AIIA submission on the Draft Report on the Greenhouse and Energy Minimum Standards 2012 (GEMS) Act

1. About AIIA

The Australian Information Industry Association (AIIA) is the peak national body representing Australia's information technology and communications (ICT) industry. Since establishing 40 years ago, the AIIA has pursued activities aimed to stimulate and grow the ICT industry, to create a favourable business environment for our members and to contribute to the economic imperatives of our nation. Our goal is to "create a world class information, communications and technology industry delivering productivity, innovation and leadership for Australia".

Our membership includes global brands such as Apple, EMC, Google, HP, IBM, Intel, KPMG, Microsoft, Deloitte, and Oracle; international companies including Telstra, Optus; national companies including Data#3, TechnologyOne and Oakton Limited; and ICT SME's such as Silverstone Edge and Zen Enterprise.

2. Introduction

Thank you for the opportunity to make a submission on the Draft Report on the GEMS Act. This submission outlines AIIA's members' concerns and difficulties with respect particularly to the product registrations clause 5.3 of the **INDEPENDENT REVIEW OF THE GREENHOUSE AND ENERGY MINIMUM STANDARDS (GEMS) ACT 2012 DRAFT REPORT NOVEMBER 2018** ("the Independent Review"). This AIIA submission focuses on the following:

1. the two clauses 5.3.2 (the same clause number appears in two separate clauses in the review) covering: "Large *number of models*" on page 44 and "*GEMS product unique identifiers*" on Page 46,
2. outlines our industry's negative, time consuming and costly experiences with product registrations of multiple model numbers to date,
3. reviews the impact of product registrations guidelines issued by the GEMS regulator to industry registrants,

4. considers the regulator's advice in the context of the Greenhouse and Energy Minimum Standards Act 2012, and
5. proposes possible solutions to the difficulties faced by industry with the multiple family model identifiers registration processes.

3. Background

Personal computers, laptop computers, small scale servers and the like are subject to the *Greenhouse and Energy Minimum Standards (Computers) Determination 2013* (the GEMS computers determination), which is a legislative instrument made under the *Greenhouse and Energy Minimum Standards Act 2012* (the GEMS Act). The GEMS Act is currently under review and the final draft review report has been circulated to industry for comment, closing on 21 December 2018.

In accordance with the GEMS Act, there is a legislated requirement for computers specified in the product classes in the GEMS Computers Determination to comply with minimum energy performance standards as specified "*in section 4.3 of AS/NZS 5813.2:2012*" as tested in accordance with sections 2 and 3 of AS/NZS 5813.1:2012. Section 12 of the Act also requires products covered by a GEMS Determination to be registered on the GEMS register. For clarity, the Determination also lists certain products which are explicitly not covered, and it also states that there is no requirement for GEMS labelling of subject computers.

4. The problems

a. Regulator's communication to industry

In June 2018, the GEMS regulator wrote to industry advising "*that the registrations for many of the brands of computers on the market have not been completed correctly*", and that the problem was:

> *A number of current registrations, across a range of brands, specify a family model name and/or number but do not appear to list all individual model variants (i.e. specific to the hardware or software combination of the individual unit) within that family of models.*

Refer to Appendix A for the complete correspondence, which was received by industry which included AIIA members.

b. Previous understanding

The practice of industry as previously agreed with and practiced by the regulator was that products in a family which were covered by the same compliance test report could be classified for registration as a family of models under a unique family model or models' identifier. Variations of the product identifiers beyond the family models' identifiers which did not affect compliance with the technical specifications required by the GEMS Act and the GEMS Determination were not necessary to be explicitly listed. This is industry's understanding of Section 12 (2) of the GEMS Act, and understood to be the intention of Section 9 – GEMS (Computers) Determination and AS/NZS 5813.2:2012 clause 1.5.7 - Family of models. All these sections are quoted in the regulator's correspondence in Appendix A below.

