

EQUIPMENT ENERGY EFFICIENCY PROGRAM

Performance Verified

The results of the first one thousand verification tests undertaken in Australia & New Zealand between 1991 and 2010 in support of energy efficiency regulations for electrical appliances

April 2011



A joint initiative of Australian, State and Territory and New Zealand Governments



DISCLAIMER

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Prepared by Mark Ellis and Associates

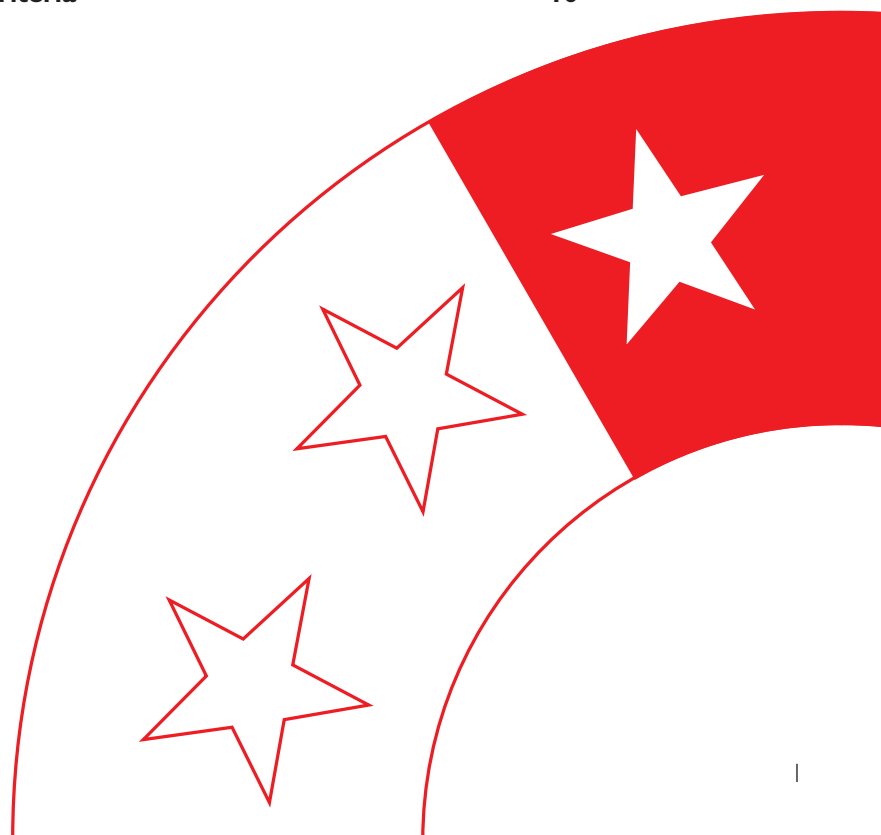


Mark Ellis & Associates

PO Box 109 Wagstaffe NSW 2257
P: +61 (0) 2 4360 2931 M: +61 (0) 424 264 014
E: mark@energyellis.com

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Glossary

The following terms and definition are used in this report:

- Check test** Also known as a verification test. This type of test is usually undertaken by an accredited laboratory and is used to prove the performance of a product with regard to its energy consumption in accordance with a specified test methodology.
- Compliance** Defined as the actions of a program participant that are in accordance with program requirements. Where a participant or product does not meet these requirements, they are said to be non-compliant.
- E3 Committee** The Equipment Energy Efficiency Committee comprising officials from the Commonwealth, State and Territory government agencies and representatives from New Zealand. The Committee manages the E3 energy efficiency program for equipment and appliances in Australia and New Zealand. Australia and New Zealand have a joint forward workplan for MEPS and labelling measures.
- Energy Labelling** The use of a label to describe the energy performance of a product.

- Energy Rating** The use of scale to rank the energy performance of similar types of products, often taking the form of alphabetical or numerical scale.
- MEPS** Minimum energy performance standards. Mandatory requirements applying to energy-using equipment and appliances.
- NATA** National Association of Testing Authorities, Australia
- Registration** The lodging of information through a centralised process. For products included in the scope of the E3 MEPS and Energy Labelling programs it a requirement that all such products offered for sale in Australia are registered. The registration process records details of the product supplier; attributes of the product including claimed energy performance and information to enable traceability.
- Standard** A protocol describing the methodology for testing the performance of a product. Often published either by a national or international standards body, or a industry organisation.

This report presents the results of 1,000 laboratory tests conducted between 1991 and 2010 undertaken to verify the performance of appliances and equipment regulated for energy efficiency in Australia and New Zealand. The two relevant types of regulatory programs are Minimum Energy Performance Standards (MEPS) and Mandatory Energy Labelling, both of which are part of the Equipment Energy Efficiency (E3) program.

The E3 program maintains consistency between participating jurisdictions and is managed by the E3 Committee, which comprises officials from the Commonwealth, state and territory government agencies and government representatives from New Zealand. The Committee reports to other government structures and is ultimately directed by the Ministerial Council on Energy (MCE), comprised of Energy Ministers from all jurisdictions.

Under the relevant jurisdiction's legislation all products within the scope of energy labelling and MEPS regulations must be registered and meet the specified performance requirements. In the case of labelling, products are also required to display the correct label indicating the product's performance. Some individual products have additional requirements.

Amongst other tasks, the E3 Committee administers a monitoring, verification and enforcement program to maximize compliance with energy efficiency regulations and ensure that the overall efficiency goals of the program are being met. These activities are based on practices developed in other countries and fields, including environmental programs, and are designed to raise the perceived risks of non-compliance by stakeholders in the E3 Program. As such it follows the principles of deterrence theory:

"Deterrence theory... maintains that there must be a credible likelihood of detecting violations, swift, certain, and appropriate sanctions upon detection; and a perception among the regulated firms that these detection and sanction elements are present" (Zaelke, 2005)

Activities undertaken by the E3 Committee to monitor compliance include:

- Aiding compliance through education, stakeholder forums and other communication activities;
- Maintenance of a registration database and on-line registration facility (energyrating.gov.au);
- In-store surveys to check that the correct labels are being displayed¹;
- Checks to ensure that products on the market are registered²; and
- Check testing.

Check testing or verification testing, is undertaken according to the methodology specified by a test standard or protocol and is the only means to confirm whether individual models meet the performance requirements of MEPS and that energy labels indicate the correct level of performance.

