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INTERNATIONAL STANDARD

Liquid crystal display devices – Part 40-3: Mechanical testing of display cover glass for mobile devices – Biaxial flexural energy to failure (ball drop)

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International Standard IEC 61747-40-3 has been prepared by technical committee 110: Electronic display devices.

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

CDV	Report on voting
110/569/CDV	110/609A/RVC

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 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 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- withdrawn,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.

INTRODUCTION

Mobile electronic devices have become increasingly sophisticated and often include 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 standard 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.

LIQUID CRYSTAL DISPLAY DEVICES –

Part 40-3: Mechanical testing of display cover glass for mobile devices – Biaxial flexural energy to failure (ball drop)

1 Scope

This part of IEC 61747-40 is a mechanical performance testing procedure for cover glass used in electronic flat panel displays in mobile devices. This standard is focused on the measurement of surface impact resistance via biaxial flexure generated by a ball drop.

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

IEC 61649:2008, *Weibull analysis*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
specimen
individual piece of glass to be tested to failure

3.2
sample
group of specimens sharing a common pedigree (such as manufacturing process and period of production), for which failure statistics can be generated and reported

3.3
sample size
number of specimens in a sample

3.4
nominal value
value about which a tolerance range is specified

4 General

This test is statistical in nature. A ball is dropped onto each of a number of specimens in a sample. The energy required to break each specimen is recorded. Statistics that might be specified are calculated and reported. The energy required to break a given specimen is determined by starting with a minimum drop height and then increasing the drop height by a fixed increment for drops that do not result in breakage.