AS/NZS 4879.1:2008
Reconfirmed 2017

Australian/New Zealand Standard™

Performance of transformers and electronic step-down convertors for ELV lamps

Part 1: Test method—Energy performance

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-041, Lamps and Related Equipment. It was approved on behalf of the Council of Standards Australia on 4 June 2008 and on behalf of the Council of Standards New Zealand on 19 May 2008.
This Standard was published on 30 June 2008.

The following are represented on Committee EL-041:

Australian Electrical and Electronic Manufacturers Association
Australian Greenhouse Office, Department of the Environment and Water Resources
Consumers' Federation of Australia
Electrical Compliance Testing Association
Energy Efficiency and Conservation Authority of New Zealand
Institution of Professional Engineers New Zealand
National Appliance and Equipment Energy Efficiency Committee

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR 07275.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION

OF

AS/NZS 4879.1:2008

Performance of transformers and electronic step-down convertors for ELV lamps
Part 1: Test method Energy performance

RECONFIRMATION NOTICE

Technical Committee EL-041 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 22 November 2016.

Approved for reconfirmation in New Zealand on behalf of the Standards Council of New Zealand on 13 December 2016.

The following are represented on Technical Committee EL-041:

Australian Industry Group
Consumers' Federation of Australia
Department of the Environment and Energy
Electrical Compliance Testing Association
Electrical Contractors Association of New Zealand
Electrical Regulatory Authorities Council
Energy Efficiency & Conservation Authority of New Zealand
IES: The Lighting Society
Joint Accreditation System of Australia and New Zealand
Joint Accreditation System of Australia and New Zealand- New Zealand
Lighting Council Australia
Lighting Council New Zealand
Master Electricians Australia
NSW Fair Trading
Worksafe New Zealand

Australian/New Zealand Standard™

Performance of transformers and electronic step-down convertors for ELV lamps

Part 1: Test method—Energy performance

First published as AS/NZS 4879.1:2008.

Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 8779 7

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Constituted Subcommittee EL-041-08, Lighting Equipment—Energy performance.

The objective of this Standard is to provide industry, consumers, test laboratories, regulators and users of transformers and electronic step-down convertors used with ELV lamps with a test method to determine their energy efficiency. This Standard further specifies requirements for the energy performance mark.

This Standard was prepared in response to the publication of a plan for the regulation of transformers and electronic step-down convertors for ELV lamps under the National Appliance and Equipment Energy Efficiency Program (NAEEEP) in 2005.

It is proposed that this publication be adopted as an IEC Standard soon after its publication.

This Standard draws upon AS/NZS 4665.1, *Performance of external power supplies,* Part 1: *Test method and energy performance mark* .

This Standard consists of two parts. These are:

AS/NZS		
4879	Performance of transformers and electronic step-down convertors for ELV lamps	
4879.1	Part 1:	Test method—Energy performance (this Standard)
4879.2(Int)	Part 2:	Minimum Energy Performance Standards (MEPS) requirements

Part 2 of this Standard specifies Minimum Energy Performance Standards (MEPS) requirements and high efficiency levels for transformers and electronic step-down convertors up to certain ratings.

This Standard is structured to allow common requirements in Australia and New Zealand.

The terms ‘normative’ and ‘informative’ are used to define the application of the Appendix to which they apply. A normative Appendix is an integral part of a standard, whereas an informative Appendix is only for information and guidance.

CONTENTS

Page

FOREWORD

During development of this test method, considerable effort was spent analysing three separate methods, in order to find the one giving the least uncertainty of measurement. The three methods were:

(a) *Method 1* The converter was viewed as a stand-alone unit and its output measured by the use of electrical power measurement equipment when driving incandescent halogen lamp(s).

(b) *Method 2* The converter was viewed as a stand-alone unit and its output measured by a voltmeter to measure its output when driving a near-perfect non-inductive resistor. Output power is then determined by simply measuring output voltage.

(c) *Method 3* The electronic converter was viewed as an integral part of a luminaire. Its efficacy in lumens/watt was then measured.

Method 1 was chosen, aided by the development of a new high frequency power calibration technique developed by the National Measurement Institute of Australia. This technique allows traceable calibration of digital wattmeters or power analysers to the international unit (Watt).

Method 3 was disregarded as converters are often sold separately, thus—

(i) a specific manufacturer's lamp would need to be specified as a reference lamp;

(ii) this lamp would need complex high frequency calibration; and

(iii) lead lengths in an integrating sphere would affect test repeatability (although the converter could be placed in the sphere with the lamp).

Method 2 was discarded as either—

(A) specific construction would need to be specified for the non-inductive resistor; or

(B) the resistor and voltmeter would need complex high frequency calibration.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Interim Standard

Performance of transformers and electronic step-down convertors for ELV lamps

Part 1: Test method—Energy performance

1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies a test method for determining the energy efficiency of magnetic isolating transformers and electronic step-down convertors primarily used or intended to be used with extra-low voltage (ELV) lamps covered in IEC 60357.

The transformers or convertors covered in this Standard have a mains supply input and a single a.c or d.c ELV output. These are referred to as ELV lighting convertors (ELCs) in this Standard.

The ELCs are generally used for Class III luminaires or SELV lighting systems with an output voltage not exceeding 50 V a.c.

1.2 EXCLUSION

This Standard does not cover safety requirements. These are covered separately in AS/NZS 61347.1, AS/NZS 61347.2.2 or AS/NZS 61558.1 and AS/NZS 61558.2.6.

Appendix A includes information on the energy performance mark.

2 REFERENCED DOCUMENTS

The following documents are referenced in this Standard.

NOTE: See Appendix F for additional reading.

AS	
2706	Numerical values—Rounding and interpretation of limiting values
AS/NZS	
61347	Lamp controlgear
61347.1	Part 1: General and safety requirements
61347.2.2	Part 2.2: Particular requirements for d.c. or a.c. supplied electronic step-down convertors for filament lamps (IEC 61347-2-2, Ed 1.2(2006) MOD)
61558	Saety of power transformers, power supply units and similar
61558.1	Part 1: General requirements and tests
61558.2.6	Part 2.6: Particular requirements for safety isolating transformers for general use (IEC 61558-2-26:1997, MOD)
IEC	
60050-300	International Electrotechnical Vocabulary—Electrical and electronic measurements and measuring instruments
60357	Tungsten halogen lamps (non vehicle)—Performance specifications
ISO	
Guide 98	Guide to the expression of uncertainty in measurement (GUM)