

Australian/New Zealand Standard™

**Information technology equipment—
Energy performance of computer
monitors**

**Part 2: Minimum energy performance
standards (MEPS) and energy rating
labels**



AS/NZS 5815.2:2013

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee TE-001 and TE-021, Safety of Electronic Equipment and Energy Performance for Audio/Video, Information and Communication Technology and Associated Equipment. It was approved on behalf of the Council of Standards Australia on 17 January 2013 and on behalf of the Council of Standards New Zealand on 23 January 2013.

This Standard was published on 8 February 2013.

The following are represented on Committee TE-001 and TE-021:

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
Consumer Electronics Suppliers Association
Curtin University of Technology
Department of Climate Change and Energy Efficiency
Electrical Compliance Testing Association
Electrical Regulatory Authorities Council
Energy Efficiency and Conservation Authority of New Zealand
Engineers Australia
Free TV Australia
Ministry of Economic Development, New Zealand
Telstra Corporation

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 Standards may also be withdrawn.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.saiglobal.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

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 DR3 AS/NZS 5815.2.

Australian/New Zealand Standard™

Information technology equipment— Energy performance of computer monitors

Part 2: Minimum energy performance standards (MEPS) and energy rating labels

First published as AS/NZS 5815.2:2013.
Reissued incorporating Amendment No. 1 (January 2014).

COPYRIGHT

© Standards Australia Limited/Standards New Zealand

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Australia) or the Copyright Act 1994 (New Zealand).

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, Private Bag 2439, Wellington 6140.

ISBN 978 1 74342 343 1

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Technical Committee TE-001, Safety of Electronic Equipment and TE-021, Energy Performance for Audio/Video, Information and Communication Technology and Associated Equipment.

This Standard incorporates Amendment No. 1 (January 2014). 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 designers, manufacturers, importers, test laboratories, regulators and users of computer monitors with the minimum energy performance standards (MEPS) and energy rating label requirements for computer monitors.

A1 | The energy labelling and MEPS requirements set out in the legislative instruments for computer monitors came into force in Australia and New Zealand on 1 October 2013.

This Standard is published with the approval of Australian and New Zealand regulatory authorities and is structured to be suitable for reference in regulations.

A1 | This series consists of the following parts:

AS/NZS

5815 Information technology equipment—Energy performance of computer monitors

5815.1 Part 1: Methods of measurement of energy performance

5815.2 Part 2: Minimum energy performance standards (MEPS) and energy rating labels

The terms ‘normative’ and ‘informative’ are used in this Standard 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>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE.....	5
1.2 EXCLUSIONS.....	5
1.3 APPLICATION	6
1.4 REFERENCED DOCUMENTS.....	7
1.5 DEFINITIONS.....	7
SECTION 2 DETERMINING THE MINIMUM ENERGY PERFORMANCE OF COMPUTER MONITORS	
2.1 GENERAL.....	9
2.2 ON MODE MEPS POWER REQUIREMENTS	9
2.3 STANDBY ACTIVE MODE POWER REQUIREMENTS	10
2.4 OFF MODE POWER REQUIREMENTS	10
SECTION 3 DETERMINATION OF ENERGY RATING FOR COMPUTER MONITORS	
3.1 MEASURING CONDITIONS	11
3.2 PROJECTED ANNUAL ENERGY CONSUMPTION (PAEC).....	11
3.3 DETERMINATION OF STANDBY ACTIVE (SLEEP) MODE	11
3.4 COMPARATIVE ENERGY CONSUMPTION (CEC).....	11
3.5 ENERGY EFFICIENCY LABEL VALIDITY.....	12
SECTION 4 DETERMINATION OF STAR RATING INDEX AND REQUIREMENTS FOR ENERGY LABELS FOR COMPUTER MONITORS	
4.1 STAR RATING INDEX (SRI)	13
4.2 LABEL TYPE AND SIZE	14
4.3 LABEL POSITIONING AND ATTACHMENT.....	14
APPENDICES	
A FORMAT OF APPLICATION FOR REGISTRATION OF COMPUTER MONITORS FOR MEPS	17
B PHYSICAL LABEL SPECIFICATION FOR COMPUTER MONITORS.....	22
C SAMPLE TEST REPORT	29

