

Australian/New Zealand Standard™

**Information technology equipment—  
Energy performance of computers**

**Part 2: Minimum energy performance  
standards (MEPS) for computers**



## **AS/NZS 5813.2:2012**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee TE-001, Safety of Electronic Equipment. It was approved on behalf of the Council of Standards Australia on 25 June 2012 and on behalf of the Council of Standards New Zealand on 26 June 2012.

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*This Standard was issued in draft form for comment as DR AS/NZS 5813.2.*

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Australian/New Zealand Standard™

## Information technology equipment— Energy performance of computers

### Part 2: Minimum energy performance standards (MEPS) for computers

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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee TE-001, Safety of Electronic Equipment.

*This Standard incorporates Amendment No. 1 (March 2013). 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 computers with minimum energy performance standard (MEPS) requirements.

This Standard was prepared in response to the publication of a plan for the regulation of computers under the Equipment Energy Efficiency Program (E3) in 2004. This Standard draws upon the test method and Typical Energy Consumption calculations or maximum power allowances by operational mode specified in the ENERGY STAR® Program Requirements for Computers: Version 5.2 (ENERGY STAR® V5.2 Computer Specification) published by the United States' Environmental Protection Agency (EPA) in 2010. This Standard also draws upon definitions and terms in International Electrotechnical Commission (IEC) draft standard 62623-post CD Rev Nov 2. This Standard is based on but not equivalent to the test and calculation methods specified in the ENERGY STAR® V5.2 Computer Specification and the IEC draft standard 62623-post CD Rev Nov 2.

This series consists of two parts. These are:

### AS/NZS

- 5813 Information technology equipment—Energy performance of computers
- 5813.1 Part 1: Methods of measurement of energy performance
- 5813.2 Part 2: Minimum energy performance standards (MEPS) for computers (this Standard)

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 for information and guidance.

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## FOREWORD

Regulatory authorities have advised that it is intended to mandate this Standard in regulations in Australia and New Zealand no earlier than 1 October 2012.

Regulators advise that transitional arrangements, also known as grandfathering, exist for products that are manufactured in Australia or imported into Australia prior to the MEPS implementation date. Such products can continue to be sold without registration or MEPS compliance until stocks are exhausted. Products that are manufactured in Australia or imported after the MEPS implementation date must hold a valid registration at the time of sale which indicates compliance with the relevant MEPS requirements. Further information can be found in the Administrative Guidelines at the <http://www.energyrating.gov.au> website.

Administrative arrangements during the transition period may vary. Although it is expected that regulators will be able to call the requirements of this Standard into regulations by 1 October 2012, due to legislative variations in different jurisdictions, not all regulators may have regulations in place by that date. Suppliers should contact their regulator to obtain detailed requirements with respect to the application date for registration and holding of records.

## STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

### Australian/New Zealand Standard

### Information technology equipment—Energy performance of computers

#### Part 2: Minimum energy performance standards (MEPS) for computers

## SECTION 1 SCOPE AND GENERAL

### 1.1 SCOPE

This Standard specifies the minimum energy performance standard (MEPS) requirements for computers as defined in AS/NZS 5813.1.

This Standard also specifies the following:

- (a) Classification of computers into categories associated with different MEPS requirements.
- (b) Classification of discrete graphics processing units.
- (c) Typical energy consumption (TEC) calculation methods for desktop, integrated and notebook computers.
- (d) Definition of base computer configurations and additional TEC allowances for non-base configurations.
- (e) Maximum power allowances by operational mode for small-scale servers.
- (f) Minimum power supply efficiency levels.
- (g) Maximum times for power management settings.
- (h) Information required for registration of computers for MEPS.

The scope includes computers supplied with operating systems, such as FreeDOS and Linux, that do not include the ability to activate computer and computer monitor sleep modes.

### 1.2 EXCLUSIONS

This Standard does not apply to hand-held computing devices such as personal digital assistants (PDAs) or palmtop computers, smart phones, game consoles, hand-held gaming devices, thin clients, blade personal computers (blade PCs), slate computers, workstations, mobile workstations, category D – high end computers or computer servers that are not small-scale servers.

### 1.3 APPLICATION

This Standard shall be read in conjunction with AS/NZS 5813.1.

## 1.4 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS/NZS

4665 Performance of external power supplies (series)

5813 Information technology equipment—Energy performance of computers

5813.1 Part 1: Methods of measurement

5814 Information technology equipment—Energy performance of internal power supplies

5814.1 Part 1: Methods of measurement

IEC

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

IEEE

100 The Authoritative Dictionary of IEEE Standards Terms

Bellcore

TR-NWT-000332 Reliability Prediction Procedure for Electronic Equipment, Issue 6, 1997

## 1.5 DEFINITIONS

For the purpose of this Standard, the definitions contained in AS/NZS 5813.1, IEC 60050-300 and IEEE 100 and the following apply.

