



THIRD PARTY CERTIFICATION IMPLEMENTATION

ENERGY STAR® PRODUCTS

SUBJECT: ENERGY STAR Ceiling Fan Lighting Verification Testing – Test Requirements, Sample Sizes and Determining Testing Failures

DIRECTIVE NO. 2020-01

Date: 03/26/2020

This directive focuses on the verification of lighting components within certified ceiling fan and ceiling fan light kit products, when applicable. Verifying other ceiling fan components should be performed per normal verification test (VT) procedures.

Lighting Performance Criteria

Verification testing is limited to the following core performance requirements of the Ceiling Fans and Ceiling Fan Light Kits AS APPLICABLE to the specific model:

Products shipped with ENERGY STAR certified lamps:

- Confirmation of certified lamp(s)¹
- In-situ ambient air temperature measurement test² (for enclosed models only)

Products with other separable light sources or integrated SSL circuitry:

- Luminous Efficacy (lumens/W)
- Light Output (lumens)
- Color Consistency:
 - Correlated Color Temperature (CCT)
 - Color Maintenance
- Color Accuracy:
 - Color Rendering Index (Ra)
 - R9
- Minimum Rated Life / Lumen Maintenance³
- Start Time
- Run Up Time (fluorescent models only)
- Power Quality: Power Factor
- Transient Protection
- Thermal Performance: in situ ballast or driver case temperature
- Flicker:
 - Short Term Flicker Indicator (P_{ST})
 - Stroboscopic Visibility Measure (SVM)

To ensure ceiling fan lighting components continue to meet the ENERGY STAR specification, verification testing should be conducted for these performance requirements in the same manner as for certification.

¹ All lamps that ship with a ceiling fan or ceiling fan light kit are required to be associated with the current ENERGY STAR CFLK certification. Verification of products certified on the basis of shipping with an ENERGY STAR certified lamp will be based on an inspection of the enclosed lamp rather than testing of the lamp.

² Placing the thermocouple in the same location that was used for certification.

³ For solid state lighting products, lumen maintenance and color maintenance shall be verified consistent with its certification:

- a. If the ceiling fan or ceiling fan light kit was certified using IES LM-80 data and an IES TM-21 projection, the LED packages, modules, or 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.
- b. 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.
- c. 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.
- d. If the ceiling fan or ceiling fan light kit was certified using IES LM-84, this method should be employed for verification testing.

Note that:

- For models certified as shipping with ENERGY STAR certified lamp(s), the shipped lamp(s) should be used during the in-situ ambient air temperature measurement test (if required);
- For models certified with another separable light source (i.e. circline or compact non-integrated fluorescent lamp/ballast combinations, LED light engines, or non-standard integrated LED lamps), the shipped source(s) should be used for all required verification testing; and
- If a model is shipped without the required ENERGY STAR certified lamp(s) or other separable light source(s), the CB should obtain a new model(s) for testing and make note of the issue to EPA when reporting test results. CBs should not procure substitute lamps/sources in this circumstance.

Test Sample Sizes and Determining Testing Failures

The ENERGY STAR Ceiling Fans and Ceiling Fan Light Kits 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 minimum rated life and lumen maintenance, 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](#).