The regulator now appears to be interpreting Section 40 more narrowly as meaning the following:

> *each specific hardware/software combination that a registrant wishes to be covered by a family registration must be separately identified in the registration application with the relevant model number.*

However, industry believes that Section 40 should be read in conjunction with and is subordinate to Section 12 (2) which permits products to be identified as the same model if they meet the same specifications as they relate to the requirements of the Act. In industry's view, products which are covered by the same test report can be considered to be part of the same family, therefore the family identifier or high-level model number identified in the test report should be sufficient unique model identification for registration on the GEMS register.

c. New interpretation issues

There are several reasons why the regulator's correspondence and new interpretation of the Act is seriously problematic for industry. For computers, while each model in the family will have the supplier's family model identifier tying it to a specific hardware base and compliance report, extensions to the model identifier may be used to represent which specific hardware and software combinations (e.g. operating systems or custom application set builds) apply to a specific build. Marketing identifiers or warranty or even customer order identifiers often form part of the information marked along with the equipment's "model" identifier. The point is, a full model identifier marked on products for marketing purposes goes far beyond the minimum requirements of Section 12 of the Act, therefore Section 40 should not apply to every possibility of codes in an identification system.

Another difficulty is these extensions to the numbering system in a family of models may continue to evolve through the life of the product marketing cycle, as new marketing and warranty promotions come and go, and as new customers require different standard feature sets for a corporation or even marking with customer logos, asset coding and tracking systems and many other reasons that have nothing to do with compliance with the technical requirements of the Act or Determination.

In short: so long as a unique family model identifier or high-level model identifiers are present for the purposes of Section 12 of the Act, which neither the Determination nor AS/NZS 5183.2 or even Section 40 can modify, additions and extensions to the unique model identification should be of no consequence for registration identification purposes.

d. Arbitrary limits

Another difficulty faced by a too narrow interpretation of Section 40, taken out of the context of Section 12 of the Act, is that the Computers Determination, Section 9 (2) specifies that:

> *a model cannot be a member of a family of models if its inclusion in that family would lead to the family consisting of more than 10 models.*

The problem here is that there may be very many unique computer marketing model identifiers, as discussed above, covering the range of models the computers are sold under. There may be dozens of identifiable marketing configurations available in the same product family, yet the Computers Determination limits registration to a maximum of ten unique numbers per registration, and the advice from the regulator is that all unique model numbers, even if used for marketing purposes not compliance, must be individually listed in the registry. This forces suppliers to apply multiple times for registration of essentially the same product and pay registration fees and submit duplicate test reports and wait more time for approval for all their models. Very often more models are added in the future under a numbering scheme extension which weren't included in the original set, for marketing and promotional reasons as previously described. Having to apply for registration of future models at later times before the

models can be sold causes serious business disruption when those model identifiers have nothing to do with compliance but delays getting products to market, and consequential costs of lost sales opportunities.

For smaller companies with limited and fixed product lines, this might not be such a huge problem, but for the larger PC manufacturers with far more variable configurations it's a very large issue, and in many cases the customer generally doesn't even know in advance what the impact on their configuration and options choices their selections may have on the model numbering of the product they receive.

e. Other jurisdictions

According to information provided to AIIA, Australia is the only place having this unique model identifier registration requirement. Other jurisdictions all accept computer registration at the platform level. This includes Energy Star, China Energy and Korea Energy as examples. The following web link shows how Energy Star registers computer models:

https://www.energystar.gov/productfinder/product/certified-computers/results?scrollTo=78&search_text=&type_filter=Notebook&brand_name_isopen=1&minimum_processor_speed_filter=&processor_name_isopen=&minimum_system_memory_filter=&markets_filter=United+States&zip_code_filter=&product_types=Select+a+Product+Category&sort_by=brand_name&sort_direction=asc¤tZipCode=&page_number=0&lastpage=0&brand_name_filter=HP&brand_name_filter=Lenovo

It would be enormously helpful if the Australian regulator was to take note of the Energy Star simplified model identification system in the Energy Star database and allow Australian industry the latitude to follow the lead of these major economies in identifying registered products.

f. Examples

The way the model identifier system works for suppliers and too quickly grows out of hand for registration purposes is illustrated in the hypothetical examples below:

ABC Testing Corp issues a test report number ABC123 to a supplier, which lists a test configuration for a product model or several models of a family of products which may have many optional hardware and software features and configurable arrangements. The test lab assesses the worst-case compliance configuration and bases its test results on that specific configuration. Other configurations are determined to more likely than not also meet the technical specifications if the maximum case configuration complies with the specifications.