### 1.5.1 Base configuration

The hardware configuration for each computer category. This is used to define base MEPS levels and additional capability allowances where hardware differs from the base configuration.

### 1.5.2 Capability adders

Additional allowances to typical energy consumption (TEC) requirements of MEPS over the base configurations for desktop, integrated and notebook computers. Capability adders apply to over base components such as system memory, hard disk drives, solid state drives, television tuners, audio cards and discrete graphics processing units.

### 1.5.3 Deemed-to-comply computers

Typically these are short-run custom-built computers for a single client.

### 1.5.4 Duty cycle

The percentage of time a computer spends in each of its individual operational modes.

### 1.5.5 Duty cycle components

#### 1.5.5.1 Active (work) component ( $T_{work}$ )

The percentage of time the EUT is in the active (work) mode.

#### 1.5.5.2 Long idle component ( $T_{idleL}$ )

The percentage of time the EUT is in the long idle mode.

#### 1.5.5.3 Off component ( $T_{off}$ and $T_{offWoL}$ )

The percentage of time a computer is in the off mode.

$T_{off}$  represents the off time with wake on LAN disabled.

$T_{offWoL}$  represents the off time with wake on LAN enabled.

#### 1.5.5.4 On component ( $T_{on}$ )

The percentage of time the EUT is in the on mode.

The  $T_{on}$  duty cycle is equal to  $T_{work} + T_{idleS} + T_{idleL}$ .

#### 1.5.5.5 Short idle component ( $T_{idleS}$ )

The percentage of time the EUT is in the short idle mode.

#### 1.5.5.6 Sleep component ( $T_{sleep}$ and $T_{sleepWoL}$ )

The percentage of time the EUT is in the sleep modes.

$T_{sleep}$  represents the off time with wake on LAN disabled.

$T_{sleepWoL}$  represents the off time with wake on LAN enabled.

### 1.5.6 Enterprise channels

Supply channels normally used by large and medium-sized businesses, government organizations, educational institutions, and other organizations purchasing computers used in managed client/server environments.

### 1.5.7 Family of models

A group of computers typically sharing one chassis/motherboard combination that contains many possible hardware configurations.

A range of computer models, manufactured in multiple configurations or styles, may be registered as a product 'family' or series, in either of the following cases:

- (a) All computers are built on the same platform and are identical in every respect except for housing, colour or brand name. In this case, the family of models may be identified and tested based on a single representative model.
- (b) If a computer model is manufactured in multiple configurations, they may be treated as a family of models which is represented by the highest power configuration available in the family, i.e. rather than treating each and every individual configuration as a single model. In this case, the highest power configuration would consist of the highest power processor, the maximum memory configuration, the highest power GPU, etc. The family of models would be identified and tested based on the representative highest power configuration.

### 1.5.8 Game consoles

A stand-alone computer-like device whose primary use is to play video games. Game consoles use a hardware architecture based in part on typical computer components (e.g. processors, system memory, video architecture, optical and/or hard drives, etc.). The primary input for game consoles are special hand-held controllers rather than the mouse and keyboard used by more conventional computer types. Game consoles are also equipped with audio visual outputs for use with televisions as the primary display, rather than (or in addition to) an external or integrated display. These devices do not typically use a conventional PC operating system, but often perform a variety of multimedia functions such as: DVD/CD playback, digital picture viewing, and digital music playback.

### 1.5.9 Mobile workstation

A high-performance, single-user portable computer typically used for graphics, CAD, software development, and financial and scientific applications among other computer intensive tasks.

The following characteristics apply to mobile workstations:

- (a) Be marketed as a mobile workstation.

- (b) Be qualified by at least two independent software vendors product certifications; these certifications can be in process, but need to be completed within three months of qualification.
- (c) Be open graphics library (open GL) certified.
- (d) Have a discrete GPU greater than or equal to G3.
- (e) Contain a docking station interface.

#### **1.5.10 Model number**

A unique descriptor that applies to a specific hardware/software configuration (i.e. operating system, types or processors, memory, graphics processing unit, etc.) that is either predefined, or a configuration that is selected by the customer.

#### **1.5.11 Network proxy—Base capability**

To maintain addresses and presence on the network while in a low power mode, the system handles IPv4 Address Resolution Protocol (ARP) and IPv6 Neighbour Solicitation/Neighbour Discovery (NS/ND).

#### **1.5.12 Network proxy—Full capability**

While in a low power mode, the system supports base capability, remote wake and service discovery/name services.

#### **1.5.13 Network proxy—Remote wake**

While in a low power mode, the system is capable of remotely waking upon request from outside the local network. This includes base capability.

#### **1.5.14 Network proxy—Service discovery/name services (SD/NS)**

While in a low power mode, the system allows for advertising host services and network name. This includes base capability.

