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INTERNATIONAL STANDARD

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Organic light emitting diode (OLED) displays – Part 5-3: Measuring methods of image sticking and lifetime

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ORGANIC LIGHT EMITTING DIODE (OLED) DISPLAYS –

Part 5-3: Measuring methods of image sticking and lifetime

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International Standard IEC 62341-5-3 has been prepared by IEC technical committee 110: Electronic displays.

This second edition replaces the first edition published in 2013. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) the measurement vehicle for lifetime is only for the module;
b) the measurement method for monitor or TV devices is modified;
c) the digital signage display is included as an example of OLED devices;
d) the measurement method with HDR (high dynamic range) for image sticking is added;
e) the analysis method with CIEDE 2000 is added for image sticking;
f) the information method for evaluating image sticking is modified.

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

FDIS	Report on voting
110/1134/FDIS	110/1154/RVD

Full information on the voting for the approval on 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 62341 series, under the general title *Organic light emitting diode (OLED) displays*, 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- withdrawn;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.

A bilingual version of this publication may be issued at a later date.

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ORGANIC LIGHT EMITTING DIODE (OLED) DISPLAYS –

Part 5-3: Measuring methods of image sticking and lifetime

1 Scope

This part of IEC 62341 specifies the standard measuring methods for determining the image sticking and lifetime of organic light emitting diode (OLED) display panels and modules, except finalized display products for end customers, such as TV sets, monitor sets and mobile phones. The measuring method for the lifetime mainly applies to modules.

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 60050-845, *International Electrotechnical Vocabulary (IEV) – Part 845: Lighting* (available at <http://www.electropedia.org>)

IEC 62341-1-2, *Organic light emitting diode (OLED) displays – Part 1-2: Terminology and letter symbols*

IEC 62341-6-1:2017, *Organic light emitting diode (OLED) displays – Part 6-1: Measuring methods of optical and electro-optical parameters*

ISO 11664-1*, Colorimetry – Part 1: CIE standard colorimetric observers*

CIE 15, *Colorimetry*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62341-1-2 and IEC 60050-845 and the following apply.

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

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

3.1.1
equivalent current density
average current density of a certain pixel calculated from a varying luminance per frame image in a moving picture so that luminance degradation becomes similar at the same time

Note 1 to entry: See Annex A.

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3.1.2
equivalent signal level
digital code value from 0 to 255 (in the case of 8 bits) transformed from the normalized luminance of a certain pixel by a specified opto-electronic transfer function (OETF)

Note 1 to entry: See Annex A.

3.2 Abbreviated terms

For the purposes of this document, the following abbreviated terms apply.

APL	average picture level
CIELAB	CIE 1976(L*a*b*) colour space
DUT	devices under test
EOTF	electro-optical transfer function
FWHM	full-width-at-half-maximum
HDR	high dynamic range
LMD	light measuring device
OETF	opto-electronic transfer function
OLED	organic light emitting diode
PQ	perceptual quantizer
SDR	standard dynamic range

4 Measuring configuration

4.1 General

The system diagrams and/or operating conditions of the measuring equipment shall comply with the structure specified in each item. The measuring system and its arrangement are shown in Figure 1. The details are given in Clause 5.

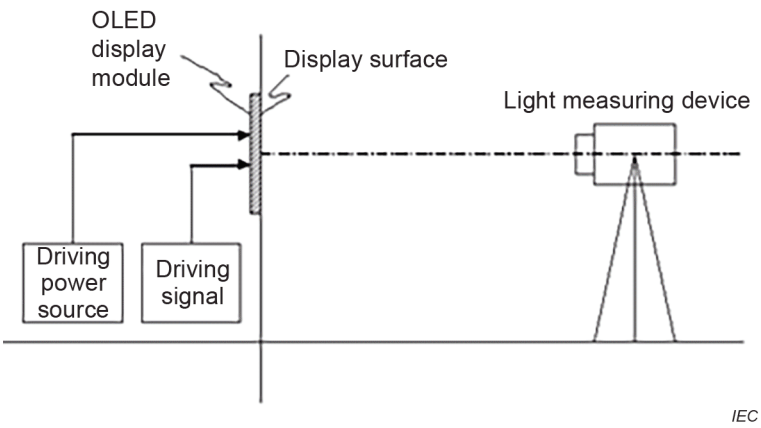

Figure 1 – Measuring system and arrangement

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