

## STANDARD OPERATING PROCEDURE FOR EVALUATION OF PRODUCTS AGAINST ENERGY STAR® SPECIFICATIONS

**DISCLAIMER:** This chart represents a template for reviewing product submissions and test data for ENERGY STAR® certification. Please be advised that EPA reserves the right to change the eligibility criteria for any given ENERGY STAR product category at any time should technological and/or market changes affect its usefulness to consumers, industry, or the environment. The ENERGY STAR Program Requirements for all products can be found at [www.energystar.gov/specifications](http://www.energystar.gov/specifications).

<b>GENERAL ENERGY STAR REQUIREMENTS</b>	<b>Applicant satisfies requirements? (Yes/No and Comments)</b>
<b>Has all of the information from the required fields in the Certified Product Data Submission Form been provided with the test data/lab report?</b>	
Does the applicant/partner have a valid Organization ID as verified in My ENERGY STAR Account (MESA)?	
Was the product tested in an EPA-recognized laboratory? <sup>1</sup>	
Is the test report included in the submission?	
If product family qualification is permitted under the specification and the tested model is a member of a product family, is the appropriate documentation of membership in a product family provided (e.g., test report for representative model, explanation of variations within family, up-to-date list of models included in the family)?	

<b>ENERGY STAR ELIGIBILITY</b>	<b>Applicant satisfies requirements? (Yes/No/Not Applicable and Comments)</b>
Is the device an Included Product, as outlined in Section 2: Scope of most ENERGY STAR specifications? <sup>2</sup> (Model must be on the Included list and not be an Excluded Product as defined by the specification.)	
Does the product meet <b>all</b> of the qualification criteria as outlined in the specification? (Typically, refer to Section 3 of the specification. Be sure to check all requirements, including multiple energy efficiency requirements, warranty requirements, packaging requirements, etc. Also, where applicable, ensure calculations have been performed correctly (e.g., TEC calculations).)	

<sup>1</sup> EPA maintains a list of recognized laboratories on the [Third-Party Certification page](#) of [energystar.gov](http://energystar.gov). If the laboratory is not on this list, please verify that the laboratory participates in an affiliated witnessed or supervised manufacturer's laboratory program. Certification Bodies (CBs) also will be able to validate laboratories' ENERGY STAR organization ID through the MESA tool.

<sup>2</sup> Due to specification revisions currently underway, a few ENERGY STAR specifications were not recently revised to address third-party certification procedures. As such, they do not incorporate the new Section 2: Scope addressing both Included Products and Excluded Products. Affected product categories include residential light fixtures, decorative light strings, furnaces, and set-top boxes. For these product categories, the CB shall review the applicable specification carefully (e.g., Section 2: Qualifying Products) to ensure that the model is not excluded from qualification.

<b>ENERGY STAR ELIGIBILITY (continued)</b>	<b>Applicant satisfies requirements? (Yes/No/Not Applicable and Comments)</b>
Are the qualification criteria met using the appropriate significant digits and rounding?	
Was/were the appropriate test method(s) used per the test report?	
Were the correct type and number of units tested, based on specification requirements?	
Is the product available for sale in the US or a partner country <sup>3</sup> market?	
Was the product tested for qualification at the relevant input voltage/frequency combination for each market in which it will be sold and promoted as ENERGY STAR?	

<b>EPA-RECOGNIZED LABORATORY TEST REPORT REQUIREMENTS</b>	<b>Applicant satisfies requirements? (Yes/No and Comments)</b>
Test procedure name listed	
Test date listed	
Serial Number Listed	
Sample description listed (e.g. number of products tested)	
Equipment calibration dates and next due date listed and within range?	
Environmental conditions listed (e.g., temperature, humidity)	
Test engineer and witness names and signatures provided	
Are test results organized by applicable test procedure section and clearly marked to indicate results that are relevant to ENERGY STAR?	

