AS/NZS 60065:2012
(Incorporating Amendment No. 1)

AS/NZS 60065:2012

Australian/New Zealand Standard™

Audio, video and similar electronic apparatus—Safety requirements (IEC 60065, Ed.7.2 (2011) MOD)

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee TE-001, Safety of Electronic Equipment. It was approved on behalf of the Council of Standards Australia on 24 July 2012 and on behalf of the Council of Standards New Zealand on 28 May 2012.
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The following are represented on Committee TE-001:

Australian Chamber of Commerce and Industry
Australian Communications and Media Authority
Australian Industry Group
Australian Information Industry Association
Australian Subscription Television and Radio Association
Choice
Communications Alliance
Consumer Electronics Association of New Zealand
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee, TE-001, Safety of Electronic Equipment, to supersede AS/NZS 60065:2003 (which incorporates Amendment 1:2008), *Audio, video and similar electronic apparatus—Safety requirements (IEC 60065:2001, MOD)* on 1 October 2012. Until 1 October 2012 both editions of the Standard will operate in parallel, then the 2003 edition will be withdrawn.

This Standard incorporates Amendment No. 1 (June 2015). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Standard is to provide Australian and New Zealand electrical and electronic industries with minimum safety requirements for electrically powered equipment intended for the reception, generation, recording or reproduction of audio, video and associated signals.

This Standard is an adoption, with national modifications, and has been reproduced from IEC 60065, Ed.7.2 (2011), *Audio, video and similar apparatus—Safety requirements*, and has been varied as indicated to take account of Australian/New Zealand conditions. The modifications are set out in Appendix ZZ.

IEC 60065, Ed.7.2 (2011) comprises the seventh edition of IEC 60065 (2001), its Corrigendum (2002), Amendment 1 (2005) and Amendment 2 (2010). Marginal bars show where IEC 60065 (2001) has been modified by Amendment 1 and 2.

The purpose of this revision was to provide the updated Version 7.2 of the source text which incorporates Amendments 1 and 2. The Australian/New Zealand modifications have been updated with respect to dates of application of some compliance requirements, removal of redundant notes and other editorial changes (including editorial change to wording of compliance requirements of Clause 20 and changes resulting from the reference document AS/NZS 4695.2.2 being superseded by AS/NZS 60695.11.5). The content of this Standard is therefore technically equivalent to AS/NZS 60065:2003 and its Amendment 1 (2008), with the addition of IEC Amendments 1 (2005) and 2 (2010) being the only change.

A1 Amendment 1 to this Standard adds requirements to address safety issues identified with coin/button batteries and batteries designated R1. These requirements take into account requirements from IEC 62368-1, Ed. 2, IEC 60065, Ed. 8 and requirements for electric toys.

This amendment takes effect two years from its publication.

This Standard is structured in the following layout:

(a) Australian/New Zealand Preface (including Australian and New Zealand reference documents).

(b) IEC 60065 (unedited from the scope to the final clause of the source document).

(c) Appendix ZZ—Australian/New Zealand variations to the source document.

The variations listed in Appendix ZZ address issues including the following:

(i) Alternate requirements for thermoplastic materials.

(ii) Appropriate tests of AS/NZS 3112.

(iii) Australian/New Zealand requirements for flexible cords.

(iv) Requirements for stability of television receivers.

(v) Alternate resistance to fire tests.

(vi) Change Table 21 flammability category.

(vii) Reference to Australian Telecommunications Labelling Notice (Annex B).

The essential safety requirements in AS/NZS 3820, *Essential safety requirements for electrical equipment*, that could be applicable to electrically powered equipment intended for the reception, generation, recording or reproduction of audio, video and associated signals are covered by this Standard.

The variations described in Appendix ZZ form the Australian and New Zealand variations for the purposes of the CB scheme for recognition of testing to standards for safety of electrical equipment.

