THIRD PARTY CERTIFICATION IMPLEMENTATION

ENERGY STAR® PRODUCTS

SUBJECT: ENERGY STAR Luminaires Verification Testing Guidance for Certification Bodies – Test Requirements, Sample Sizes and Determining Testing Failures	DIRECTIVE NO. 2012-01 Revised Date: 08/16/2016

Performance Criteria

Verification testing for ENERGY STAR certified luminaires is limited to the following core performance requirements as applicable to the specific model.

- Luminous Efficacy and Output
- Zonal Lumen Density (Directional Luminaires Only)
- Lumen Maintenance[1]
- Correlated Color Temperature
- Color Rendering
- Color Angular Uniformity
- Color Maintenance[1] (Directional Solid State Indoor Luminaires Only)
- Source Start Time
- Source Run-Up Time (Fluorescent products only)
- Maximum Measured Ballast or Driver Case Temperature
- Standby/Off-State Power Consumption (Only Luminaires Employing an Integral Method of Switching or connected functionality)
- Power Factor
- Confirmation of certified lamp(s) (Luminaires shipping with ENERGY STAR lamps only)[2]
- In-situ temperature measurement test for enclosed luminaires shipping with ENERGY STAR lamps

To ensure luminaires continue to meet the ENERGY STAR specification, verification testing should be conducted for these performance requirements in the same manner it was for certification[3]. Note that for luminaires that are required to ship with a lamp in the package, testing is required to occur with the shipped lamp. If a luminaire that requires inclusion of a lamp is shipped without one, the CB should obtain a new luminaire(s) for testing and make note of the issue to EPA when reporting test results; a CB should not procure a substitute lamp in those circumstances.

Test Sample Sizes and Determining Testing Failures

[1] For solid state lighting luminaires, lumen maintenance and color maintenance shall be verified consistent with how the luminaire was certified. If the luminaire was certified using IES LM-80 data and an IES TM-21 projection, the LED packages/modules/arrays should be visually inspected and, to the extent practical, verified to ensure they are the same make(s) and model(s) as those included in the certification. The *in situ* temperature should be measured in the same manner as originally tested, and a new TM-21 calculation should be made using the corresponding LM-80 data to determine if the product meets the relevant ENERGY STAR requirements. For color maintenance, the measured *in situ* temperature must be less than or equal to the case temperature in the originally referenced LM-80 report. If the luminaire was certified using IES LM-84, the same method should be employed for verification testing.

[2] All lamps that ship with a luminaire are required to currently be associated with the ENERGY STAR luminaire certification and report efficacy of greater than 65 lm/W. All ENERGY STAR luminaires are required to ship with lamps. Verification of luminaires, ventilating fans, and ceiling fanscertified on the basis of shipping with an ENERGY STAR lamp will be based on an inspection of the enclosed lamp rather than testing of the lamp,

[3] Ventilating fans with lighting and ceiling fans with lighting are subject to lighting testing per the luminaires specification version to which the product was originally certified, regardless of the luminaires version currently in effect.

The ENERGY STAR Luminaires specification includes tailored sample size requirements for each of the performance criteria. To ensure that testing reflects the metrics of the product's certification, the following sample size approaches should be used for the relevant performance criteria.

One Sample Requirements: For the performance criteria above that require all tested samples to meet ENERGY STAR requirements, a single sample should be selected, obtained, and tested for verification testing. The measured performance should be equal to or better than the ENERGY STAR requirements. A verification testing failure will result if the measured performance fails to meet any of these ENERGY STAR requirements.

Three Sample Requirement: For fluorescent light source life, consistent with certification, three samples should be procured at once for the purpose of verification testing.

For both one-sample and three-sample requirements, even if a testing failure occurs, testing shall continue to completion, unless EPA notifies the CB to cease testing.

Reporting to EPA

Consistent with procedures for other ENERGY STAR product categories, CBs are required to report testing failures on any of the performance requirements to enforcement@energystar.gov within two days of determining a testing failure, and include with this submission all relevant test reports. EPA will then notify the Partner per the ENERGY STAR Disqualification Procedures.