



Third-Party Certification Training for EPA-Recognized Lighting Certification Bodies

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Training Design



- Training addresses existing lighting specifications and EPA-recognized CB requirements
- Training also informs CBs of near term specification changes and key implications

<i>ENERGY STAR Lighting Specifications</i>	
Today	Near Future (2011-2012)
Residential Light Fixtures (RLF)	Luminaires
SSL Luminaires	
CFLs	Lamps
Integral LED Lamps	
Decorative Light Strings (DLS)	Decorative Light Strings



Today's Agenda

- Lab Accreditation and Recognition by EPA
- Product Certification
- Private Labeling
- Verification Testing
- Common Problems with Lighting Submissions
- Upcoming Specification Changes

Lab Accreditation and Recognition by EPA

Category Approach to EPA-Recognized Laboratories



- Category Approach: Defined groups of test methods (mainly photometric) relevant to a category/specification
 - Lighting Categories: Recognize labs for a lighting category, based on a defined group of test methods required in a specification
 - Component Categories: Ballasts, Lamps and LED Package, Module or Array will need to be tested and labs will be recognized based on relevant test(s)

Category Approach to EPA-Recognized Laboratories (cont.)



- Categories do not include EVERY test in a specification
- Test reports may come from multiple EPA-recognized labs
- EPA-recognized CBs must verify that all relevant test reports come from an EPA-recognized lab
- EPA-recognized CBs use specifications to identify additional test reports/information (e.g., safety, warranty, product labeling) a partner needs to submit to determine if a product qualifies as ENERGY STAR

Lab Recognition by Lighting Category



- The purpose of the following slides is to clarify for laboratories, ABs, and CBs the test methods to which a laboratory must be accredited to gain EPA recognition for testing one or more lighting product types.
- The Application for EPA Recognition of a Laboratory allows laboratories to apply to be recognized to test one or more lighting product types. Recognized laboratories are listed by lighting product type on EPA's Recognized Laboratories webpage.
- Scopes of Accreditation: When creating Scopes of Accreditation for a laboratory seeking EPA recognition for lighting products, the AB must include the titles of the test methods enumerated in the tables that follow, depending on the product types the laboratory is seeking to test. This may be in addition to the title of the relevant ENERGY STAR specification(s). For Decorative Light Strings, the test method is the title of the specification, and should appear as such on the Scope of Accreditation.
- Electromagnetic Interference (EMI) testing: EPA is not requiring lighting laboratories to be accredited for EMI testing to be recognized. However, the CB must ensure the ENERGY STAR partner seeking to qualify a lighting product provides an EMI test report from a NVLAP- or A2LA-accredited or FCC laboratory. Electrical safety test reports must originate from an OSHA NRTL.

Lab Recognition by Lighting Category



Luminaire/Lamp Categories

- Solid State Lighting Luminaires
- Residential Light Fixtures, Outdoor
- Residential Light Fixtures, Indoor
- Compact Fluorescent Lamps
- GU 24 Lamps
- Integral LED Lamps, Omnidirectional/ Directional
- Integral LED Lamps, Decorative
- Decorative Light Strings

Component Categories

- Fluorescent Ballasts
- Fluorescent Lamps
- LEDs (Package, Module or Array)

Solid State Lighting Luminaires (SSL)



Solid State Lighting Luminaires (SSL)	
Criteria	Test Method
Luminaire Efficacy (Light Output, Input Power), Color Rendering Index (CRI), Chromaticity and Correlated Color Temperature (CCT)	IESNA LM-79-08 sections 9 and 12
Power Factor	ANSI C82.77-2002
Zonal Lumen Density (except Ceiling Mounted Luminaires with diffusers)	IESNA LM-79-08 section 10* (Goniophotometer)
Lumen Maintenance (L ₇₀)	IESNA LM-80-08**

*Lab will be only partially recognized if lacking accreditation to LM-79-08 section 10. In this case, the CB will need a supplemental test report from an EPA-recognized lab accredited to LM-79-08 section 10.

