IEC 62341-5-2

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Organic light emitting diode (OLED) displays – Part 5-2: Mechanical endurance testing methods

Afficheurs à diodes électroluminescentes organiques (OLED) – Partie 5-2: Méthodes d'essais d'endurance mécanique

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FOREWORD

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International Standard IEC 62341-5-2 has been prepared by IEC technical committee 110: Electronic display devices.

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

FDIS	Report on voting
110/472/FDIS	110/486/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 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 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

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- withdrawn,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

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ORGANIC LIGHT EMITTING DIODE (OLED) DISPLAYS –

Part 5-2: Mechanical endurance testing methods

1 Scope

This part of IEC 62341 defines testing methods for evaluating mechanical endurance quality of Organic Light Emitting Diode (OLED) display panels and modules or their packaged form for transportation. It takes into account, wherever possible, the environmental testing methods outlined in specific parts of IEC 60068. The object of this standard is to establish uniform preferred test methods for judging the mechanical endurance properties of OLED display devices.

There are generally two categories of mechanical endurance tests: those relating to the product usage environment and those relating to the transportation environment in packaged form. Vibration, shock, quasistatic strength, four-point bending test and peel strength test are introduced here for usage environment, while transportation drop test is applicable to the transportation environment. Mechanical endurance tests may also be categorized into mobile application, notebook computer or monitor application and large size TV application. Special considerations or limitations of test methods according to the size or application of the specimen will be noted.

NOTE This standard is established separately from IEC 61747-5-3, because the technology of organic light emitting diodes is considerably different from that of liquid crystal devices in such matters as:

– used materials and structure;
– operation principles;
– measuring methods.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-2-6:2007, *Environmental testing – Part 2-6: Tests–Test Fc: Vibration (sinusoidal)*

IEC 60068-2-27:2008, *Environmental testing – Part 2-27: Tests–Test Ea and guidance: Shock*

IEC 61747-5:1998, *Liquid crystal and solid-state display devices – Part 5: Environmental, endurance and mechanical test methods*

IEC 61747-5-3:2009, *Liquid crystal display devices – Part 5-3: Environmental, endurance and mechanical test methods – Glass strength and reliability*

IEC 62341-1-2:2007, *Organic light emitting diode displays – Part 1-2: Terminology and letter symbols*

IEC 62341-5:2009, *Organic light emitting diode (OLED) displays – Part 5: Environmental testing methods*

IEC 62341-6-1:2009, *Organic light emitting diode (OLED) displays – Part 6-1: Measuring methods of optical and electro-optical parameters*

IEC 62341-6-2:2012, *Organic light emitting diode (OLED) displays – Part 6-2: Measuring methods of visual quality and ambient performance*

ISO 2206:1987, *Packaging – Complete, filled transport packages – Identification of parts when testing*

ISO 2248:1985, *Packaging – Complete, filled transport packages – Vertical impact test by dropping*

3 Terms and definitions

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

3.1
strength
stress at which a sample fails for a given loading condition

3.2
glass edge strength
measured stress at failure where the failure origin is known to have occurred at an edge

4 Abbreviations

FEA	finite element analysis
FPCB	flexible printed circuit board
B_{10}	the value at lower 10 % position in the Weibull distribution [1][1]
TSP	touch screen panel

5 Standard atmospheric conditions

The standard atmospheric conditions in IEC 62341-5:2009, 5.3, shall apply unless otherwise specifically agreed between customer and supplier.

6 Evaluations

6.1 Visual examination and verification of dimensions

The specimen shall be submitted to the visual, dimensional checks in non-operation condition and functional checks in operational condition prescribed by the following specification.

a) Visual checks of damage to exterior body of the specimen including marking, encapsulation and terminals shall be examined as specified in IEC 61747-5:1998, 1.5.

b) Dimensions given in the customer's specification shall be verified.

c) Visual and optical performance shall be checked as specified in IEC 62341-6-1.

Unless otherwise specified, visual inspection shall be performed under the conditions and methods as specified in IEC 62341-6-2:2012, 6.2.

1 Numbers in square brackets refer to the bibliography.