<sup>3</sup> A list of ENERGY STAR's international country partners may be found at [http://www.energystar.gov/index.cfm?c=partners.intl\\_implementation](http://www.energystar.gov/index.cfm?c=partners.intl_implementation).

## **APPENDIX A: SUPPLEMENTAL EPA GUIDANCE REGARDING PRODUCT CERTIFICATION**

### **General**

- Lab report must include test data for all ENERGY STAR partner markets where the product is sold.
- If the lab report only provides a next equipment calibration date but not a last equipment calibration date, it can be accepted as long as the next equipment calibration date is after the test date.
- Additional information is available on DOE's Public Test Procedure Guidance Website: <http://www1.eere.energy.gov/guidance/default.aspx?pid=2&spid=1>

### **Appliances**

- The CB may note that there is a difference, sometimes a sizable one, between the tested and listed value. As long as the listed value is equal to or less efficient than the tested value, please list the listed value. The tested value will need to be submitted to EPA in the future, so make sure to maintain this information even though it is not requested in the regular data uploads.
- Additional, specific guidance about testing clothes washers and refrigerators-freezers is available at the following websites:
  - Clothes Washers: [http://www1.eere.energy.gov/buildings/appliance\\_standards/residential/pdfs/cw\\_guidance\\_faq.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/residential/pdfs/cw_guidance_faq.pdf)
  - Clothes Washers with Warm Rinse Cycles: [http://www1.eere.energy.gov/buildings/appliance\\_standards/residential/pdfs/warm\\_rinse\\_guidance\\_9-21-2010\\_final.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/residential/pdfs/warm_rinse_guidance_9-21-2010_final.pdf)
  - Refrigerators-Freezers with Automatic Ice Makers: [http://www1.eere.energy.gov/buildings/appliance\\_standards/residential/pdfs/rf\\_test\\_procedure\\_addl\\_guidance.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/residential/pdfs/rf_test_procedure_addl_guidance.pdf)

### **Heating and Cooling**

- If a partner sends ventilating fan test data indicating CFM levels at the hundredth or thousandth levels, as long as the reported number rounds to the CFM level found in the HVI database, the reported numbers are acceptable.

### **Home Electronics**

- For audio/video equipment and televisions, "worst case scenario" test results must be reported on ENERGY STAR Qualified Product list (so if a partner tests three prototypes of the same model, the worst case scenario for efficiency measurements must be reported on the Qualified Product list).

### **IT Equipment**

- For product specifications that contain a power supply requirement, the CB should require and review the following material to determine fitness of the power supply:
  - If the product uses an internal power supply, the manufacturer submittal must include a certificate of compliance issued by an EPA-recognized laboratory that covers the internal power supply, and the CB must accept this certificate of compliance in lieu of a lab report.
  - If the product uses an external power supply with integral fan cooling or multi-output external power supply (that is not covered by the International Efficiency Marking Protocol), the CB may accept either a certificate of compliance from an EPA-recognized laboratory or a laboratory report that covers the external power supply.
  - If the product uses an external power supply covered by the International Efficiency Marking Protocol, the CB must obtain documentation, or affirmation from the test laboratory of visual inspection, that confirms the EPS is marked as Level V. The CB must not require a full lab report or certificate of compliance from the manufacturer.
- The following example calculations may be helpful to reference for displays.

### Example Calculations

Diagonal Screen Size (inches)	Resolution (pixel count)	Resolution (MP)	Screen Dimensions (inches)	Screen Area (sq. inches)	P <sub>ON MAX</sub> (watts)
7	800 x 480	0.384	5.9 x 3.5	20.7	6.4
19	1440 x 900	1.296	16.1 x 10.1	162.6	22.8
26	1920 x 1200	2.304	21.7 x 13.5	293.0	38.4
42	1360 x 768	1.044	36.0 x 20.0	720.0	202.4
50	1920 x 1080	2.074	44.0 x 24.0	1056.0	293.1