Check testing provides several important functions with respect to the energy efficiency regulatory program:

- It helps to ensure that the projected energy and greenhouse gas savings are delivered;
- It safeguards the integrity of the program, maintaining consumer and industry confidence in the energy performance labels; and
- It protects the investment made by manufacturer's and product suppliers producing compliant equipment from being undercut by non-compliant products. (MEA, 2010)

¹ See for example: <http://www.energyrating.gov.au/library/details201101-aircon-labelling-survey.html>

² See for example: <http://www.energyrating.gov.au/library/details200910-labelling-compliance-survey.html>

Table 1: Electric appliances and equipment check tested for compliance with energy efficiency regulations, 1991- 2010

PRODUCT	MEASURE	
	Year (to be) implemented/ revised (Australia)	
	MEPS	Labelling*
Single-phase air conditioners	2004, 2006 (2011)	ML: 1992, 2000, 2010
Three-phase air conditioners	2001, 2010 (2011)	VL: 2001, 2010
Refrigerator Display Cabinets	2004	-
Distribution Transformers	2004	-
Electric Motors (Three-phase)	2001, 2006	-
Electric Water Heaters	1999, 2005	-
Linear fluorescent ballasts	2003	VL
Linear fluorescent lamps	2004	VL
Clothes dryers	-	ML: 1989, 2000
Clothes washers	-	ML: 1990, 2000
Dishwashers	-	ML: 1988, 2000
Refrigerators	1999, 2005	ML: 1986, 2000, 2010
Freezers	1999, 2005	ML: 1986, 2000, 2010

Measures: MEPS – minimum energy performance standards; ML- Mandatory Labelling; VL- Voluntary Labelling

1.1 Appliances and equipment regulated for energy efficiency in Australia and New Zealand

Nationally consistent regulations for energy efficiency have been applied to electric appliances or equipment in Australia since the early 1990s and in New Zealand since 2002. Verification testing has been undertaken on 11 major categories of residential and commercial equipment since 1991 to check compliance with the regulations identified in Table 1. Details of the implementation date and subsequent updates for each regulation are provided.

1.2 Description of the check testing process

The check testing process comprises a stage 1 test (also known as the screen test) performed on one sample of the model. This sample is generally independently purchased (usually through a retail outlet), paid for by the regulatory authority and tested by a laboratory accredited for check testing. All testing is undertaken in accordance with the requirements of the relevant Australian/ New Zealand Standard identified in the regulation.

If the model is found to be non-compliant the supplier has the choice of either cancelling the registration for the model or proceeding to stage 2 check testing. Stage 2 involves the testing of either two further units (where the failure relates to performance standards) or three units (where failure relates to a 'supplier declaration' i.e. claims on labels etc), paid for by the registration holder. The registration holder has up to 15 working days to provide written details and

a timetable for stage 2 check testing. The actual units to be tested in stage 2 are randomly selected from the stock by a representative of the regulatory authority.

Only NATA³ or other laboratories accredited by bodies with a mutual recognition agreement with NATA, and with a registration that permits the laboratory to issue test reports for the test in question, are accredited to undertake check testing.

The check testing process is described in more detail in Appendix 1, extracted from the Administrative Guidelines that are publicly available and were updated in 2005⁴. This supplements the testing and cancellation procedures set out in relevant state and territory legislation.

1.3 Check testing product selection criteria

If tests were to be conducted on a random sample of products available in the marketplace, it would be expected that the majority of tests would confirm compliance with program requirements. Since the cost of each test may run to many thousands of dollars, the number of products that can be check tested using the limited funds available will comprise only a small sample. It is therefore a more efficient use of public funds to target products that have an above average likelihood of failure and, by publicly highlighting instances of non-compliance, raise the perceived risk of detection amongst all product suppliers (MEA, 2010).

³ National Association of Testing Authorities

⁴ <http://www.energyrating.gov.au/pubs/admin-guidelines.pdf>

As a result, although the E3 check testing program aims to cover most major categories and types of regulated appliances and equipment, individual models are not randomly selected from the stock of models sold, but are chosen according to a set of criteria. The criteria are based on established 'risk factors' that indicate that a product has a higher probability of failure compared to the market, and are shown in Appendix 2 and published on the public website at: <http://www.energyrating.gov.au/checktest-criteria.html>

These factors are summarised in the following points:

- Suppliers and models with a demonstrated record of check testing non-compliance because of the likelihood of a continuation of such historical trends.
- Where a third party, such as competitors, consumers, consumer groups or regulatory agencies, provide evidence of non-compliance, for example the results of in-house or independent laboratory tests.
- Products that appear as new brands on the market or from suppliers that do not have any check testing track record.
- Models tested in previous years of the check test program are excluded from any further testing unless specific evidence becomes available to suggest that a re-test is warranted.

Amongst products selected according to 'risk factors', products that are likely to have the greatest adverse impact on energy and greenhouse gas savings are prioritised for check testing. These include models belonging to the following groups:

- Models with high volumes of sales because of their greater potential to impact on energy usage as compared to models with low sales volumes.
- Models with the highest claims for energy efficiency (eg. high star ratings) because of the market's higher expectations with respect to the performance of these models as compared to models with low ratings.
- Newer models will normally be given preference when considering models for check testing because of their potential to remain on the market for a longer period as compared to older models.

2 One thousand check tests

2.1 Annual distribution of tests

The following sections detail the results of the first 1,000 check tests undertaken between 1991 and 2010. This does not include subsequent check tests undertaken in 2010 and standards development testing used in development of regulations. Standards development testing has been extensive including, for example in 2008, a joint program with other Asia-Pacific countries to test the performance of approximately 4,000 compact fluorescent lamps⁵.

The number of stage 1 check tests undertaken each year has varied considerably, as shown in Figure 1. While this is partially explained by changing budget allocations, the fluctuation may also be exaggerated because some tests have been contracted in one year but the results finalised in the following year. It should be noted that even with a consistent budget, the number of tests conducted each year will vary according to mix of products tested, due to the variation between the per unit test costs for different product categories. For example, the test for an individual commercial refrigerator may cost more than five thousand dollars, while an external power supply test is likely to be only a few hundred dollars.