A1

FOREWORD

In Australia, specific product requirements are set out in a legislative instrument called the Greenhouse and Energy Minimum Standards (Computer Monitors) Determination. The Determination may contain different requirements to those specified in this Standard and, if any conflict arises, the Determination takes precedence over this Standard.

All computer monitors within the scope of the Determination that are supplied, offered for supply, or commercially used in Australia are required by the Determination to be registered, unless they are covered by the grandfathering provisions of the *Greenhouse and Energy Minimum Standards Act 2012*; this will, in general, be products that met the legal requirements in place at the time that they were manufactured or imported, but do not meet the requirements of the current Determination. Section 5 of this Standard specifies registration requirements; however, it should be noted that the approved application form may contain different requirements to those specified in Section 5. Further information and the latest version of the Determination are available on the Energy Rating website: <http://www.energyrating.gov.au>.

In New Zealand, requirements from this Standard have been incorporated by reference into New Zealand regulations. Specific details may be obtained from the Energy Rating website: <http://www.energyrating.gov.au>, and the Energy Efficiency and Conservation (EECA) website: <http://www.eeca.govt.nz>.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Information technology equipment—Energy performance of computer monitors****Part 2: Minimum energy performance standards (MEPS) and energy rating labels**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies the minimum energy performance standards (MEPS) and energy rating label requirements for computer monitors. The power consumption of the computer monitors is measured according to the current version of AS/NZS 5815.1.

A1

NOTES:

- 1 In Australia, specific product requirements are set out in a legislative instrument called the Greenhouse and Energy Minimum Standards (Computer Monitors) Determination. The Determination may contain different requirements to those specified in this Standard and, if any conflict occurs, the Determination takes precedence over this Standard.
- 2 In New Zealand, requirements from this Standard have been incorporated by reference into New Zealand regulations.

1.2 EXCLUSIONS

This Standard does not apply to the following:

- (a) Electronic displays used exclusively for digital signage or digital picture frames.
- (b) Electronic displays used exclusively for advertising.
- (c) *High performance electronic displays* An electronic display using in plane switching (IPS) or vertical alignment (VA) technology and offering—
 - (i) native pixel resolution greater than or equal to 2.3 (1920 × 1200) MP; and
 - (ii) viewing angle greater than or equal to 178° (at contrast ratio of min. 1:10); and
 - (iii) colour gamut greater than or equal to 72% of NTSC; and
 - (iv) diagonal size greater than or equal to 61 cm (24 inches).
- (d) *Specialized electronic displays* Intended for use primarily in commercial, professional fields, engineering, medicine, graphic arts, etc., and not intended for sale to the general public. Examples include the following:
 - (i) Those defined as professional products that are in the scope of EN 55103.
 - (ii) Medical products as set out in the IEC 60601 series.

