

Australian/New Zealand Standard™

**Performance of transformers and  
electronic step-down converters for ELV  
lamps**

**Part 1: Test method—Energy  
performance**

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## **AS/NZS 4879.1:2008**

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.

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The following are represented on Committee EL-041:

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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  
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**RECONFIRMATION**

**OF**

**AS/NZS 4879.1:2008**

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

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## 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

	<i>Page</i>
FOREWORD.....	4
1 SCOPE AND GENERAL .....	5
2 REFERENCED DOCUMENTS.....	5
3 DEFINITIONS.....	6
4 GENERAL CONDITIONS FOR TEST AND MEASUREMENT .....	7
5 COMPATIBILITY WITH ELECTRONIC DIMMERS SWITCHES .....	9
6 TESTS .....	9
7 ENERGY PERFORMANCE MARK.....	13
APPENDICES	
A ENERGY PERFORMANCE MARK.....	14
B DETERMINATION OF UNCERTAINTIES .....	15
C EXAMPLES FOR DETERMINATION OF UNCERTAINTY .....	19
D TEST REPORT .....	37
E SAMPLE TEST REPORT .....	39
F BIBLIOGRAPHY.....	41

## 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	Safety 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)