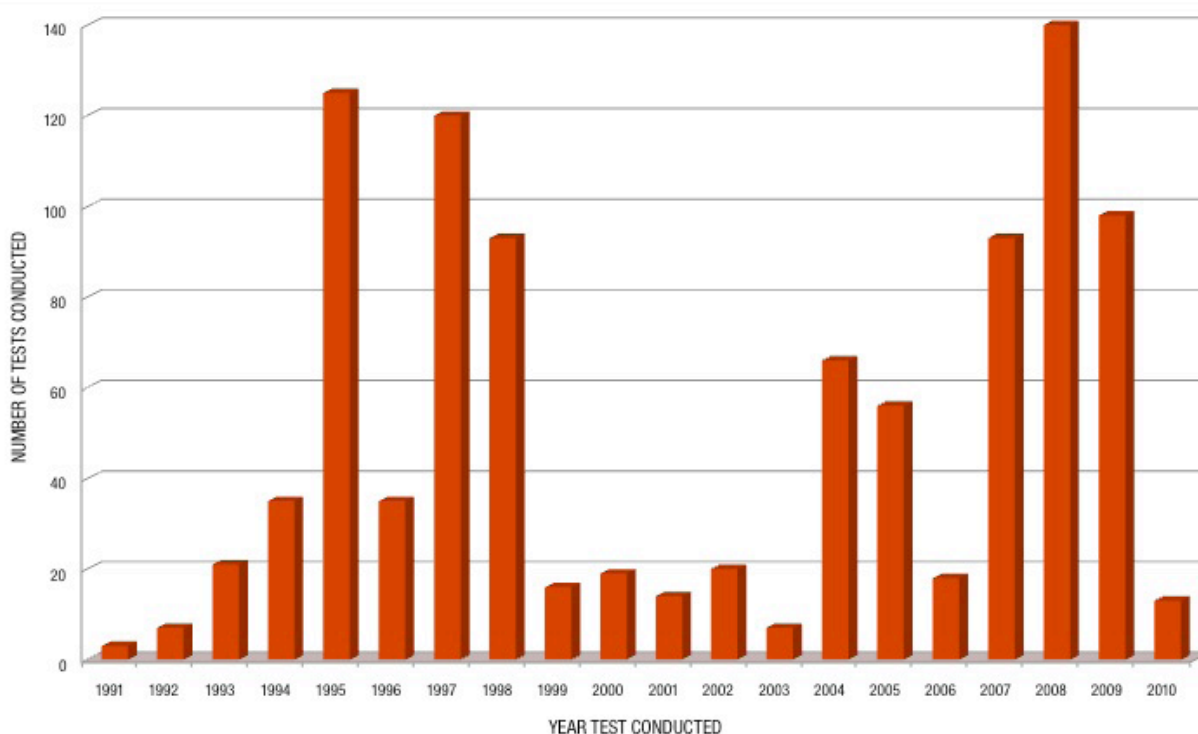
The past five years has seen considerable expansion in the check test program, particularly compared with the previous five-year period, to the highest level since the commencement of the national program (see Figure 2).

The need for increased testing is driven by a corresponding growth in the number of regulated product categories and the number of individual products registered, which have increased considerably over the past ten years. This is indicated by Figure 3 that shows the number of models registered as required by MEPS and labelling regulations from 2002 to 2010.

2.2 Distribution of tests by appliance category

65% of all check tests have been conducted on refrigerators and freezers, air conditioners, and clothes washers, which were amongst the first products to be regulated. The distribution of all check tests by appliance category is shown in Figure 4.

Figure 1: Annual number of stage 1 check tests completed, 1991-2010



Note: 2010 data covers only part of the year.

⁵ See Report: <http://www.energyrating.gov.au/pubs/2008-aceee-lamp-phaseout-investigations.pdf> and www.asiapacificpartnership.org/pdf/TestingforQuality_CFLReport2010Apr.pdf

Figure 2: Five-yearly number of screen tests completed, 1991-2010

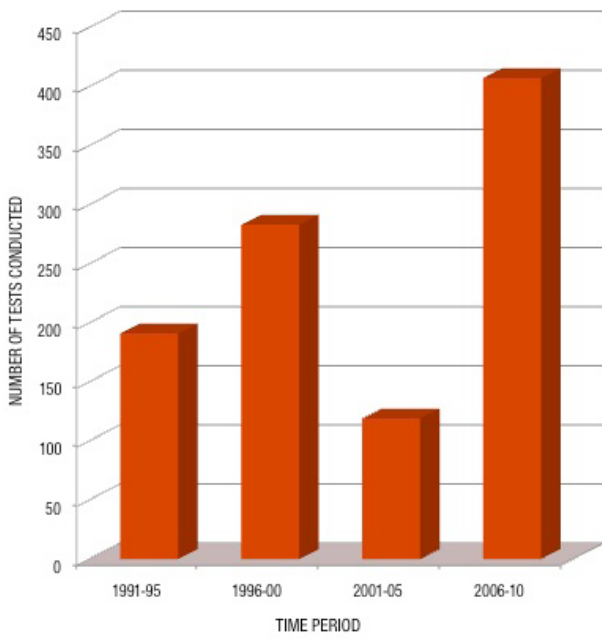


Figure 3: Product registrations for MEPS and labelling (Harrington, 2010)