- (iii) Those that comply with PS 3.1—2011, the Digital Imaging and Communications in Medicine (DICOM) Standard (for medical electronic displays). Products used in diagnostic medical applications that do not have a power state meeting the definition of Standby Active (Sleep) Mode (e.g. FDA's specifications for medical devices that require luminance to be maintained over the lifetime of the electronic displays among other requirements) that prevent such electronic displays from implementing power management capabilities.
- (iv) Products that can display content through installed serial digital interface (SDI) signal path/s including medical electronic displays intended by manufacturers to be used in the diagnosis, treatment, or monitoring of a patient.
- (e) *Combined products* Products with video electronic display capability and other functionality including one or more of the following:
 - (i) Built-in or integrated networking functionality, the circuitry for which cannot be physically separated or switched independently from the electronic display component. Examples of such functionality include, but are not restricted to, video-conferencing capability, VoIP capability, and PCoIP capability. The inclusion of just a camera, microphone and/or loudspeakers is not considered a network function.
 - (ii) Integrated PCs, tablet computers, slates, electronic readers, smart phones, and personal digital assistants.
- (f) *Public displays* Products intended for electronically displaying content to multiple users, such as in public settings, conference rooms, etc., with one or more of the following characteristics:
 - (i) The product has a screen size of 81 cm (32 inches) or above.
 - (ii) The product is marketed as a product that is intended to be viewed by more than one user at a time.
 - (iii) The product is not intended for desktop use.
 - (iv) The product is not supplied with a means of allowing it to be freestanding.
 - (v) The product requires installation on a permanent basis (it cannot be easily moved without tools being used).
- (g) *Large displays* Devices with a display size greater than 152 cm (60 inches) diagonally.
- (h) *Products classified, marketed and/or sold as televisions or TVs* Includes products with an integrated television tuner, products with a computer input port (e.g. VGA) that are marketed and sold primarily as televisions, and component televisions.

1.3 APPLICATION

This Standard shall be read in conjunction with AS/NZS 5815.1.

1.4 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

2706 Numerical values—Rounding and interpretation of limiting values

AS/NZS

5815 Information technology equipment—Energy performance of computer monitors

5815.1 Part 1: Methods of measurement of energy performance

62087 Power consumption of audio, video and related equipment

62087.1 Part 1: Methods of measurement

EN

55103 Electromagnetic compatibility—Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use

IEC

60601 Medical electrical equipment (series)

62087 Methods of measurement for the power consumption of audio, video and related equipment

60050-300 International Electrotechnical Vocabulary—Electrical and electronic measurements and measuring instruments

IEEE

100 The Authoritative Dictionary of IEEE Standards Terms

Governments of Australia and New Zealand

TTMRA—Trans-Tasman Mutual Recognition Arrangement

National Electrical Manufacturers Association (NEMA)

PS 3.1—2011 Digital Imaging and Communications in Medicine (DICOM) Part 1: Introduction and Overview

A1

Government of New Zealand

Energy Efficiency (Energy Using Products) Regulations 2002

1.5 DEFINITIONS

For the purpose of this Standard, the definitions given in AS/NZS 5815.1, IEC 60050-300 and IEEE 100, and those below, apply.

1.5.1 Automatic brightness control (ABC)

The self-acting mechanism that controls the brightness of a display as a function of ambient light.

1.5.2 Computer monitor

A commercially-available product with a display screen and associated electronics, often encased in a single housing, that as its primary function displays visual information from a computer, workstation or server via one or more inputs, such as VGA, DVI, HDMI, or IEEE 1394, or through a wireless connection.

Common computer monitor technologies include liquid crystal display (LCD), light emitting diode (LED), cathode-ray tube (CRT), and plasma display panel (PDP).

1.5.3 Family of models

In general, computer monitors do not have families of models for energy consumption purposes. Multiple models may be included as a family if—

- (a) they are marketed as in the same class or category of product;

- (b) they have the same energy performance characteristics (i.e. use the same declared data or characteristics on which compliance with MEPS and/or labelling is assessed);
- (c) they have identical relevant physical characteristics (e.g. overall size, and any other dimensions or component arrangement) which might affect performance;
- (d) they rely on the same test report data (and use those reported data for purposes required by this Standard); and
- (e) they are not more than 10 individual models*.

1.5.4 Measured quantities

Quantities measured using AS/NZS 5815.1.

1.5.5 Off mode

The operational mode of a computer monitor that is—

- (a) connected to a power source;
- (b) engaged by a mechanical power switch; and
- (c) not providing any function.

1.5.6 On mode

The operational mode of a computer monitor that—

- (a) is connected to a power source;
- (b) has all mechanical (hard) power switches turned on; and
- (c) is performing its primary function of producing an image.