As this Standard is reproduced from an International Standard, the following applies:

(A) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(B) In the source text 'this International Safety Standard' should read 'this Australian/New Zealand Standard'.

(C) A full point should be substituted for a comma when referring to a decimal marker.

Unless otherwise indicated in Appendix ZZ, references to International Standards should be replaced by references to Australian or Australian/New Zealand standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*	
IEC		AS	
60227	Letter symbols for use in electrical technology (series)	1046	Letter symbols for use in electrotechnology (series)
60038	IEC standard voltages	60038	Standard voltages
60068	Environmental testing	60068	Environmental testing
60068-2-6	Part 2-6: Tests—Test Fc: Vibration (sinusoidal)	60068.2.6	Part 2.6: Tests—Test Fc: Vibration (sinusoidal)
60068-2-32	Part 2-6: Tests—Test Ed: Free fall (Procedure 2)	60068.2.32	Part 2.32: Tests—Test Ed: Free fall
60068-2-75	Part 2-75: Tests—Test Eh: Hammer tests	60068.2.75	Part 2.75: Tests—Test Eh: Hammer tests
60068-2-78	Part 2-78: Tests—Test Cab: Damp heat, steady state	60068.2.78	Part 2.78: Tests—Test Cab: Damp heat, steady state
60112	Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions	60112	Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions
60227	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V	60227	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V
60227-5	Part 5: Flexible cables (cords)	60227.5	Part 5: Flexible cables (cords)
60245	Rubber insulated cables—Rated voltages up to and including 450/750 V	60245	Rubber insulated cables—Rated voltages up to and including 450/750 V
60245-4	Part 4: Cords and flexible cables	60245.4	Part 4: Cords and flexible cables
		AS/NZS	
60320	Appliance couplers for household and similar general purposes (series)	60320	Appliance couplers for household and similar general purposes (series)
60335	Household and similar electrical appliances—Safety	60335	Household and similar electrical appliances—Safety
60335-1	Part 1: General requirements	60335.1	Part 1: General requirements

		AS	
60417	Graphical symbols for use on equipment (series)	60417	Graphical symbols for use on equipment (series)
60529	Degrees of protection provided by enclosures (IP Code)	60529	Degrees of protection provided by enclosures (IP Code)
IEC		AS/NZS	
60695	Fire hazard testing	60695	Fire hazard testing
60695-11-5	Part 11-5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance	60695.11.5	Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance
60695-11-10	Part 11-10: Test flames—50 W horizontal and vertical flame test methods	60695.11.10	Part 11.10: Test flames—50 W horizontal and vertical flame test methods
60825	Safety of laser products	2211	Safety of laser products
60825-1	Part 1: Equipment classification and requirements	2211.1	Part 1: Equipment classification , requirements and user's guide
60884	Plugs and socket-outlets for household and similar purposes (series)	3112	Approval and test specification—Plugs and socket-outlets
60950	Safety of information technology equipment—Safety (series)	60950	Information technology equipment—Safety (series)
60990	Methods of measurement of touch current and protective conductor current	60990	Methods of measurement of touch current and protective conductor current
60998	Connecting devices for low-voltage circuits for household and similar purposes	60998	Connecting devices for low voltage circuits for household and similar purposes
60998-2-2	Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units	60998.2.2	Part 2.2: Particular requirements for connecting devices as separate entities with screwless-type clamping units
61058	Switches for appliances	61058	Switches for appliances
61058-1	Part 1: General requirements	61058.1	Part 1: General requirements
61260	Electroacoustics—Octave-band and fractional-octave-band filters	4476	Acoustics—Octave-band and fractional-octave-band-filters
61558	Safety of power transformers, power supply units and similar	61558	Safety of power transformers, power supply units and similar
61558-1	Part 1: General requirements and tests	61558.1	Part 1: General requirements and tests
61558-2-17	Part 2-17: Particular requirements for transformers for switch mode power supplies	61558.2.17	Part 2.17: Particular requirements for transformers for switch mode power supplies
ISO		AS	
261	ISO general purpose metric screw threads—General plan	1721	General purpose metric screw threads
262	ISO general-purpose metric screw threads—Selected sizes for screws, bolts and nuts	1721	General purpose metric screw threads

306	Plastics—Thermoplastic materials—Determination of Vicat softening temperature (VST)	1368	Plastics—Theroplastic material—Determination of Vicat softening temperature (VST)

Only international references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The following documents are referred to in Appendix ZZ.