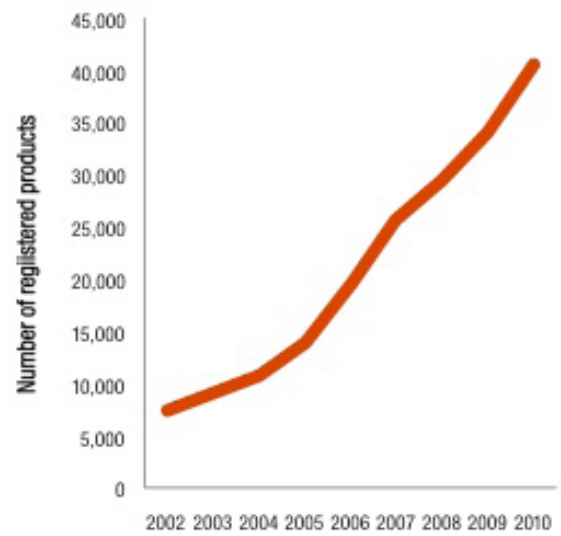
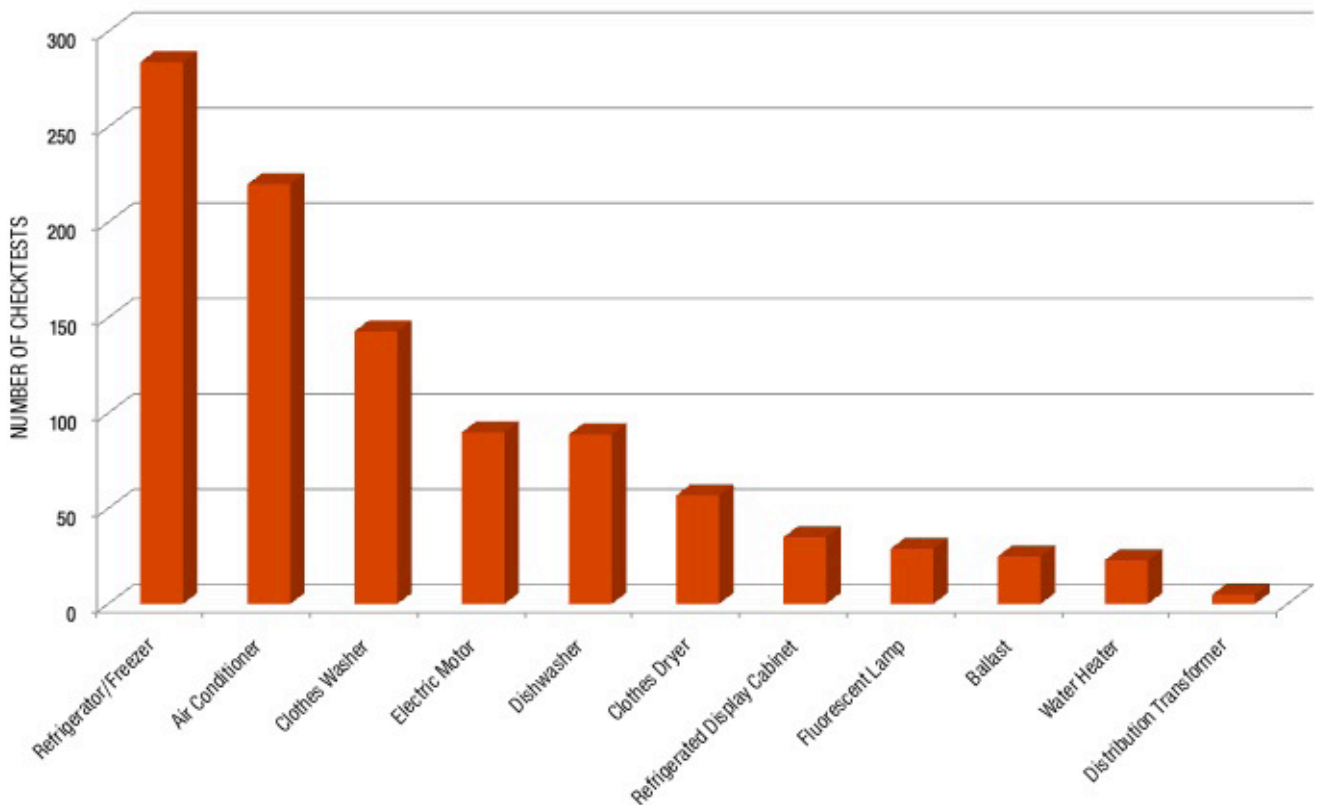


Figure 4: Total number of check tests conducted by appliance category, 1991-2010



3 Test results

3.1 Stage 2 compliance

Of the 1,000 appliances tested, 73% were found to meet the energy performance requirements contained in energy efficiency regulations, and the registration of 207 (21%) models was cancelled by regulators.

For an additional 1% of cases, action by regulators included the referral of three products for cancellation or to the Australian Competition and Consumer Commission (ACCC). A further four failed products were found to be older stock imported or manufactured prior to the introduction of new regulations and allowed to be sold under grandfathering provisions.

In response to the test results, suppliers either withdrew or corrected the registration details; or re-registered a total of 39 (4%) products.

22 (2%) failed tests are either still awaiting resolution, the registration has expired or were found not be registered at the time of testing. These results are shown in Figure 5.

As noted in section 1.3, these results should not be confused with the overall level of compliance in the stock of regulated appliances, since they result from the selection of products with an above average likelihood of non-compliance.

3.2 Stage 2 compliance by appliance category

There is considerable variation in the pass rate of stage 2 tests between each product category, ranging from 58% to 100%.

Categories with a pass rate in excess of 90% include:

- Distribution transformers (100%).
- Fluorescent lamps (97%).
- Electric motors (94%).
- Ballasts (92%).

Categories of products with a pass rate below the overall average of 72% include:

- Air conditioners (58%).
- Dishwashers (67%).
- Refrigerators & freezers (69%).
- Clothes washers (72%).

These results are shown in Table 2 and Figure 6.