In this hypothetical but typical example, the computers under test form a family called "MaxPute" (a fictional name just for this example), and all share the same planar board and power supply but come in a range of processor speeds (say AMD or Core i5 and Core i7) and form factors (say, desktop or tower for example, but more could be possible such as rack mount), and the software is determined by the lab not likely to impact compliance (e.g. Windows or Linux or bare metal). So that is essentially six unique hardware configurations and possible six unique devices which can be tested under the same test report. For discussion purposes we'll call the hardware platforms the following:

FIGURE 1 MAXPUTE HARDWARE BASE PLATFORMS

1. DSKAM
2. DSKCI5
3. DSKCI7
4. TWRAM
5. TWRCI5
6. TWRCI7

Note: they could be any other non-descriptive designation instead, this is just for illustration.

Adding the software options to the above hardware, we can end up with the following 18 models just for the above hardware in the MaxPute family, which doesn't change compliance under the test report:

FIGURE 2 MAXPUTE HARDWARE/SOFTWARE CONFIGURATIONS

1. DSKAMBM
2. DSKCI5BM
3. DSKCI7BM
4. TWRAMBM
5. TWRCI5BM
6. TWRCI7BM
7. DSKAMWN
8. DSKCI5WN
9. DSKCI7WN
10. TWRAMWN
11. TWRCI5WN
12. TWRCI7WN
13. DSKAMLX
14. DSKCI5LX
15. DSKCI7LX
16. TWRAMLX
17. TWRCI5LX
18. TWRCI7LX

As can be seen, the model numbering grows exponentially as options and features are added to the base hardware. Changing combinations and amounts of memory, storage, cache, mounting means, to the hardware/software list above will grow the model list enormously, without affecting compliance, and that is just the tip of the iceberg of options when considering peripheral options as well. Adding end-user application software packages either stock-standard or user-selected to the list will grow the model numbering exponentially yet again. Offering all these models with different warranty periods, and/or back to base versus on-site warranties, plus choice of colours and customer logos – none of which will affect compliance, makes it become seriously difficult and expensive to list all the possible marketing model variations in a registration system. These permutations far exceed the apparently arbitrary limit of 10 in the Computers Determination, and are not required by Section 12 of the Act.

There are several different ways the supplier can offer these systems for sale. These may include any or all the following or other different methods:

- Build to Plan (BTP), where the supplier chooses several or many pre-configured systems, builds them in anticipation of orders and only offers those pre-configured systems for sale, or
- Build to Order (BTO), where the supplier offers the base models plus all the options and features for sale separately and permits the customer to select exactly what they want to have in the system, and doesn't assemble the system until they receive the customer's specifically-configured orders, or
- A combination of BTP and BTO where the supplier offers a limited range of partially pre-configured systems (possibly BTP) built on the base system and permits the user a more limited range of options and features to add to these systems for themselves.

All the above methods lead to very many unique models offered for sale. Different identification systems are used by different manufacturers or suppliers to track for themselves

just what each individual build entails. There is no common system, so suppliers need the flexibility to choose their own identification systems for their own business needs.

Suppliers respectfully request the regulator to accept the manufacturers' product identification schemes, and to trust and respect the manufacturer's sound judgement in selecting appropriate product grouping for registration which manufacturers have acquired through long years of experience and expertise for worldwide energy regulations compliance.

5. A way forward

If the Australian model number registration system were to be modelled along the lines of family of models similar to our international partner Energy Star, it would be very helpful for industry and reduce what appears to be a regulatory burden that does not appear to be limited to meeting the objectives of the GEMS Act.

AIIA members believe that the Act has some latitude in this regard. However, the regulator does not appear to be making use of that latitude and appears to be asking for registrations of a vast range of model numbers which have nothing to do with saving energy or greenhouse gas emissions. This can be addressed under Horizon 1, short term improvements which do not require legislative change. In this case, the GEMS regulator has an opportunity to straightaway apply the Draft Report Recommendation 11 "*to engage stakeholders to improve the usability of unique identifiers for industry and compliance officers*". In any case, if changes to the Act are necessary to provide clarity in streamlining the process, AIIA would be happy to be consulted with the drafting of future legislation to find a better way than we have now.

a. The Independent Review on these matters

The independent Review of the GEMS Act discusses the issues of a "Large number of Models" in clause 5.3.2 on Page 44. The problems raised by the AIIA members in the above discussion have not been adequately addressed nor fully recognised in the Independent Review paper and needs further consideration and consultation with industry about the difficulties expressly faced by the ICT industry today.

