IEC 60068-2-5 will make the reading much easier, partly because it includes guidance for solar radiation testing, previously published in a separate publication, IEC 60068-2-9, and partly because it now allows the use of all lamps specified in CIE 85 and published in 1985 by the International commission on Illumination.

The text of this standard is based on the following documents:

FDIS	Report on voting
104/500/FDIS	104/515/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 60068 series, under the general title *Environmental testing*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## INTRODUCTION

This part of IEC 60068 describes methods of simulation designed to examine the effect of solar radiation on equipment and components at the surface of the earth. The main characteristics of the environment to be simulated are the spectral energy distribution of the sun, as observed at the earth's surface, and the intensity of received energy, in combination with controlled temperature conditions. However, it may be necessary to consider a combination of solar radiation with other environments, e.g. temperature, humidity, air velocity, etc.

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## ENVIRONMENTAL TESTING –

### Part 2-5: Tests – Test Sa: Simulated solar radiation at ground level and guidance for solar radiation testing

#### 1 Scope and object

This part of IEC 60068 provides guidance for testing equipment or components under solar radiation conditions.

The purpose of testing is to investigate to what extent the equipment or components are affected by solar radiation.

The method of combined tests detects electrical, mechanical or other physical variations.

#### 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 60068-2-1, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

CIE 85:1985, *Solar spectral irradiance*

#### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60068-1, as well as the following, apply.

##### 3.1

##### air mass

path length that light from a celestial object takes through the earth's atmosphere relative to the length at the zenith where air mass = 1 at the zenith

NOTE The air mass is  $1/\sin(\gamma)$ , where  $\gamma$  is the elevation angle of the sun.

##### 3.2

##### black standard temperature

BST

characteristic value of the specimen surface temperature

NOTE Black standard temperature as measured by a black standard thermometer (see ISO 4892-1).