### Lighting

#### CFLs

- There are two packaging requirements that are NOT included in the original packaging checklist, as stated in a memo sent to all partners on 9/21/2009:
  - Products may not state lumen output values lower than 100 lumens under the tested average. Products may not overstate lumen output values by more than 3% over the tested value.
  - Stated wattage may not fall outside of the following ranges, which are from Underwriters Laboratory (UL)'s standards:  $(\text{measured wattage}) * 0.9 - 0.5 < \text{stated wattage} < (\text{measured wattage}) * 1.1 + 0.5$
- If a Partner uses the new FTC's lighting facts labeling requirements: FTC's Lighting Facts label rule takes effect in July 2011. Partners may use these labeling requirements for ENERGY STAR submissions in place of their corresponding ENERGY STAR packaging requirements. This label will be required

by FTC for medium screw-base lamps only. More information on the FTC Lighting Facts label can be found here:  
<http://www.ftc.gov/os/2010/06/100719appliancelabelingrule.pdf>.

- **For private labeled submissions only:**
  - If the Private Labeler Qualification Form is missing the Private Labeler and/or Qualified Bulb Contact signature(s):
    - Ask the partner to obtain the necessary signature(s) and resubmit the qualification form. Products cannot be qualified without signatures from both parties to confirm the private label agreement.
  - If the OEM model is not listed as a qualified CFL:
    - Ask the partner to double-check the model number to determine if it is correct – partners will often enter the model number incorrectly or enter the retail number instead of the model number. Have the partner resubmit the qualification form with the correct model number. If they are sure the model number is correct, ask the partner to contact their supplier to determine why it is not qualified.
- **For OEM submissions only:**
  - If the company has not signed the NEMA Voluntary Commitment on Mercury in Compact Fluorescent Lamps:
    - Contact the partner to inform them that submitted products cannot be qualified until confirmation as been received that they have signed and paid the associated fee for the NEMA Voluntary Commitment to Limit Mercury Content in Compact Fluorescent Lamps, as stated on page 7 of the CFL criteria.
    - More information about the NEMA Voluntary Commitment on Mercury in Compact Fluorescent Lamps, including the list of participating companies, can be found here [http://www.nema.org/gov/env\\_conscious\\_design/lamps/cfl-mercury.cfm](http://www.nema.org/gov/env_conscious_design/lamps/cfl-mercury.cfm).
  - If it is unclear whether the product meets the CCT requirement:
    - At least 9 out of 10 samples tested must fall within a 7-step ANSI MacAdam ellipse for a given color temperature at the 100-hour lumen measurement. If the points are not all graphed together, graph the points manually to double-check. (Refer to Section 11 for CCT quality assurance requirements and Appendix C/ANSI Color Ellipses of the CFL criteria.
  - If a partner submits a single test report for multiple CFL products:
    - A single test report can be used to qualify both a medium-based lamp and candelabra-based version of that lamp if the base type is the only difference between the two models. Otherwise, there are no other instances in which test data can be shared, and a unique test report will need to be submitted for each product.

#### *Integral LED Lamps*

- See “Integral LED Lamp Technical Clarifications” document posted to the ENERGY STAR Web site August, 25, 2010. Can be found at [www.energystar.gov/ledbulbs](http://www.energystar.gov/ledbulbs).
- Product Grouping:
  - For variations in product finish or beam angle – Products which differ solely in product finish or beam angle may share long term lumen maintenance data as long as it is demonstrated that the thermal performance of the product is not affected by the changes to secondary optics. This is determined by comparing the In-Situ Temperature Measurement tests of both products. If the TMP of the LED of the product the manufacturer wishes to have share lumen maintenance data is greater than 1°C over the TMP of the LED of the qualifying lamp, it is determined that the thermal performance has been affected, and the product will not be able to share lumen maintenance data. The manufacturer will have to

perform separate long-term lumen maintenance testing in order to submit. If the TMP of the LED of the product wishing to share lumen maintenance data is less than 1°C greater than the qualifying lamp, or lower than the qualifying lamp, the product grouping is allowed.