Clause 5.3.2 on Page 46 discusses Unique Identifiers (note this is a different clause to Page 44 but has the same clause number). AIIA supports the positions expressed by industry mentioned on Page 47 of the Review that:

> *the GEMS registration system should be able to accommodate industry practice, and that effective post-market compliance and enforcement activity should be the focus, rather than additional compliance costs*

If a clear identifier cannot be readily located and traceable back to the product registration, rather than compliance officers spending resources to determine whether a product is properly registered, the compliance officers should be able to simply ask the supplier to provide the required link to the appropriate registration record and show how that record applies to the product in question. This was the case before the new interpretation/enforcement of the GEMS Act section 12 and 40 and section 9 of GEMS Determination concerning the unique identifier.

b. AIIA specific responses to Recommendations 10-16

Recommendation 10 – supplier level registration

> ***The Commonwealth Government examine the appropriate use of supplier level registration.***

Horizon 2: AIIA supports and encourages supplier level registration as an optional alternative to equipment level registration (that is, both systems can work together at the supplier's

choice). There are precedents for this in other regulatory frameworks in Australia. An example is for telecommunications equipment and radio equipment compliance as mandated by the Australian Communications and Media Authority (ACMA), where suppliers must register their supplier details on the electrical equipment safety scheme (EESS) database (no charge) in order to use the regulatory compliance mark (RCM), and they must keep auditable records to show their products comply with mandatory standards set by the ACMA. In this regulatory framework there is no requirement to register products; only the brands supplied are listed. Suppliers can be asked to present their compliance records within ten days of request by the regulator, or face fines for non-compliance. A similar arrangement could work well in the GEMS regulations once the details are worked out for responsibilities and sanctions for non-compliance.

Recommendation 11 – usability of unique identifiers

The GEMS Regulator engage with industry stakeholders to improve the usability of unique identifiers for industry and GEMS compliance officers.

AIIA will be happy to work with the GEMS regulator to develop usability frameworks for product identifier systems, while maintaining suppliers' freedom to use any identification system of their own choice. As described earlier in this document, once the GEMS regulator's compliance officers understand how the model identification system chosen by any supplier operates, they should be able to decode the identifiers on a product label for compliance purposes and this should be relatable to an applicable GEMS registration if a product registration pathway is chosen. If a supplier registration pathway has been chosen instead, then the GEMs compliance officers should be able to request the supplier to provide evidence of compliance for a specific product with a marked identifier within a reasonable time frame.

Recommendation 12

The Commonwealth Government amend the Act to allow registration 'at the point a sale is confirmed' for clearly defined customised products.

In AIIA members' experience it can take a substantial period for the registration of products to be approved on the GEMS registration web site. It appears to be impractical to require registration of customised products at the point of sale in this case, because the customised product can't be offered for sale unless it is registered. Section 17 in the present GEMS Act prohibits the "*supply or offer to supply a GEMS product if … the model of the product is not registered…*", so a customised model can't even be offered for sale without prior registration today. This illustrates why it is impractical to list every model of computer where a large range of options is available because very many options can be unique to each purchase order. That is why there is a need for flexibility in permitting a supplier-defined approach as outlined above. Before registration at the point of sale can be enabled, a consequential change to the Act appears to be required so it could be supported by a Determination, and a process of almost instant approval is needed on the database against a compliant base model in order to permit the sale of the customised device to proceed. Certainly, it would impose an ungainly delay to normal commercial procedures. If Recommendation 10 for supplier registration is accepted as an alternative, that could resolve this difficulty.

Recommendation 13

The Commonwealth Government examine the joint registration arrangements with the EESS for other GEMS products covered under the Act.

The regulatory schemes of other regulators are fundamentally different from the registration system under the GEMS Act. It is difficult for AIIA members to see how combining the regulatory arrangements into a common national registration database would be of overall benefit to industry, consumers or the national economy. A single point of registration is also potentially a single point of failure. Instead, AIIA supports and encourages the further streamlining and ongoing development of the GEMS registration system to improve the overall user experience

and reduce the cost and time it takes to bring products to market. All time savings are important as they reduce the costs of lost sales opportunities associated with product launch regulatory delays.