#### **1.5.15 Registration**

##### **1.5.15.1 *Registration in Australia***

The completion and submission to an Australian regulator of the prescribed application form demonstrating that the product complies with the relevant energy performance Standards and/or the Standard's mandatory energy performance labelling requirements.

##### **1.5.15.2 *Registration in New Zealand***

The completion and submission to the Energy Efficiency and Conservation Authority (EECA) of the prescribed application form demonstrating that the product complies with the relevant energy performance Standards and/or the standard's mandatory energy performance labelling requirements.

#### **1.5.16 Regulators**

Entities set out in the list of regulators maintained on the [www.energyrating.gov.au](http://www.energyrating.gov.au) website for the purposes of registration.

#### **1.5.17 Slate computer**

A type of computer lacking a physical keyboard, relying solely on touchscreen input, having solely a wireless network connection (e.g. Wi-Fi, 3G), and primarily powered from an internal battery (with connection to the mains for charging, not primary powering of the device). They are considered hand-helds, not notebook computers, and as such are outside the scope of this Standard.

### 1.5.18 Thin client

An independently-powered computer that relies on a connection to remote computing resources to obtain primary functionality. Main computing (e.g. program execution, data storage, interaction with other Internet resources, etc.) takes place using the remote computing resources. Typically thin clients are devices with no rotational storage media integral to the computer and are intended for location in a permanent location (e.g. on a desk) and not for portability.

### 1.5.19 Trans Tasman Mutual Recognition Agreement (TTMRA)

The agreement dated 1 May 1998 between the Commonwealth of Australia, the State of New South Wales, the State of Victoria, the State of Queensland, the State of Western Australia, the State of South Australia, the State of Tasmania, the Australian Capital Territory, the Northern Territory of Australia and New Zealand.

### 1.5.20 Typical energy consumption (TEC)

Represents the typical annual energy consumption of a computer, calculated using measured power for each operational mode scaled by an annual duty cycle, expressed as kilowatt-hours (kWh).

### 1.5.21 Workstation

A high-performance, single-user computer typically used for graphics, CAD, software development, and financial and scientific applications among other computer intensive tasks.

The following characteristics apply to workstations:

- (a) Be marketed as a workstation.
- (b) Have a mean time between failures (MTBF) of at least 15 000 hours based on either Bellcore TR-NWT-000332, issue 6, 12/97 or field collected data.
- (c) Support error-correcting code (ECC) and/or buffered memory.

In addition, a workstation has three of the following six optional characteristics:

- (i) Have a supplemental power support for high-end graphics (i.e., PCI-E 6-pin 12 V supplemental power feed).
- (ii) System is wired for greater than  $\times 4$  PCI-E on the motherboard in addition to the graphics slot(s) and/or PCI-X support.
- (iii) Does not support Uniform Memory Access (UMA) graphics.
- (iv) Includes five or more PCI, PCIe or PCI-X slots.
- (v) Capable of multi-processor support for two or more processors (must support physically separate processor packages/sockets, i.e., not met with support for a single multi-core processor).
- (vi) Be qualified by at least two Independent Software Vendor (ISV) product certifications; these certification can be in process but must be completed within three months of qualification.

## SECTION 2 CLASSIFICATION OF COMPUTERS

### 2.1 CLASSIFICATION OF DESKTOP COMPUTERS AND INTEGRATED COMPUTERS

#### 2.1.1 General

For the specification of MEPS requirements, desktop computers and integrated computers have four classification categories (A, B, C and D) as defined below.

#### 2.1.2 Category A

All desktop computers and integrated computers that do not meet the definition of Category B, Category C or Category D below shall be classified as Category A.

#### 2.1.3 Category B

To be classified in Category B, desktop computers and integrated computers shall have—

- (a) two physical processor cores; and
- (b) greater than or equal to two gigabytes (GB) of system memory.

#### 2.1.4 Category C

To be classified in Category C, desktop computers and integrated computers shall have greater than two physical processor cores and shall be configured with a minimum of one of the following two characteristics:

- (a) Greater than or equal to two gigabytes (GB) of system memory.
- (b) A discrete GPU.

#### 2.1.5 Category D

To be classified in Category D, desktop computers and integrated computers shall have greater than or equal to four physical processor cores and shall be configured with a minimum of one of the following two characteristics:

- (a) Greater than or equal to four gigabytes (GB) of system memory.
- (b) A minimum of a category G3 GPU.

#### 2.1.6 Category D – high end

Category D – high end desktop and integrated computers have all the following characteristics:

- (a) Greater than or equal to four physical processor cores.
- (b) A discrete GPU greater than or equal to category G5 with a data width (frame buffer width) greater than or equal to 192 bits.
- (c) System memory greater than or equal to six gigabytes (GB).
- (d) Greater than or equal to two channels of memory.
- (e) Greater than or equal to two PCIe slot single-ended points of ×8 or ×16 configuration.
- (f) A power supply unit of greater than or equal to 500 W nameplate output rating.