AS/NZS

3112 Approval and test specification—Plugs and socket-outlets

3123 Approval and test specification—Plugs, socket-outlets and couplers for general industrial application

3191 Electric flexible cords

60695 Fire hazard testing

60695.2.11 Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products

60695.10.2 Part 10.2: Abnormal heat—Ball pressure test

60695.11.5 Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance

60695.11.10 Test flames—50 W horizontal and vertical flame test methods

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex and appendix to which they apply. A ‘normative’ annex and appendix is an integral part of a Standard, whereas an ‘informative’ annex and appendix is only for information and guidance.

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FOREWORD

In this standard, the following print types are used:

– requirements proper: roman type
– *test specifications: italic type*
– NOTES: smaller roman type

For terms defined in clause 2, SMALL CAPITALS are used.

INTRODUCTION

Principles of safety

General

This introduction is intended to provide an appreciation of the principles on which the requirements of this standard are based. Such an understanding is essential in order that safe apparatus can be designed and manufactured.

The requirements of this standard are intended to provide protection to persons as well as to the surroundings of the apparatus.

Attention is drawn to the principle that the requirements, which are standardized, are the minimum considered necessary to establish a satisfactory level of safety.

Further development in techniques and technologies may entail the need for future modification of this standard.

NOTE The expression "protection to the surroundings of the apparatus" implies that this protection should also include protection of the natural environment in which the apparatus is intended to be used, taking into account the life cycle of the apparatus, i.e. manufacturing, use, maintenance, disposal and possible end-of-life recycling of parts of the apparatus.

Hazards

The application of this standard is intended to prevent injury or damage due to the following hazards:

– electric shock;
– excessive temperatures;
– radiation;
– implosion;
– mechanical hazards;
– fire.

Electric shock

Electric shock is due to current passing through the human body. Currents of the order of a milliampere can cause a reaction in persons in good health and may cause secondary risks due to involuntary reaction. Higher currents can have more damaging effects. Voltages below certain limits are generally regarded as not dangerous under specified conditions. In order to provide protection against the possibility of higher voltages appearing on parts that may be touched or handled, such parts are either earthed or adequately insulated.

For parts which can be touched, two levels of protection are normally provided to prevent electric shock caused by a single fault. Thus a single fault and any consequential faults will not create a hazard. The provision of additional protective measures, such as SUPPLEMENTARY INSULATION or protective earthing, is not considered a substitute for, or a relief from, properly designed BASIC INSULATION.

Cause	Prevention
Contacts with parts normally at hazardous voltage.	Prevent access to parts at hazardous voltage by fixed or locked covers, interlocks, etc. Discharge capacitors at hazardous voltages.
Breakdown of insulation between parts normally at hazardous voltage and accessible parts.	Either use double or reinforced insulation between parts normally at hazardous voltages and accessible parts so that breakdown is not likely to occur, or connect accessible conductive parts to protective earth so that the voltage which can develop is limited to a safe value. The insulations shall have adequate mechanical and electrical strength.
Breakdown of insulation between parts normally at hazardous voltage and circuits normally at non-hazardous voltages, thereby putting accessible parts and terminals at hazardous voltage.	Segregate hazardous and non-hazardous voltage circuits either by double or reinforced insulation so that breakdown is not likely to occur, or by a protective earthed screen, or connect the circuit normally at non-hazardous voltage to protective earth, so that the voltage which can develop is limited to a safe value.
Touch current from parts at hazardous voltage through the human body. (Touch current can include current due to RFI filter components connected between mains supply circuits and accessible parts or terminals.)	Limit touch current to a safe value or provide a protective earthing connection to the accessible parts.

