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Edition 1.0 2018-02

INTERNATIONAL STANDARD

colour inside

Liquid crystal display devices – Part 40-5: Mechanical testing of display cover glass for mobile devices – Strength against dynamic impact by a sharp object with the specimen rigidly supported

IEC 61747-40-5:2018 (en)

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

FDIS	Report on voting
110/936/FDIS	110/958/RVD

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

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

A list of all parts in the IEC 61747 series, published under the general title *Liquid crystal display devices*, 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 "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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- withdrawn,
- replaced by a revised edition, or
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INTRODUCTION

Mobile electronic devices have become increasingly sophisticated and often incorporate displays for the purposes of user interface and viewing. Such displays commonly incorporate a transparent cover glass, which aids in protecting the display against the introduction of damage through routine device transport and use, as well as occasional or accidental misuse.

The purpose of this document is to provide mechanical testing procedures for cover glasses utilized in such applications. Such glasses can be strengthened, for example via an ion-exchange process, which acts to increase mechanical strength through the introduction of a surface compressive layer.

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LIQUID CRYSTAL DISPLAY DEVICES –

Part 40-5: Mechanical testing of display cover glass for mobile devices – Strength against dynamic impact by a sharp object with the specimen rigidly supported

1 Scope

This part of IEC 61747 is a mechanical performance testing procedure for cover glass used in electronic displays in mobile devices. This document focuses on the measurement of surface impact energy required to fracture a specimen due to the collision of sharp particles onto the surface of a cover glass. This is achieved by dropping a ball on a sheet of coated abrasives placed on the cover glass, which is rigidly supported. The failure mode is associated with damage introduction via sharp contact. Crack propagation is enhanced by central tension in the case of strengthened glass. This failure mode represents one of several field failure modes observed in mobile devices.

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 61649:2008, *Weibull analysis*

IEC 61747-40-1, *Liquid crystal display devices – Part 40-1: Mechanical testing of display cover glass for mobile devices – Guidelines*

ISO 6344-1, *Coated abrasives – Grain size analysis – Part 1: Grain size distribution test*

ISO 8512-2, *Surface plates – Part 2: Granite*

JIS R6111, *Artificial abrasives*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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
specimen
individual piece of glass to be tested for failure