Figure 5: Summary of check test results, 1991-2010

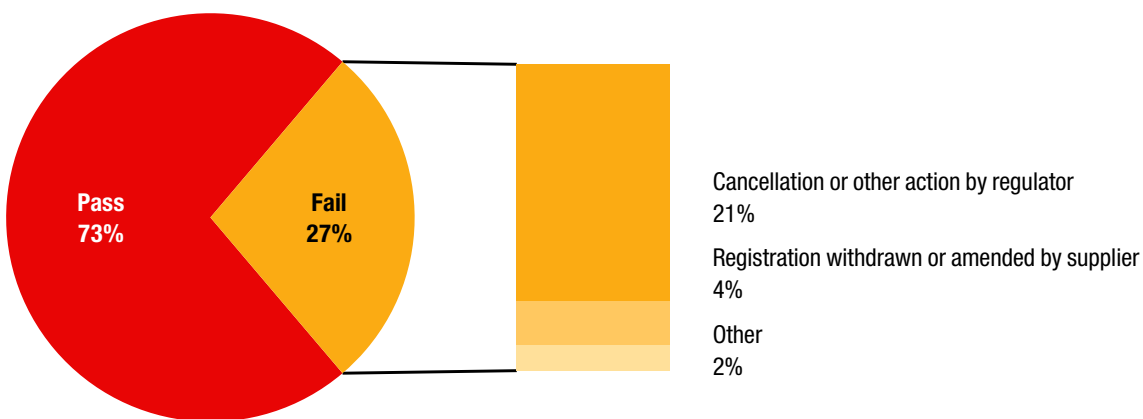


Figure 6: Stage 2 test results by product category, 1991-2010

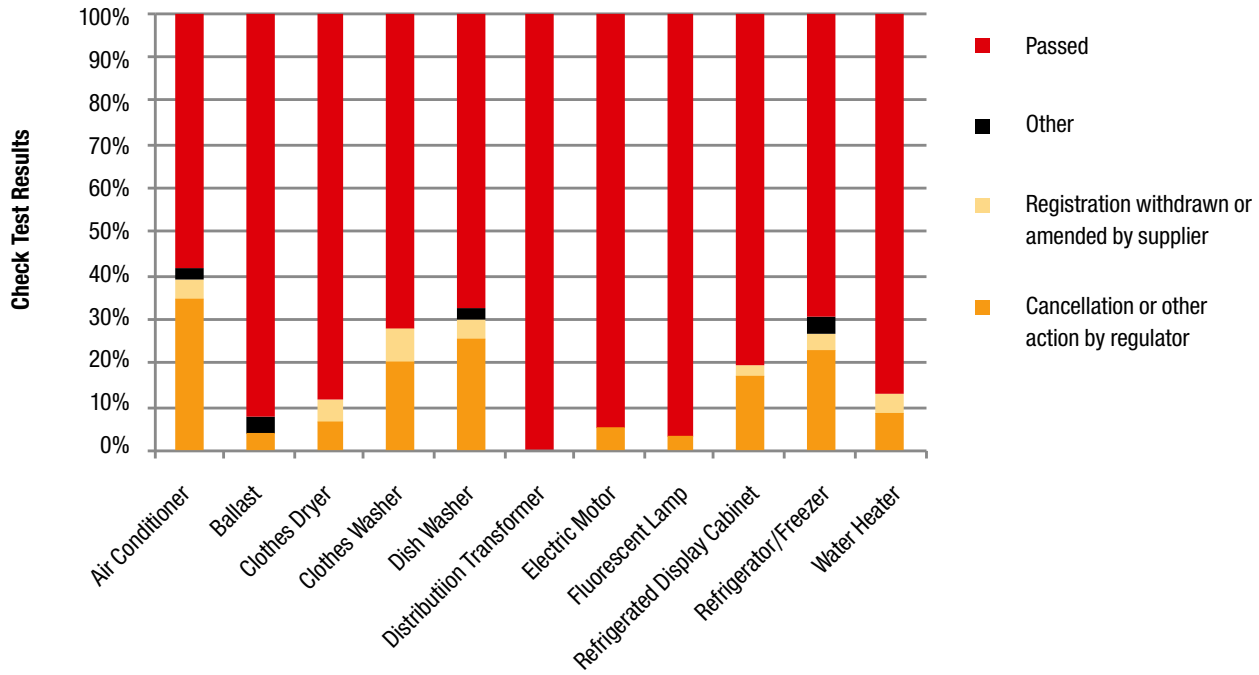


Table 2: Stage 2 test results by product category, 1991-2010

	Sample	Passed Stage 2	Failed Stage 2			Total
			Cancellation or other action by regulator	Registration withdrawn or amended by supplier	Other	
Air Conditioner	220	127	77	9	7	93
Ballast	25	23	1	0	1	2
Clothes Dryer	57	50	4	3	0	7
Clothes Washer	143	103	29	11	0	40
Dishwasher	89	60	23	4	2	29
Distribution Transformer	5	5	0	0	0	0
Electric Motor	90	85	5	0	0	5
Fluorescent Lamp	29	28	1	0	0	1
Refrigerated Display Cabinet	35	28	6	1	0	7
Refrigerator/Freezer	284	196	66	10	12	88
Water Heater	23	20	2	1	0	3
Total	1000	725	214	39	22	275

3.3 Stage 1 and Stage 2 results by appliance category

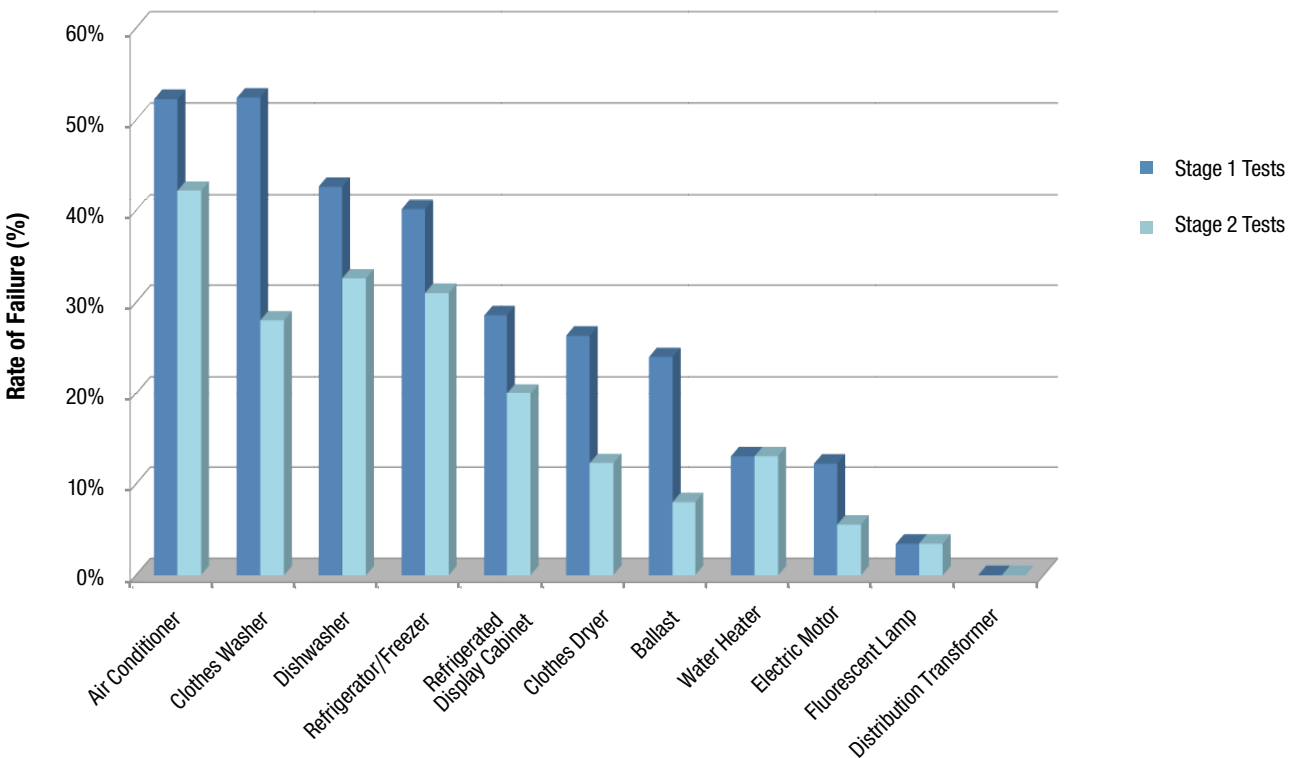
Table 3 and Figure 7 show the stage 1 tests and stage 2 tests results for each appliance category. Of the 388 individual products that failed the stage 1 test, 71% also failed the stage 2 testing; demonstrating that stage 1 tests in general provide a good indicator of whether the product will pass or fail the stage 2 tests.

