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INTERNATIONAL STANDARD

Durability test methods for electronic displays –
Part 2-23: Environmental tests – Outdoor weathering

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DURABILITY TEST METHODS FOR ELECTRONIC DISPLAYS –

Part 2-23: Environmental tests – Outdoor weathering

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IEC 63211-2-23 has been prepared by IEC technical committee 110: Electronic displays. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
110/1643/CDV	110/1687A/RVC

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 63211 series, published under the general title *Durability test methods for electronic displays*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

This document relates to the common environmental test methods for outdoor weathering of electronic displays, which can overlap with some of the parts of existing IEC TC 110 documents that describe the environmental test methods of individual technologies, such as LCD, OLED, PDP, and others. This document is intended to be used as the reference document in future standards and in revisions of existing ones. The existing standards will be revised in their maintenance time to refer to this document to the largest extent possible.

DURABILITY TEST METHODS FOR ELECTRONIC DISPLAYS –

Part 2-23: Environmental tests – Outdoor weathering

1 Scope

This part of IEC 63211 specifies testing methods and environmental conditions for evaluating durability of displays to be installed outdoor, which covers exposure to solar radiation and rain.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 62715-5-3, *Flexible display devices – Part 5-3: Visual assessment of image quality and defects*

IEC 62977-2-1, *Electronic displays – Part 2-1: Measurements of optical characteristics – Fundamental measurements*

IEC 62977-2-2, *Electronic displays – Part 2-2: Measurements of optical characteristics – Ambient performance*

IEC 62977-2-8[1], *Electronic displays – Part 2-8: Measurements of optical characteristics – Reflective displays*

ISO 4892-1:2016, *Plastics – Methods of exposure to laboratory light sources – Part 1: General guidance*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4892-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

[1] Under preparation. Stage at the time of publication: IEC FDIS 62977-2-8:2025.

3.1
black standard temperature
insulated black panel temperature
characteristic value of the test specimen(s) surface temperature measured by an insulated black panel thermometer, consisting of a black painted stainless steel panel and a resistance temperature sensor embedded in insulating material (white polyvinylidene difluoride (PVDF)) attached

Note 1 to entry: More details are described in ISO 4892-1:2016, 5.2.2.1.

Note 2 to entry: It is designed to approximate the maximum surface temperature of any material with thermal insulating properties and for control in weathering test apparatus.

[SOURCE: ISO 4892-1:2016, 5.2.2.1, modified – notes have been added.]

3.2
black panel temperature
uninsulated black panel temperature
characteristic value of the test specimen(s) surface temperature measured by an uninsulated black panel thermometer, consisting of a black painted stainless steel panel and a resistance temperature sensor attached

Note 1 to entry: More details are described in ISO 4892-1:2016, 5.2.2.2.

Note 2 to entry: It is designed to approximate the maximum surface temperature of any material and for control in weathering test apparatus.

[SOURCE: ISO 4892-1:2016, 5.2.2.2, modified – notes have been added.]

4 Principle

4.1 General

The test specimens to be tested are exposed to laboratory light sources and water sprays under controlled environmental conditions. The methods described include the requirements which have to be met for the measurement of the irradiance and radiant exposure in the plane of the specimen, the temperature of specified white and black sensors, the chamber air temperature and the relative humidity.

4.2 Light source

A xenon arc, fitted with filters, is used to simulate the relative spectral irradiance of daylight in the ultraviolet (UV) and visible regions of the spectrum.

4.3 Environmental conditions

The test specimens are exposed to various levels of irradiance, temperature, relative humidity, and water under controlled environmental conditions.

The exposure conditions are varied by the selection of:

a) the light filter(s);
b) the irradiance level;
c) the temperature during exposure to light;
d) the relative humidity in the chamber during light and dark exposures, when exposure conditions requiring control of humidity are used;
e) the way the test specimens are wetted;
f) the water temperature and wetting cycle;