AS 2211—1991

Australian Standard®

Laser safety

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee SF/19, Personal Protection Against Laser Radiation. It was approved on behalf of the Council of Standards Australia on 12 June 1991 and published on 16 September 1991.

The following interests are represented on Committee SF/19:

Australian Dental Association

Australian Laser Institute

Australian Nuclear Science & Technology Organisation

Australian Radiation Laboratory

Australian Small Business Association

Confederation of Australian Industry

Department of Defence (Commonwealth)

Department of Health, New South Wales

Department of Health, Queensland

Department of Industrial Affairs, Queensland

Department of Industrial Relations & Employment, New South Wales

Department of Labour, Victoria

Health Department, Victoria

Melbourne and Metropolitan Board of Works

Queensland Institute of Technology

Royal Australian College of Ophthalmologists

Safety Institute of Australia

Telecom Australia

The University of Melbourne

Water Board, Sydney

This Standard was issued in draft form for comment as DR 89051.

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First published as AS 2211—1978.
Second edition 1981
Third edition 1991.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY NSW
ISBN 0 7262 7010 5

PREFACE

This Standard was prepared by the Standards Australia Committee on Personal Protection Against Laser Radiation, to supersede AS 2211—1981, *Code of practice for laser safety.*

This edition of the Standard has been substantially rearranged to align closely, in technical content and format, with IEC Publication 825, *Radiation safety of laser products, equipment classification, requirements and user's guide*, as amended by the six months' rule document 76(Central Office)15. This alignment has been possible because—

(a) the amendments in 76(Central Office)15 and the subsequent further decisions taken by IEC TC 76 satisfy many of the Australian objections to IEC Publication 825—1984, and

(b) the Committee believes that alignment with the International Standard will more readily facilitate comparison of the respective requirements for testing and approvals purposes, as well as import and export activities.

This edition also provides for low powered lasers used for survey and alignment tasks in the building and construction industry to be classified as 3B (Restricted) lasers. Although IEC 825 as amended by 76(Central Office)15 does not clearly identify such a classification, it provides identical technical requirements for the manufacture and testing of such lasers, which are identified as limited power (<5 mW) 3B lasers operating in the visible wavelength range. Of particular concern during preparation of this Standard was the different approach taken by US authorities who, by removing the irradiance limit on these lasers, simply allowed them to be covered in the US Federal Regulations by the 3A classification. In determining to follow the IEC approach (in line with Standards Australia policy) the Committee expressed regret that it had not been possible to encourage a truly world-wide adoption of common classification criteria for these lasers.

Other significant technical amendments and format changes incorporated in this edition, including those resulting from the above alignment, include the following:

(i) The textual order of the Standard has been changed to align with IEC 825.

(ii) Text, tables and graphs are presented in the IEC format.

(iii) Extension of the radiant power limits, for wavelengths other than the visible range, for Class 3A lasers. However, the imposition of irradiance limits for this wavelength range ensures that Maximum Permissible Exposures (MPEs) are not exceeded.

(iv) The limiting aperture for Accessible Emission Limits (AELs) from 1400 nm to 10^5 nm and exposure times greater than 0.25 s has been changed to 3 mm and the AELs have been modified accordingly.

(v) Revised medical surveillance specifications.

(vi) Extended examples of calculations.

Attention is also drawn to the supplementary Standard AS 2397—1980, *Guide to the safe use of lasers in the construction industry*, which was prepared as a concise reference appropriate for the use of those visible light lasers used for alignment, levelling, control and survey tasks in the construction industry. It should be noted that although AS 2211 is applicable to all lasers, AS 2397 specifies additional or more stringent requirements considered necessary for those lasers used in the construction industry. It should also be noted that AS 2397 is currently under revision.

Attention is also drawn to specialist software, available through Standards Australia, which assists to readily identify relevant limits and to undertake calculations of the sort listed in Appendix A.

CONTENTS