The correlation between stage 1 and 2 test results was particularly good for air conditioners, refrigerators/freezers and dishwashers (also for water heaters and fluorescent lamps, although the sample size for these products is very small). However, less than half of the samples of ballasts, electric motors and clothes dryers that failed the screen test went on to fail the stage 2 test. This may indicate that the test method is insufficiently robust or that there is a significant variation in the manufactured product performance amongst these categories of appliances.

Table 3: Results of stage 1 and stage 2 tests by appliance category

	Number Stage 1 Fail	Number Stage 2 Fail	Number registration cancelled	Ratio Stage 1 - Stage 2 Fail
Air Conditioner	115	93	76	81%
Ballast	6	2	0	33%
Clothes Dryer	15	7	4	47%
Clothes Washer	75	40	29	55%
Dishwasher	38	29	23	76%
Distribution Transformer	0	0	0	0%
Electric Motor	11	5	5	45%
Fluorescent Lamp	1	1	1	100%
Refrigerated Display Cabinet	10	7	6	70%
Refrigerator/Freezer	114	88	61	77%
Water Heater	3	3	2	100%
Total	388	275	207	71%

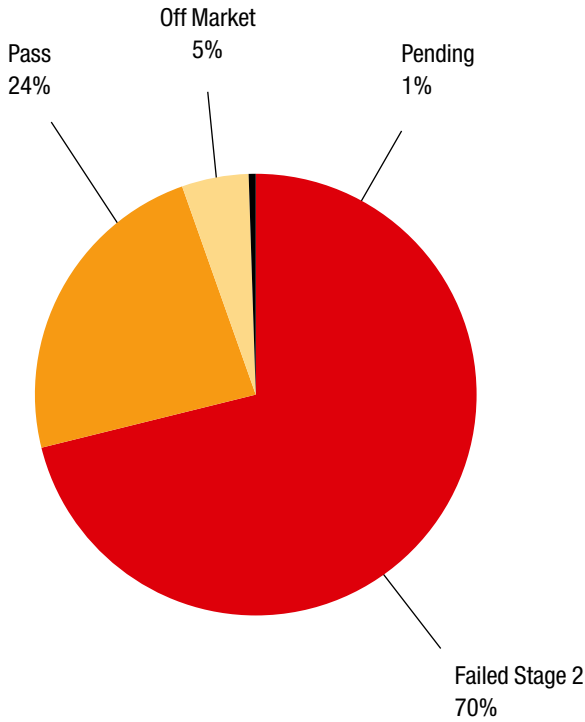
Figure 7: Results of stage 1 and stage 2 tests by appliance category



3.4 Stage I test results

Of the 388 products that failed at stage I testing, 92 (24%) passed the stage 2 test, 19 (5%) were found to be no longer sold and 2 (1%) are still awaiting a decision by the regulator. These results are shown in Figure 8.

Figure 8: Overview of stage 1 test results



3.5 Stage I tests by appliance category

Overall, 612 (61%) products passed the stage I test, however the pass rate for each category of appliance subjected to check tests varied from 48% to 100%, as shown in Table 3.

Clothes washers and air conditioners showed the lowest pass rates; while distribution transformers and linear fluorescent lamps had the highest rates.

While it is probable that the general compliance rate is greater than 61%, extreme caution should be taken when drawing conclusions on the overall level of compliance of appliances in the marketplace. The check testing results are based on a sample of appliances selected because they are more likely to fail a check test, rather than a randomly selected sample representative of all products sold.

Table 3: Rate of stage 1 check test passes by appliance category

Equipment	Sample No. Tested	Number Stage 1 Pass	Pass Rate
Air Conditioner	220	105	48%
Ballast	25	19	76%
Clothes Dryer	57	42	74%
Clothes Washer	143	68	48%
Distribution Transformer	5	5	100%
Dishwasher	89	51	57%
Electric Motor	90	79	88%
Fluorescent Lamp	29	28	97%
Refrigerated Display Cabinet	35	25	71%
Refrigerator/Freezer	284	170	60%
Water Heater	23	20	87%
Total	1,000	612	61%

3.6 Stage I pass rate over time

The rate at which selected products have passed stage I tests has varied over time from 70% in 1991-95 to 62% in 2006-2010, as shown in Figure 8. From 1991-2005 compliance rates with stage I tests decreased steadily (70% to 43%), which is most likely due to an improvement in the targeting of products with a high risk of failure. As the program has matured, intelligence to better identify models with high risk factors has improved.

It is noticeable that products which do not have a history of check testing tend to have higher compliance rates, reflecting the importance of experience in successfully targeting likely

non-compliance appliances. This may explain why there was an increase in compliance rates from 2006, which include the high compliance rates recorded amongst several categories of products that had little or no previous history.

As shown in Figure 10, pass rates tended to be high amongst products where little testing has been done, for example, distribution transformers, fluorescent lamps and water heaters. On the other hand, greater non-compliance was found in products with a larger number of tests conducted over a prolonged period, such as refrigerator/ freezers, air conditioners, clothes dryers and clothes washers reflecting better targeting of products likely to fail.

