

INTERNATIONAL STANDARD

IEC 61965

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Mechanical safety of cathode ray tubes

Sécurité mécanique des tubes cathodiques

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CONTENTS

FOREWORD	5
INTRODUCTION	6
1 Scope	7
2 Normative references.....	7
3 Definitions	8
4 General requirements	9
4.1 Corrosion protection	9
4.2 Mechanical damage.....	9
4.3 Handling	9
4.4 Film-coated CRTs.....	9
5 Environmental conditioning	10
5.1 Standard atmospheric conditions for testing.....	10
5.2 Preconditioning.....	10
5.3 Thermal conditioning	10
6 Sampling	10
6.1 Sampling plans	10
6.2 Sample numbers.....	10
6.3 Compliance	10
7 Test preparation and set-up	10
7.1 Scratch patterns	10
7.2 Barriers	11
7.3 Mounting	11
7.4 Mounting position	11
8 Testing of large CRTs.....	11
8.1 Mechanical strength (ball impact test).....	11
8.2 Implosion test (missile).....	12
8.3 Implosion test (thermal shock).....	13
8.4 High-energy impact test.....	13
9 Testing of small CRTs.....	14
9.1 Mechanical strength (ball impact test).....	14
9.2 Implosion test (high ball).....	15
9.3 Implosion test (thermal shock)	15
9.4 High-energy impact test.....	15
10 Testing of prestressed banded CRTs with protective film	16
10.1 General	16
10.2 Film scoring pattern for CRTs with protective film	16
10.3 Peel test	17
10.4 Immersion test.....	17
11 Marking	17
12 Application notes for pre-stressed banded CRTs with protective film.....	18
13 Normative requirements for the use of Tables 1 and 2 (prestressed banded CRTs)	18
13.1 Sampling plan I: New construction	18
13.2 Sampling plan II: New construction with known resin or tape	19
13.3 Sampling plan III: Tension band and alternative tension band.....	19
13.4 Sampling plan IV: Alternative construction	20

14	Normative requirements for the use of Tables 3 and 4 (prestressed banded with protective film).....	21
14.1	Sampling plan I: New construction	21
14.2	Sampling plan II: New construction with known resin, tape, film or adhesive	22
14.3	Sampling plan III: Alternative tension band	22
14.4	Sampling plan IV: Alternative construction	23
15	Alternative thermal conditioning for use with Tables 3 and 4 (prestressed banded with protective film).....	24
15.1	Additional peel force requirements where alternative thermal conditioning is to be performed	24
15.2	Tensile strength test where alternative thermal conditioning is to be performed	24
16	Normative requirements for the use of Tables 6 and 7 (bonded frame CRTs).....	25
16.1	Sampling plan I: New construction	25
16.2	Sampling plan II: Alternative construction	26
17	Normative requirements for the use of Tables 8 and 9 (laminated CRTs)	26
17.1	Sampling plan I: New construction	26
17.2	Sampling plan II: Alternative construction	26
Annex A (informative) Background to the development of this standard.....		46
A.1	Mechanical strength test	47
A.2	Implosion test	47
A.3	Small CRTs (76 mm to 160 mm diagonal)	47
A.4	Evaluation time	47
Annex B (informative) Velocity and potential force of glass particles expelled from a CRT subjected to a ball impact – Ballistic and statistical calculations		48
B.1	Introduction	48
B.2	Analysis without friction.....	48
B.3	Analysis with friction	54
B.4	Potential threat	57
B.5	Conclusions	57
Figure 1 – Example of a test cabinet		35
Figure 2 – Example of a ball impact test.....		36
Figure 3 – Example of a 2,3 kg steel missile		37
Figure 4 – Missile impact area on a typical CRT.....		38
Figure 5 – Example of a missile impact test.....		39
Figure 6 – Options for scratch patterns for implosions by the thermal shock method		40
Figure 7 – Film scoring tool.....		41
Figure 8 – Example of high-energy impact test set-up		42
Figure 9 – Steel pins used in high-energy impact test.....		43
Figure 10 –Weights used in high-energy impact test.....		44
Figure 11 – Example of 1,4 kg steel missile.....		45
Figure B.1 – Height of the barriers and distances from the CRT face.....		48