- Product Failures during Long-term Lumen Maintenance Testing:
  - Samples that have failed cannot be substituted for additional samples to continue testing, and cannot have components repaired to continue testing.
  - 10 samples will be averaged together to determine the lumen maintenance value. If a sample fails, it will be averaged in (essentially with a lumen maintenance of zero), and will most likely bring the total average below the passing requirement.
  - If a sample failure occurs at the hands of a lab technician the sample must be replaced as soon as possible and begin testing. Interim qualification may be determined based on the average of 9 samples, pending the tenth sample's completion and passing criteria of all ten samples when the last sample is added.
  
- Early Initial Qualification Lifetime Claims:
  - After 3,000 hours of testing, a product may only be able to claim the minimum lifetime for the respective product category, until such testing reaches 6,000 hours. Omni-directional, directional, and non-standard lamps may only claim a lifetime of 25,000 hours, and decorative lamps may only claim a lifetime of 15,000 hours. Upon completion of 6,000 hours of testing, the product may then be upgraded to a higher lifetime, granted that it meets the minimum lumen maintenance level outlined in Table 1, on page 15 of the specification.
    - All products will have to continue testing to the required minimum number of hours outlined in Table 2 on page 15, if they wish to claim lifetime greater than 25,000 hours.
  
- Missing from table 2 below is the minimum cumulative test period for 45,000 hour life claim. It should be 11,250, 91.5%, 45,000.

Optional for All Lamp Types	93.1%	30,000	Initial approval, pending completion of total required test period (see Table 2 below)
	94.1%	35,000	
	94.8%	40,000	
	95.4%	45,000	
	95.8%	50,000	

Longer life claims are allowed, based on longer required test periods and associated lumen maintenance thresholds, as shown in Table 2.

Minimum cumulative test period (hours)	Minimum lumen maintenance at end of test period (% of initial lumens; -3% tolerance)	Maximum L <sub>70</sub> Life Claim (hours)
7,500	91.2%	30,000
8,750	91.5%	35,000
10,000	91.5%	40,000
12,500	91.8%	50,000

Residential Light Fixtures

- Additional/Alternate Model Numbers Procedure:
  - Does the manufacturer provide an assertion letter which lists the original and new brand and model numbers and also meets the following requirement:
    - For additional model numbers: the letter must state that the fixtures are identical in safety and performance and only differ in aesthetics, packaging, and branding
    - For alternate model numbers: the letter must state that the fixtures are identical except for packaging and branding
  - Does the manufacturer provide a copy of the new product's packaging?

#### *Solid-State Lighting Luminaires*

- EPA has adopted DOE's technical interpretations and guidance to manufacturers covered in the [Manufacturer's Guide](#).
- Additional resources can be found at <http://www.energystar.gov/sslpartners>.

#### **Commercial Food Service**

- For commercial griddles, it is particularly important to check several values in the lab reports (as compared to the test standard), including:
  - The griddle temperature for the idle energy test
  - The initial hamburger patty temperature for the cooking energy efficiency test
  - Average percent weight loss of the cooked hamburger patties
- For commercial ovens, bakery depth convection ovens need to be tested separately from standard depth.
- For commercial ovens, it is particularly important to check several values in the lab reports (as compared to the test standard), including:
  - Timing of the idle test
  - The starting and ending temperatures of the potatoes in the cooking test
  - The oven temperature for both the cooking and idle energy tests
  - The weight of raw potatoes in the cooking test

#### **Other Commercial Products**

- Often water heater manufacturers will sell a single product under multiple brands and model numbers. In these situations, often the model number on the test report will be for one of the brands/model numbers, not all of them. In such cases, EPA suggests requesting a memo or other written confirmation from the manufacturer that the models on the QPI form are the same model as that in the test report, simply with a different brand name/model number.