Figure 9: Stage 1 rate of compliance over time

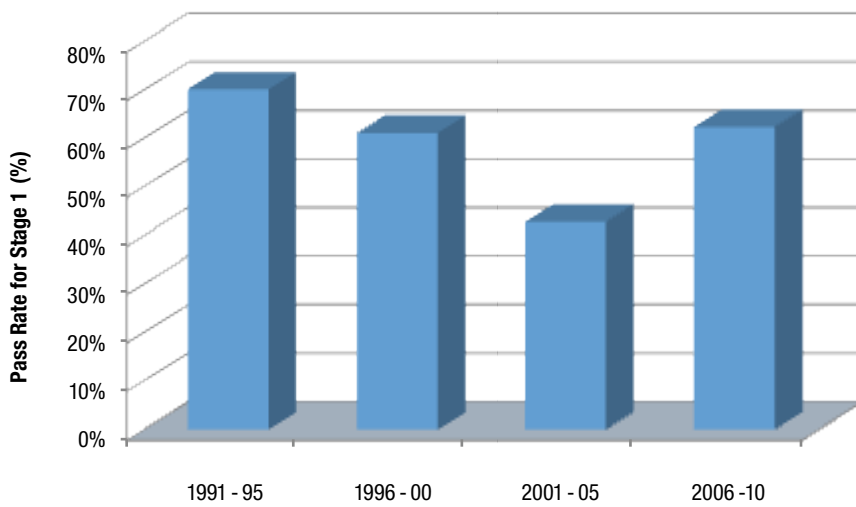
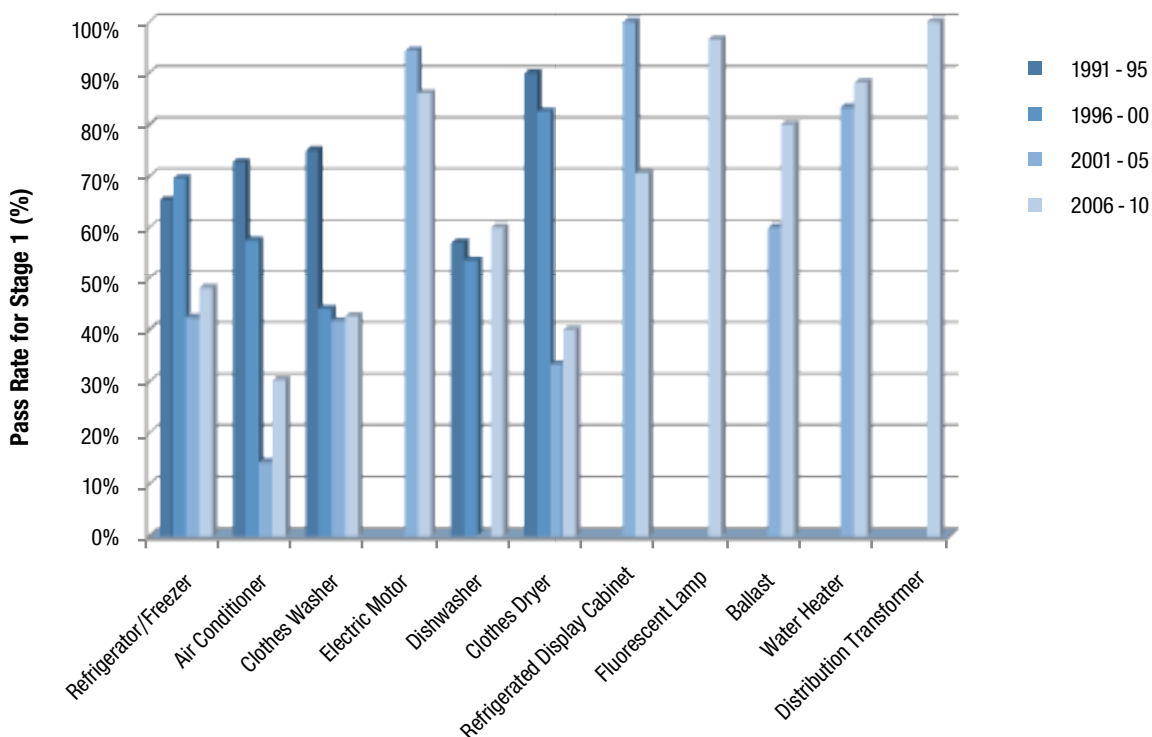


Figure 10: Stage 1 rate by appliance category over time



4 Recommendations

This analysis of the first 1,000 check tests undertaken by the E3 program suggests that the targeting of check testing has been effective, and could be further improved by:

- Allocating future check testing more equitably amongst the categories of regulated equipment;
- Exploring whether the test results to date indicate any patterns with respect better or worse performing brands. Further analysis of the results by brand is warranted within product categories and for suppliers of products within several categories;
- Investigating the reasons why there is variation in the rate of failure at stage 2 testing amongst categories of equipment to determine whether improvements can be made to the screening process to ensure higher conversion rates.

5 References

MEA (2010), *Compliance Counts: A Practitioner's Guidebook on Best Practice Monitoring, Verification, and Enforcement for Appliance Standards & Labeling*, Mark Ellis & Associates in partnership with the Collaborative Labeling & Appliance Standards Program (CLASP), September 2010.

Harrington, L. (2010), pers. com. 18 September 2010.

Zaelke, D. et al. (2005), *What Reason Demands: Making Law Work for Sustainable Development in Compliance, Rule of Law and Good Governance*, available from http://www.inece.org/mlw/Chapter1_ZaelkeStilwellYoung.pdf

Appendix 1: Description of the E3 check testing process

The check testing process discussed below supplements the testing and cancellation procedures set out in relevant state and territory legislation. The check test procedure discussed below should be read in the context of that legislation. The full text is available from the Administrative Guidelines.

A STAGE 1 CHECK TESTING (ALSO KNOWN AS THE SCREEN TEST)

Initially, a stage 1 check test, which is a full or part test to the relevant Australian and New Zealand Standard, will be performed on one sample of the model. This sample will generally be independently purchased (usually through a retail outlet) and tested by a laboratory accredited for check testing on behalf of the regulatory authorities. However, it should be noted that the state and territory legislation does provide that a registration holder may be required to provide a sample of registered proclaimed equipment. In cases of stage 1 check test non-compliance (as determined in accordance with the validity criteria set out in Section 4 of the Administrative Guidelines) the supplier may choose to request cancellation of the registration for the model in question on the basis of the stage 1 check test result or, alternatively, a supplier may choose the option of proceeding to stage 2 check testing.

An appliance that has failed a stage 1 check test will not be released from the check testing laboratory until the outcome of the check test failure has been finalised to the satisfaction of the relevant regulator. The sample used for the Stage 1 check test will not be sold until Stage II check testing is completed or until the non-compliance matter is otherwise satisfactorily resolved. Upon satisfactory resolution of the matter a supplier may make application to purchase the appliance from the check test laboratory. Following such a sale, no further claims in respect of the check tested appliance shall be accepted by the regulator.

In accordance with the requirements of the relevant testing standards, prior to test measurements being collected, a laboratory is required to check each sample to ensure that it has no obvious operating defects. In the absence of such advice from the test laboratory it will be assumed by the regulator that no defects existed in the tested appliance. A manufacturer/importer who believes that the tested unit is in fact defective will be able to inspect the unit in situ (under supervision of the test laboratory) and report on their findings to the regulator.