**Lab is not required to be accredited to LM-80-08 to be recognized to test SSL Luminaires. However, the CB will need a supplemental test report from an EPA-recognized lab accredited to LM-80-08.

Residential Light Fixtures (RLF), Outdoor



<i>Residential Light Fixtures (RLF), Outdoor</i>	
Criteria Item	Test Method
System Efficacy	IESNA LM-9-1999 IESNA LM-66-00 (for single-ended CFLs) ANSI C82.2-2002
Lamp Life	IESNA LM-40-01 IESNA LM-65-01

Residential Light Fixtures (RLF), Indoor



<i>Residential Light Fixtures (RLF), Indoor</i>	
Criteria Item	Test Method
System Efficacy	IESNA LM-9-1999 IESNA LM-66-00 (for single-ended CFLs) ANSI C82.2-2002
Lamp Requirements	IESNA LM-40-01 IESNA LM-65-01
Lumen Maintenance	IESNA LM-40-01 IESNA LM-9-1999 IESNA LM-65-01 IESNA LM-66-00 (for single-ended CFLs) ANSI C78.5-2003
Color Rendering Index (CRI)	CIE Publication No. 13.3 IESNA LM-58-94
Correlated Color Temperature (CCT)	IESNA LM-58-94 IESNA LM-16-93

Compact Fluorescent Lamps (CFL)



Compact Fluorescent Lamps (CFL)	
Criteria Item	Test Method
Lamp Power (Watts) & Configuration	IESNA LM-9-1999 IESNA LM-66-00 (for single-ended CFLs)
Color Rendering Index (CRI)	CIE Publication No. 13.3
Power Factor	IESNA LM-9-1999 IESNA LM-66-00 (for single-ended CFLs)
Rapid Cycle Stress Test	IESNA LM-65-01 (for single-ended CFLs)
Lumen Maintenance	ENERGY STAR Elevated Temperature Test Procedure (Appendix B)
Run-up Time, Lumen Maintenance at 40% rated life	ANSI C78.5-2003

GU 24 Lamps



GU 24 Lamps	
Criteria Item	Test Method
System Efficacy	ANSI C78.5: 2003 IESNA LM-66-00 (for single-ended CFLs)
Color Rendering Index (CRI)	IESNA LM-58 CIE Publication No. 13.3
Correlated Color Temperature (CCT)	IESNA LM-58 IESNA LM-16
General Ballast Requirement, Lamp Start Time, Run-up Time	ANSI C78.5-2003
Average Rated Lamp Life	IESNA LM-65-01 (for single-ended CFLs) ANSI C78.5-2003
1,000 hour Lumen Maintenance	IESNA LM-66-00 (for single-ended CFLs) IESNA LM-65-01 (for single-ended CFLs) ANSI C78.5-2003

Integral LED Lamps, Omnidirectional/Directional



<i>Omnidirectional/Directional Lamps (Shapes: A, BR, BT, ER, K, MR, P, PAR, PS, R, S, T)</i>	
Criteria Item	Test Method
Correlated Color Temperature (CCT) and Duv, Color Rendering Index (CRI), Color Maintenance, Power Factor, Minimum Luminous Efficacy, Minimum Light Output, Color Spatial Uniformity (for directional lamps), Minimum Light Output (for BR, ER, K, and R lamps)	IESNA LM-79-08 sections 9 and 12
Luminous Intensity Distribution, Minimum Center Beam Intensity (for PAR and MR16 lamps)	IESNA LM-79-08 section 10 (Goniophotometer)
Lumen Maintenance	IESNA LM-79-08 section 9 Elevated Temperature Test per ENERGY STAR CFL Version 4.0 (40% rated life) IESNA LM-80-08*
Rapid Cycle Stress Test	IESNA LM-65-01

* Lab is not required to be accredited to LM-80-08 to be recognized to test Integral LED Lamps. However, in the case of a partner pursuing the early initial qualification option (see ENERGY STAR Program Requirements for Integral LED Lamps, Section 8A), which requires accreditation to LM-80-08, the CB will need a supplemental test report from an EPA-recognized lab accredited to LM-80-08.