1.5.7 Registration

1.5.7.1 Registration in Australia

The completion and submission to an Australian regulator of the prescribed application form demonstrating that the product complies with the relevant MEPS and/or the energy rating label requirements.

1.5.7.2 Registration in New Zealand

The completion and submission to the EECA of the prescribed application form demonstrating that the product complies with the relevant MEPS and/or the energy rating label requirements.

1.5.8 Standby active (sleep) mode

The operational mode of a computer monitor that—

- (a) is connected to a power source;
- (b) has all mechanical (hard) power switches turned on; and
- (c) has been placed into a low-power mode by receiving a signal from an externally connected device (e.g. a computer, game console, or set-top box) or by cause of an internal function such as a sleep timer or occupancy sensor.

1.5.9 Trans-Tasman Mutual Recognition Arrangement (TTMRA)

The current version of the agreement between the Government of New Zealand and the Commonwealth, State and Territory Governments of Australia.

* The Australian GEMS regulator has advised that the limit of 10 models can be increased for a given application by applying and stating the grounds for such an increase.

SECTION 2 DETERMINING THE MINIMUM ENERGY PERFORMANCE OF COMPUTER MONITORS

2.1 GENERAL

Unless otherwise stated, numbers shall be rounded and recorded to four significant figures in accordance with AS 2706.

Power measurements shall be performed according to AS/NZS 5815.1. On mode power measurements shall be rounded to one decimal place. Off mode and standby active mode power measurements shall be rounded to two decimal places. The test voltage and frequency shall be 230 V and 50 Hz respectively.

For a computer monitor that is powered by an external power supply (EPS), the computer monitor shall be tested with the supplied EPS. The power measurements and other related measurements required by this Standard are those of the combination of the computer monitor and the EPS.

2.2 ON MODE MEPS POWER REQUIREMENTS

2.2.1 MEPS requirements for computer monitors that do not have ABC enabled by default

For computer monitors where ABC is not enabled by default, the on mode (P_{avg}) power consumption shall be equal to or less than the values specified in Table 1. On mode power consumption shall be as measured in AS/NZS 5815.1 using the static test pattern methods.

TABLE 1
MINIMUM ENERGY PERFORMANCE REQUIREMENTS

Computer monitor category	Maximum on mode power consumption, W
Diagonal screen size <76 cm Screen resolution ≤ 1.1 MP	$P_{\text{O(MEPS)}} = (6 \times \text{Screen resolution in MP}) + (0.007\,75 \times \text{Screen area in cm}^2) + 3$
Diagonal screen size <76 cm Screen resolution >1.1 MP	$P_{\text{O(MEPS)}} = (9 \times \text{Screen resolution in MP}) + (0.007\,75 \times \text{Screen area in cm}^2) + 3$

2.2.2 MEPS requirements for computer monitors that have ABC enabled by default

For computer monitors where ABC is enabled by default, on mode (P_{avg}) power shall be as calculated in Equation 2.1 and shall be equal to or less than the values specified in Table 1.

$$P_{\text{avg}} = (0.8 \times P_{\text{h}}) + (0.2 \times P_{\text{l}}) \quad \dots 2.1$$

where

P_{avg} = the average on mode power consumption in watts, rounded to the nearest tenth of a watt

P_{h} = the on mode power consumption in high ambient lighting conditions

P_{l} = the on mode power consumption in low ambient lighting conditions.

NOTE: The formula assumes the display will be in low ambient lighting conditions 20% of the time.

2.3 STANDBY ACTIVE MODE POWER REQUIREMENTS

Standby active (also known as sleep) shall be equal to or less than 2 W.

2.4 OFF MODE POWER REQUIREMENTS

Off mode shall be equal to or less than 1 W.

A mechanical switch, where provided, shall be actuated to put the device into off mode. If there is more than one such switch, the most readily available switch shall be used. If there is no mechanical power off switch, this requirement does not apply.