Figure B.2 – Example of the parabolic trajectory of a glass particle and the definition of the distances.....	49
Figure B.3 – Definition of the initial angle and initial velocity and the forces acting on a particle.....	50
Figure B.4 – Initial velocity required to pass over barriers at $x = l_1$ (solid line) or $x = l_2$ (dashed line) as a function of the initial angle β	52
Figure B.5 – Trajectories for a glass particle for different initial angles and an initial velocity of 4 m/s	52
Figure B.6 – Definition of the forces acting on a particle.....	54
Figure B.7 – Measurements of a typical glass particle	55
Figure B.8 – Trajectory of a glass particle with an initial velocity of 2 m/s and an initial angle of 45° without friction (dashed line) and with friction (solid line)	56
Figure B.9 – Trajectories of a glass particle with an initial velocity of 2 m/s and an initial angle of 45° for different values of the cross-sectional area	57
Table 1 – Sampling and test programme for prestressed banded CRTs exceeding 160 mm diagonal.....	27
Table 2 – Sampling and test programme for prestressed banded CRTs from 76 mm to 160 mm diagonal.....	28
Table 3 – Sampling and test programme for prestressed banded CRTs with protective film exceeding 160 mm diagonal	29
Table 4 – Sampling and test programme for prestressed banded CRTs with protective film from 76 mm to 160 mm diagonal.....	30
Table 5 – Sampling and test programme for adhesion of film used in CRTs with protective film (tested according to Tables 3 and 4)	31
Table 6 – Sampling and test programme for bonded frame CRTs exceeding 160 mm diagonal.....	32
Table 7 – Sampling and test programme for bonded frame CRTs from 76 mm to 160 mm diagonal.....	32
Table 8 – Sampling and test programme for laminated CRTs exceeding 160 mm diagonal.....	33
Table 9 – Sampling and test programme for laminated CRTs from 76 mm to 160 mm diagonal.....	33
Table 10 – CRT size and deflection angle ranges.....	34
Table B.1 – Values of the distances	49
Table B.2 – Upper and lower boundary values of the initial angle.....	51

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MECHANICAL SAFETY OF CATHODE RAY TUBES

FOREWORD

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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.

MECHANICAL SAFETY OF CATHODE RAY TUBES

1 Scope

This International Standard is applicable to cathode ray tubes and cathode ray tube assemblies (hereinafter referred to as CRTs) which are intended for use as components in apparatus and which have integral protection with respect to the effects of implosion.

These requirements apply to CRTs intended for use in apparatus including electrical and electronic measuring and testing equipment, information technology equipment, medical equipment, telephone equipment, television equipment and other similar electronic apparatus.

This standard is intended to apply only to those CRTs in which the face of the CRT forms part of the enclosure for the apparatus. The test methods do not apply to CRTs which are protected by separate safety screens.

A CRT covered by this standard is intended to be installed in an enclosure designed both to protect the rear of the CRT against mechanical or other damage under normal conditions of operation and to protect the user against particles expelled in a backwards direction from the CRT face in the event of implosion.

This standard contains requirements for CRTs of 76 mm diagonal and larger that incorporate implosion protection systems providing protection against the hazards of particles expelled forwards beyond the face. There is no intended protection against particles expelled in other directions.

Compliance is tested by subjecting CRTs to the test procedures and criteria, which are given in Clauses 8 (large CRTs), 9 (small CRTs) and 10 (CRTs with protective film) of this standard. The definitions of large and small CRTs are given in Clause 3.

NOTE This set of requirements replaces the current requirements for the mechanical safety of cathode ray tubes (CRTs) as described in IEC 60065 (Clause 18), which will be modified accordingly.

2 Normative references

The following referenced documents are indispensable for the application 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 60065:2001, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*
Amendment 1 (1992)

IEC 60216-1:2001, *Electrical insulating materials – Properties of thermal endurance – Part 1: Ageing procedures and evaluation of test results*

ISO 527-1:1993, *Plastics – Determination of tensile properties – Part 1: General principles*

ISO 527-3:1995, *Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets*

ISO 8510-1:1990, *Adhesives – Peel test for a flexible-bonded-to-rigid test specimen assembly – Part 1: 90 degree peel*