UL 61965

STANDARD FOR SAFETY

Mechanical Safety for Cathode Ray Tubes

UL Standard for Safety for Mechanical Safety for Cathode Ray Tubes, UL 61965

Second Edition, Dated July 27, 2004

SUMMARY OF TOPICS

This revision of ANSI/UL 61965 dated May 9, 2019 is being issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The requirements are substantially in accordance with Proposal(s) on this subject dated February 22, 2019.

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UL 61965

Mechanical Safety for Cathode Ray Tubes

First Edition – October, 2001

Second Edition

July 27, 2004

This ANSI/UL Standard for Safety consists of the Second Edition including revisions through May 9, 2019.

The most recent designation of ANSI/UL 61965 as a Reaffirmed American National Standard (ANS) occurred on May 9, 2019. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or Preface. The National Difference Page and IEC Foreword are also excluded from the ANSI approval of IEC-based standards.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at https://csds.ul.com.

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Preface (UL)

This UL Standard is based on IEC Publication 61965: Second edition, Mechanical safety of cathode ray tubes. IEC *publication 61965* is copyrighted by the IEC.

This edition has been issued to satisfy UL Standards policy to reflect reaffirmation of ANSI approval.

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Note – Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of this Standard to judge its suitability for their particular purpose.

UL Effective Date

UL 61965, Second Edition, is now in effect.

A UL effective date is one established by Underwriters Laboratories Inc. and is not part of the ANSI approved standard.

NATIONAL DIFFERENCES

GENERAL

National Differences from the text of International Electrotechnical Commission (IEC) Publication 61965, Mechanical safety of cathode ray tubes, copyright 2003 are indicated by notations (differences) and are presented in bold text.

There are five types of National Differences as noted below. The difference type is noted on the first line of the National Difference in the standard. The standard may not include all types of these National Differences.

DR – These are National Differences based on the **national regulatory requirements**.

D1 – These are National Differences which are based on **basic safety principles and requirements**, elimination of which would compromise safety for consumers and users of products.

D2 – These are National Differences based on safety practices. These are differences for IEC requirements that may be acceptable, but adopting the IEC requirements would require considerable retesting or redesign on the manufacturer's part.

DC – These are National Differences based on the **component standards** and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE – These are National Differences based on **editorial comments or corrections**.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MECHANICAL SAFETY OF CATHODE RAY TUBES

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61965 has been prepared by IEC technical committee 39: Electronic tubes.

This second edition cancels and replaces the first edition published in 2000. This second edition constitutes a technical revision.

The main change with respect to the previous edition is the inclusion of the requirements for cathode ray tubes with film attached to the face plate.

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

FDIS	Report on voting
39/264/FDIS	39/265/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.

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition; or
- amended.

INTRODUCTION

This International Standard sets forth test methods and limits for cathode ray tubes (CRTs). Originally, the only IEC standard for the mechanical safety of CRTs had been contained within Clause 18 of the equipment standard IEC 60065. Whereas that standard had been accepted and used by many countries, many others were not able to implement its requirements because of differing local needs. IEC 61965 was therefore published in 2000 with the aim of providing the basis for wider acceptance and use and reflecting the current IEC policy of producing separate component standards to which equipment standards can refer.

This 2nd edition covers the requirements for the CRTs with film attached to the faceplate as part of the safety implosion protection system.

Many years of experience had been built up in the use of both the IEC 60065 test and the other commonly used national alternatives. During the development of IEC 61965, extensive test programmes and ballistic and statistical calculations were carried out to verify that the requirements of the standard give protection for users of CRTs when the tubes are mounted in the equipment for which they are intended. This was also done to ensure that IEC 61965 maintains the stringent requirements of both IEC 60065 and the alternative tests in common use. These tests and calculations also confirmed

a) the acceptability of one standard ball for the mechanical strength test, and

b) the need for the implosion test where it is not always possible to induce rapid devacuation using the ball impact test.

As the impact tests in this standard are overstress tests, only the effect of rapid devacuation is evaluated and not subsequent relaxation of mechanical stresses in the CRT from the implosion protection system.