Recommendation 14

The Commonwealth Government consider the development of a single entry point / central government portal to serve all government product registration obligations.

AIIA believes such a portal could be very useful (as distinct from Recommendation 13) as it could simplify the process for suppliers to locate all the product and supplier registration systems from multiple jurisdictions in one place without having to actually reproduce or combine disparate systems into one. The my.gov.au web site already works like this, providing single-portal access to multiple but different government services for individuals.

Recommendation 15

The GEMS Regulator identify opportunities to further streamline and co-ordinate registration processes to ease the regulatory burden on industry.

Horizon 1: Remove the ten models limit

AIIA suggests that this review provides the opportunity to apply this recommendation by removing the arbitrary restriction of ten models in a family, and permitting supplier-defined identification systems to be used in family model registration, so long as the compliant base model identifiers are individually identifiable for the family. This could be undertaken by amendment to the Determination and so could form part of Horizon 1 activities.

Horizon 1: Limiting exposure for large numbers of models

AIIA notes in the draft review Section 5.3.2 on Page 44 indicates that:

> *Some stakeholders … argued that families with a large number of models were too risky given that if one model was non-compliant, all models in the family could be removed from the market*

This could be mitigated if suppliers were optionally permitted to register families in subgroups of their choosing. To illustrate in the case of the Figure 1 example above, the supplier might optionally be permitted to register each base model in the family separately so that if later there is a problem with a sub-model, it wouldn't reflect on the whole product family. That way they can limit the exposure to one specific hardware platform even though that platform is part of the overall family. The GEMS Act Section 4 says the following:

> *A model cannot be covered by more than one registration in relation to a particular product class.*

However, from the above it can be inferred that listing separate sub-streams of a family of models is not prohibited by the Act.

Recommendation 16

The Commonwealth Government amend the GEMS Act to extend the grandfathering provisions that currently apply for non-compliant products to the registration obligation for compliant products.

In the GEMS Act, Section 16 subsection (2)(c) already provides grandfathering arrangements for products imported into Australia or manufactured in Australia prior to a Determination coming into force. It also permits a Determination to further extend the grandfathering period beyond that time, and Section 31 describes how the Determination may specify such a limited extended grandfathering. In such cases it does not impose a limit on how long a grandfathered product may continue to be sold in the market. However, Section 17 of the Act still requires products to be registered before they can be sold, but it doesn't exclude grandfathered products from registration, so there appears to be a disagreement about

requirements for grandfathered products between Sections 16 and 17 in the GEMS Act. This needs to be resolved so that products grandfathered under Section 16 are not required to be registered under Section 17.

Appendix A: Advice from the GEMS regulator to industry

From: E3.Compliance
Sent: Tuesday, 26 June 2018 2:02 PM
To: (**REDACTED**)
Cc: E3.Compliance <E3.Compliance@environment.gov.au>
Subject: GEMS Computer Registration Requirements [SEC=UNCLASSIFIED]

Dear (**REDACTED**),

The Department of the Environment and Energy has recently become aware that the registrations for many of the brands of computers on the market have not been completed correctly.

For your background, a number of the registrations do not meet the requirement to list unique model identifiers (model numbers) in the registration. A number of current registrations, across a range of brands, specify a family model name and/or number but do not appear to list all individual model variants (i.e. specific to the hardware or software combination of the individual unit) within that family of models. While the family of models definition given at clause 1.5.7 of AS/NZS 5813.2:2012 would appear to allow this practice, suggesting that a family can be identified and tested on the basis of the highest consuming member of the family, this approach is not actually consistent with the registration requirements of the GEMS Act.

Section 40 of the GEMS Act makes it clear that for a model to be covered by a registration, its model number must be entered in the GEMS Register against that registration. AS/NZS 5813.2:2012 defines 'model number' for the purposes of computers to be "a unique descriptor that applies to a specific hardware/software configuration (i.e. operating system, types or processors, memory, graphics processing unit, etc.)" (see clause 1.5.10). The result of this is that each specific hardware/software combination that a registrant wishes to be covered by a family registration must be separately identified in the registration application with the relevant model number. While each model must identified separately to be validly registered, test results are still only required for the highest consuming member of the family.

Example: A laptop manufacturer has a family of models registered with a family name '1000' but within that family has many variants with specific hardware/software combinations, including one that has the model number 1000-1140-i5.