The onus shall be on the manufacturer/importer to provide evidence that a defect capable of affecting the test results does exist (failure of the appliance to pass a check test would not in itself constitute such evidence). Furthermore, it must be demonstrated that the "defect" is peculiar to the test unit

alone and not common to other samples of the stock of the appliance. If such evidence is provided and accepted, the original check test will be voided and a new check test will be required to be undertaken at the same laboratory either on the original unit with repairs or on a randomly selected second sample of the stock. The costs associated with inspection and re-testing of defective samples shall be borne by the manufacturer/importer.

B STAGE 2 CHECK TESTING

Upon receipt of a stage 1 check test failure report the relevant regulator shall issue to the registration holder for that product a notice of intention to cancel the products registration.

The registration holder shall have a minimum of 15 working days from the date of the notice of intention to cancel, within which to make written submissions to the regulatory agency as to why the registration should not be cancelled. Those written submissions should provide details and a timetable for a stage 2 check testing program. Stage 2 check test procedures require that satisfactory test reports from an accredited check testing laboratory on either two (where the failure relates to performance standards) or three units (where failure relates to a 'supplier declaration' ie, claims on labels etc) be supplied to the regulator. If the submissions provided by the registration holder are not, in the regulatory agency's opinion, satisfactory, or if the submissions set out details and a timetable for testing which is subsequently not complied with, the regulatory agency may decide to cancel the registration. The actual units to be tested in stage 2 will be randomly selected from stock by a representative of the regulatory authority.

C COSTS

Stage 1 check test costs will generally be met by the regulatory agency. Where the registration holder elects to undertake stage 2 check testing, the registration holder will be liable for all stage 2 check testing related costs irrespective of the outcome. Where a unit selected for check testing is demonstrated to be defective in manufacture, then the registration holder will be liable for all resulting additional costs incurred for check testing.

D SCREENING TESTS CONDUCTED BY COMPETITORS

Where a product fails a screening test conducted at a NATA accredited laboratory (or one affiliated with an organisation with a mutual recognition agreement with NATA) and the test report is provided by the party that commissioned the test to a regulator or the E3 Committee, the E3 Committee will reimburse the (reasonable) costs of conducting the screening tests.

E LABORATORIES ACCREDITED FOR CHECK TESTING

Only NATA or other laboratories accredited by bodies with a mutual recognition agreement with NATA, and with a registration that permits the laboratory to issue test reports for the test in question, will be accredited to undertake check testing. In circumstances where stage 2 check testing can be undertaken at a supplier's own Australian or New Zealand located NATA registered laboratory, regulatory agencies will accept the results provided a NATA appointed witness is present throughout the testing. Costs associated with the provision of a NATA appointed witness will be borne by the supplier.

F NUMBER OF TESTS

For failures which fall into the "supplier declaration" category, regulatory authorities require three samples to be tested in stage 2 check testing to establish, in accordance with the validity criteria, whether the registration of a model will be maintained. However, the manufacturer or importer can choose to accept the results of check tests undertaken on fewer than three samples if the results of each sample subsequently tested also do not confirm the original claims made by the registration holder in the application for registration.

For results which fall into the "performance limit" category, regulatory authorities require at least two samples to be tested in stage 2 check testing to establish, in accordance with the validity criteria, whether the registration of a model will be maintained.

G TEST REQUIREMENTS

All testing will be undertaken in accordance with the requirements of the relevant Australian/New Zealand Standard.

Appendix 2: Check testing product selection criteria

Recommendations for appliance and equipment groups and models to be checktested are to be based on the following criteria with reference to the information sources listed under each factor noted below.

A GROUP SELECTION - FACTORS FOR CONSIDERATION

- **Plan to cover all product groups**

Over a two to three year period, there is a strategic plan to ensure that most major categories and types of appliances and equipment are included to ensure a broad and consistent coverage of the entire market. Source of Information: Check test annual reports.

- **Number and turnover of models**

Regard should be given to the numbers of models and the annual turnover of new models of each appliance group. Appliance groups will be given attention in proportion to such numbers and or turnover. Source of information: Energy Labelling Register and Energy Labelling Brochures.

- **History of non compliance in each appliance group**

Groups with a demonstrated history of high levels of non-compliance should be selected because of the likelihood of a continuation of such historical trends. Source of information: Check test data base.

B MODEL SELECTION - FACTORS FOR CONSIDERATION

A system of weighting and prioritisation for each the following factors is in use.

- **History of testing of specific models**

Models tested in previous years of the check test program should normally be excluded from any further testing unless specific evidence becomes available to suggest that a re-test is warranted. Source of information: Check test data base.

- **Age of models**

Newer models should normally be given preference when considering models for check testing because of their potential to remain on the market for a longer period as compared to older models. The exception to this rule is models that have been on the market for a considerable period of time (3 years or more) without being subjected to testing. Source of information: Energy Labelling Register and Energy Labelling Brochures.

- **Volume of sales of models**

Models with high volumes of sales should normally be given preference when considering models for check testing because of their greater potential to impact on energy usage as compared to models with low sales volumes. Source of information: Market Survey Data e.g. GFK Whitegoods survey.

- **Star rating of models**

Models with the highest claims for energy efficiency (eg. high star ratings) should normally be given preference when considering models for check testing because of the market's higher expectations with respect to the performance of these models as compared to models with low ratings. This is an important selection criteria. Source of information: Energy Labelling Register and Energy Labelling Brochures, Galaxy award nominations.

- **Record of non compliance by supplier**

Suppliers with a demonstrated record of check testing non-compliance should be subject to greater scrutiny in the check testing program because of the likelihood of a continuation of such historical trends. Source of information: Check test data base.

- **Third party referrals**

Complaints as to the accuracy of express (labelling etc) or implied (MEPS) energy use/efficiency claims from third parties such as competitors, consumers, consumer groups or regulatory agencies, will be considered by the Manager, Check Testing Program. The Manager, Check Testing Program will be responsible for establishing a complaints handling mechanism that reflects best practice, and will include a 'complaints' report in the Annual Check Testing Report. Source of information: Manufacturing Competitors either directly or via Regulators, ACA, or other sources.

- **New market entrants**

A preference will be given to the selection of products that appear as new brands on the market or from suppliers that do not have any check testing track record. Source of information: Energy Labelling Register and Energy Labelling Brochures.

<http://www.energyrating.gov.au/checktest-criteria.html>

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