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Organic light emitting diode (OLED) displays –
Part 6-7: Measuring methods of optical characteristics for display with under-
screen feature

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 31.260

ISBN 978-2-8322-9754-4

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ORGANIC LIGHT EMITTING DIODE (OLED) DISPLAYS –**Part 6-7: Measuring methods of optical characteristics for display with under-screen feature**

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IEC 62341-6-7 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
110/1667/FDIS	110/1691/RVD

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 62341 series, published 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 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

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INTRODUCTION

A display has originally been conceived to show content or images on the screen and been designed to be blocked on its back-plate, except for a transparent display. Along with advances in display technologies, various screen forms with the display are available, such as a notch type for the camera and sensors area, a pin-hole area, a teardrop shape, and a dual punch-hole for the front camera.

The display has changed and consistently improved its pixel structures to make it easier for a user to use multimedia without physical interference, for example, putting cameras and sensors under the display screen to achieve the functions of finger touch, taking photos, 3D sensing and so on; these technologies can be called under-screen features.

This document introduces mainly measuring conditions and measuring methods for the impact of these developing under-screen features.

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ORGANIC LIGHT EMITTING DIODE (OLED) DISPLAYS –

Part 6-7: Measuring methods of optical characteristics for display with under-screen feature

1 Scope

This part of IEC 62341 specifies the standard measuring conditions and measuring methods for determining the optical characteristics of an OLED display with under-screen camera; other under-screen features, such as under-screen fingerprint or under-screen time of flight (TOF) can also be applied. This document applies to OLED displays such as mobile phone, monitor and TV with under-screen features.

NOTE Under-screen feature will want the display to be partially transparent and partially non-transparent, and this can be achieved only by certain types of display technology, for example OLED. This document mainly focuses on OLED display with under-screen feature.

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

IEC 62341-5-3, *Organic light emitting diode (OLED) displays – Part 5-3: Measuring methods of image sticking and lifetime*

IEC 62341-6-2, *Organic light emitting diode (OLED) displays – Part 6-2: Measuring methods of visual quality and ambient performance*

IEC TR 62977-2-5, *Electronic displays devices – Part 2-5: Transparent displays – Measurements of optical characteristics*

IEC 62977-3-7, *Electronic displays – Part 3-7: Evaluation of optical performance – Tone characteristics*

ISO 12233, *Photography – Electronic still picture imaging – Resolution and spatial frequency responses*

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 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>

3.1.1

under-screen feature

feature placed under the display screen to achieve the functions of finger touch, taking photos, 3D sensing and so on

3.1.2

under-screen area

display area with special pixel structure and circuit design so that the under-screen feature can be achieved

3.1.3

normal display area

display area with normal pixel structure and circuit design except for the under-screen area

3.2 Abbreviated terms

CCD charge coupled device

CCT correlated colour temperature

CTF contrast transfer function <https://standards.iteh.ai/>

DUT device under test

LMD light measuring device

MTF modulation transfer function

SFR spatial frequency response

TOF time of flight

4 Measuring conditions

4.1 Standard measuring environmental conditions

Measurements shall be carried out under the standard environmental conditions as follows:

- temperature: 25 °C ± 3 °C
- relative humidity: 25 % to 85 %
- atmospheric pressure: 86 kPa to 106 kPa

When different environmental conditions are used, they shall be noted in the report.