However, the registration only lists the following:

Family Name: 1000

Model Number: 1000

This is incorrect as it does not list the model number – 1000-1140-i5 – for its individual model variants that belong to the family.

Correctly registered, it would be:

Family Name:1000

Model Number: 1000-1140-i5

For other hardware/software combinations to be covered by the registration, they would also have to be identified separately in this manner.

In recognition of the high turnover nature of computer models and to minimise the impact on registrants, the Department will not be requiring existing registrations to be amended but will

be accepting only correct registrations from the 8th June 2018 onwards. I have included excerpts of the relevant sections/clauses from the GEMS Act, Determination and AS/NZS 5813.2:2012 below, with the relevant passages highlighted.

If you have any questions they can be directed to E3.Compliance@environment.gov.au and a compliance officer will make contact to assist with the required information.

Kind Regards,

Michael Wolter

Senior Compliance Officer | Energy Efficiency Compliance Section

Appliance & Building Energy Efficiency Branch | Energy Security & Efficiency Division

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E3 Equipment Energy Efficiency

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Section 12 – GEMS Act 2012

12 Models of GEMS products to be registered in relation to product classes

(1) A model of a GEMS product in a particular product class must be registered under Part 5 in relation to that product class, unless the model is exempt from registration in relation to that product class as specified in a GEMS determination (see section 30).

Note 1: If the model is in more than one product class, the model will need to be registered under Part 5 in relation to each of those product classes.

Note 2: Offences apply in relation to supplying a GEMS product, or using a GEMS product for a commercial purpose, if the model of the product is not registered (see Part 3).

(2) Two or more GEMS products are of the same model if, and only if:

(a) the products have the same technical specifications, in so far as those specifications relate to the extent to which the products comply with the requirements of this Act; and

(b) either:

(i) there is a single brand or trademark used in supplying or offering to supply the products; or

(ii) if there is no such brand or trademark—the products have the same manufacturer; and

(c) there is a single unique identifier (the ***model identifier***) used in supplying or offering to supply the products, or manufacturing the products, to identify the products as being of that model.

Note 1: The expression ***this Act*** has an extended meaning (see the Dictionary in section 5).

Note 2: A model may be registered in relation to a product class even if there is only one product of that model (see subsection 41(2)).

(3) A single registration may cover 2 or more models in relation to a product class only if those models are in the same family of models in accordance with the GEMS determination for that product class (see section 28).

(4) A model cannot be covered by more than one registration in relation to a particular product class.

Section 40 – GEMS Act 2012

40 Information to be entered in GEMS Register

Information that must be entered in GEMS Register

(1) The following information must be entered in the GEMS Register for each registration of a model or models of GEMS products in relation to a product class:

(a) the product class;

(b) the day the registration comes into force;

(c) the day the registration ceases to be in force;

(d) a unique identifier for the registration;

(e) the model identifier for each model covered by the registration;

(f) the brand or trademark (if any) used in connection with supplies of those models;

(g) the names, with the contact details referred to in subsection 42(2), of the registrant and contact person (or persons) in relation to the registration;

(h) whether the registration is suspended;

(i) details to identify the relevant GEMS determination against which the model was registered as referred to in subsection 43(1), including the day the determination was made;

(j) if the model is taken to be registered against a replacement determination in accordance with subsection 36(2)—that fact and details to identify the replacement determination, including the day the replacement determination was made;

(k) if the model's registration is affected by a replacement determination—that fact and details to identify the replacement determination, including the day the replacement determination was made;

(l) any information specified in the regulations in relation to that product class.

Other information that may be entered in GEMS Register

(2) The GEMS Regulator may enter in the GEMS Register any other information he or she considers appropriate.

Varying information in the GEMS Register

(3) The GEMS Regulator must vary information contained in the GEMS Register as soon as practicable after becoming aware that the information is no longer correct.

Section 9 – GEMS (Computers) Determinations 2013

9 Families of models

(1) The circumstances in which two or more models of product in a single product class covered by this Determination are in the same family of models are the circumstances mentioned in clause 1.5.7 of AS/NZS 5813.2:2012.

(2) However, a model cannot be a member of a family of models if its inclusion in that family would lead to the family consisting of more than 10 models.

Australian Standard/New Zealand Standard 5813.2:2012

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.

1.5.10 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