AS/NZS 2211.6:2002
IEC TS 60825-6:1999

Australian/New Zealand Standard™

Safety of laser products

Part 6: Safety of products with optical sources, exclusively used for visible information transmission to the human eye

Standards Australia

STANDARDS NEW ZEALAND
Paerewa Aotearoa

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee SF-019, Personal Protection Against Laser Radiation. It was approved on behalf of the Council of Standards Australia on 30 August 2002 and on behalf of the Council of Standards New Zealand on 3 September 2002. It was published on 1 October 2002.

The following are represented on Committee SF-019:

Australian Faculty of Occupational Medicine
Australian Chamber of Commerce and Industry
Australian Defence Force Academy
Australian Dental Association
Australian Radiation Laboratory
Department of Defence (Australia)
National Radiation Laboratory New Zealand
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Australian/New Zealand Standard™

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PREFACE

This Standard was prepared by the Standards Australia Committee SF-019, *Safety of Laser Products*.

This Standard is identical with and has been reproduced from IEC TS 60825-6:1999, *Safety of laser products*—Part 6: *Safety of products with optical sources, exclusively used for visible information transmission to the human eye.*

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

(a) Its number appears on the cover and title page while the international Standard number appears only on the cover.

(b) In the source text, 'this technical specification' should read 'this Australian/New Zealand Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to international Standards should be replaced by references to equivalent Australian/New Zealand Standards, as follows:

Reference to International Standard or other publication		*Australian/New Zealand publication*	
IEC		AS/NZS	
60050	International Electrotechnical Vocabulary (IEV)		
60050(845)	Chapter 845: Lighting	–	
60825	Safety of laser products	2211	Safety of laser products
60825-1	Part 1: Equipment classification, requirements and user's guide	2211.1	Part 1: Equipment classification, requirements and user's guide
60825-2	Part 2: Safety of optical fibre communication systems	2211.2	Part 2: Safety of optical fibre communication systems

The term 'informative' has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

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INTRODUCTION

Probably because of the increasing radiation power available from light emitting diodes (LEDs) and their physical similarity to laser diodes, these devices have been included in the scope of the laser safety standard IEC 60825-1. However, the optical radiation from LEDs differs in various aspects from laser sources; generally they lie between incoherent broadband sources and coherent laser sources.

The safety philosophy and classification requirements of IEC 60825-1, developed for coherent point sources (with the assumption of Gaussian radiation characteristics), have been transferred to incoherent intermediate sources (with typically Lambertian radiation characteristics) which are often made for intentional viewing. The result has been an overestimation of the real risk from this kind of source.

In Europe, and effective since January 1997, IEC 60825-1, which includes LEDs, is valid. Following the European product safety laws this means that each LED application or product has to be classified under single-fault conditions. LEDs in the visible wavelength range are increasingly used as a replacement for incandescent or fluorescent sources. However, contrary to conventional lamps, LEDs with the same or similar optical features for identical applications now have to be classified and potentially labelled.

Because this effectively discriminates against LED sources, technical committee 76 (jointly with subcommittee 100C) was established with the objective of preparing additional parts to the IEC 60825 series, for specific application-related requirements.

Due to problems with these LED sources the basic standard IEC 60825-1 is also under consideration and technical development. If a new edition of IEC 60825-1 with a changed safety philosophy becomes valid in the future, it will influence all subsidiary standards. This development will influence and/or change the basis for a more realistic assessment of the optical hazard of LEDs in the future. With this background, the value of this part could be temporary if a suitable treatment is developed in IEC 60825-1.

This technical specification is considered as a “prospective standard for provisional application” in the field of optical radiation safety of LEDs. This is because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

AUSTRALIAN/NEW ZEALAND STANDARD

Safety of laser products

Part 6:

Safety of products with optical sources, exclusively used for visible information transmission to the human eye

1 Scope and object

This technical specification details the requirements, and provides an adapted hazard categorization scheme and specific guidance for the safe use of visible optical sources that are within the scope of IEC 60825-1, but used exclusively for transmission of information to the human eye. These application-related sources can be categorized into:

– type 1: safe for intended viewers and personnel in service and manufacturing activities;
– type 2: safe for intended viewers only (i.e. protective measures are required for users engaged in maintenance, service and manufacturing activities).

Applications of sources that cannot be categorized into either type must be treated in accordance with IEC 60825-1.

The peak wavelength range covered by this technical specification is limited to 400 nm to 700 nm, in accordance with the Class 2-limitation (safety by aversion reactions in the visible spectra range) in IEC 60825-1.

This technical specification covers only sources which are intended to be viewed directly. Indirectly visible sources such as illuminating sources or laserpointers are not covered.

In most cases the selected application group diode emitter sources, which include laser diodes and LEDs will be used. However, throughout this technical specification all sources covered by the scope are included whenever the words "diode emitter" are used.

The objectives of this technical specification are:

– to protect persons from optical radiation arising from products incorporating visible diode emitter sources, such as displays, indicators, electronic signs and signals;
– to lay down requirements for manufacturers and installers, in order that procedures can be established and information supplied to enable correct precautions to be taken;
– to ensure adequate warning of hazards associated with accessible optical radiation from visible sources;
– to reduce the potential for injury by minimizing unnecessary optical radiation, to give improved control of optical radiation through protective features, and to provide safe usage of products by specifying user control measures.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this technical specification. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this technical specification are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.