Excessive temperatures

Requirements are included to prevent injury due to excessive temperatures of accessible parts, to prevent damaging of insulation due to excessive internal temperatures, and to prevent mechanical instability due to excessive temperatures developed inside the apparatus.

Radiation

Requirements are included to prevent injury due to excessive energy levels of ionizing and laser radiation, for example by limiting the radiation to non-hazardous values.

Implosion

Requirements are included to prevent injury due to implosion of picture tubes.

Mechanical hazards

Requirements are included to ensure that the apparatus and its parts have adequate mechanical strength and stability, to avoid the presence of sharp edges and to provide guarding or interlocking of dangerous moving parts.

Fire

A fire can result from:

– heat;
– arcing;

caused by

– overloads;
– component failure;
– insulation breakdown;
– bad connections;
– conductor breakage.

Requirements are included that are intended to prevent fire originating within the apparatus from spreading beyond the immediate vicinity of the source of the fire or from causing damage to the surroundings of the apparatus.

The following preventive measures are recommended:

– the use of suitable components and subassemblies;
– the prevention of excessive temperature rise that might cause ignition under normal or fault conditions;
– the use of measures to eliminate POTENTIAL IGNITION SOURCES such as inadequate contacts, bad connections, interruptions;
– the limitation of the quantity of combustible material used;
– the control of the position of combustible materials in relation to POTENTIAL IGNITION SOURCES;
– the use of materials with high resistance to fire in the vicinity of POTENTIAL IGNITION SOURCES;
– the use of encapsulation or barriers to limit the spread of fire within the apparatus;
– the use of suitable fire retardant materials for the enclosure.

AUSTRALIAN/NEW ZEALAND STANDARD

Audio, video and similar electronic apparatus—Safety requirements (IEC 60065, Ed.7.2 (2011) MOD)

1 General

1.1 Scope

1.1.1 This International Safety Standard applies to electronic apparatus designed to be fed from the MAINS, from a SUPPLY APPARATUS, from batteries or from REMOTE POWER FEEDING and intended for reception, generation, recording or reproduction respectively of audio, video and associated signals. It also applies to apparatus designed to be used exclusively in combination with the above-mentioned apparatus.

This standard primarily concerns apparatus intended for household and similar general use but which may also be used in places of public assembly such as schools, theatres, places of worship and the workplace. PROFESSIONAL APPARATUS intended for use as described above is also covered unless falling specifically within the scope of other standards.

This standard concerns only safety aspects of the above apparatus; it does not concern other matters, such as style or performance.

This standard applies to the above-mentioned apparatus, if designed to be connected to the TELECOMMUNICATION NETWORK or similar network, for example by means of an integrated modem.

Some examples of apparatus within the scope of this standard are:

- receiving apparatus and amplifiers for sound and/or vision;
- independent LOAD TRANSDUCERS and SOURCE TRANSDUCERS;
- SUPPLY APPARATUS intended to supply other apparatus covered by the scope of this standard;
- ELECTRONIC MUSICAL INSTRUMENTS, and electronic accessories such as rhythm generators, tone generators, music tuners and the like for use with electronic or non-electronic musical instruments;
- audio and/or video educational apparatus;
- video projectors;

NOTE 1 Film projectors, slide projectors, overhead projectors are covered by IEC 60335-2-56 [5][1]

- video cameras and video monitors;
- video games and flipper games;
- juke boxes;
- electronic gaming and scoring machines;

NOTE 2 Video games, flipper games and gaming machines and other amusement games for commercial use are covered by IEC 60335-2-82 [6].

[1] Figures in square brackets refer to the bibliography.