Integral LED Lamps, Decorative



Decorative Lamps (Shapes: B, BA, C, CA, DC, F, G)	
Criteria Item	Test Method
Correlated Color Temperature (CCT) and Duv, Color Rendering Index (CRI), Color Maintenance, Power Factor, Minimum Luminous Efficacy, Minimum Light Output	IESNA LM-79-08 sections 9 and 12
Lumen Maintenance	IESNA LM-79-08 section 9 IESNA LM-80-08*
Rapid Cycle Stress Test	IESNA LM-65-01

*Lab is not required to be accredited to LM-80-08 to be recognized to test Integral LED Lamps. However, in the case of a partner pursuing the early initial qualification option (see ENERGY STAR Program Requirements for Integral LED Lamps, Section 8A), which requires accreditation to LM-80-08, the CB will need a supplemental test report from an EPA-recognized lab accredited to LM-80-08.

Decorative Light Strings (DLS)



- Test method as outlined in ENERGY STAR DLS Eligibility Criteria Version 1.4

Fluorescent Ballasts



<i>Fluorescent Ballasts</i>	
Criteria Item	Test Method
Ballast Performance	ANSI C82.11-2002 ANSI C82.2-2002

Fluorescent Lamps



Fluorescent Lamps	
Criteria Item	Test Method
Electrical Measurements	IESNA LM-9-1999 ANSI C78.375-1997
Life Test Performance	IESNA LM-40-01
Color Rendering Index (CRI), Correlated Color Temperature (CCT)	CIE Publication No. 13.3 - 1995

LEDs (Package, Module or Array)



- IESNA LM-80-08

Lab Applications



- 17 laboratory applications are under review at EPA covering all major lighting categories
- By January 1, EPA will begin maintaining an online database of all EPA-recognized labs in addition to the labs listed on the ENERGY STAR website
- Log in to My ENERGY STAR Account tool (MESA) to look up the laboratory's OID

Product Certification

Third-Party Certification

- Beginning January 1, 2011:
 - Partners will have products tested in EPA-recognized labs prior to qualification and labeling
 - EPA-recognized CBs will certify that products meet program requirements based on a review of test data
 - EPA-recognized CBs will upload certified data to EPA for creation of qualified product lists

Product Certification Overview



- The Guide for Certification Review: An ENERGY STAR Standard Operating Procedure (SOP) for Product Evaluation
 - Designed by EPA to reflect the steps followed by CBs when reviewing products against ENERGY STAR product specifications
 - Key Sections of the SOP
 - General Requirements
 - Eligibility Criteria
 - EPA-Recognized Laboratory Report Checklist
 - Product-Specific Appendices

General SOP-Related Guidance

- The SOP is complementary to the ENERGY STAR product specifications
- EPA-recognized CBs must ensure that products meet all aspects of the ENERGY STAR product specifications
 - Product specifications can be found at www.energystar.gov/specifications

NEMA/ALA Matrix



- Previously approved sub-components (NEMA/ALA Matrix) will not be accepted as basis for fixture qualification as of January 1, 2011
- As of January 1, 2011, no new sub-components will be added to the NEMA/ALA Matrix
 - The matrix will continue to be available online in 2011 as a general guide for manufacturers
- New RLF product submissions will be required to use a new matrix (in development) or provide full sub-component test data from an EPA-recognized lab
- EPA will communicate new process to component manufacturers

New Matrix



- Currently under development
 - Determining required group of test methods for each sub-component category (for lab recognition by EPA)
- Designed to support the upcoming Luminaires specification
- New matrix will meet the third-party certification requirements
- Component manufacturers will submit test data from an EPA-recognized lab to EPA-recognized CBs for approval
- EPA-recognized CBs will upload templates with data to MESA
- Matrix will be aggregated by EPA

Private Labeling

Private Labeling



- EPA-recognized CBs must follow private labeling requirements in each specification, including packaging review
- In addition, EPA-recognized CBs must require private labelers to 1) submit OEM test data; and 2) provide a letter of equivalency or similar documentation to affirm that OEM and private labeler model numbers represent the same product

Verification Testing

Verification Testing

- EPA-driven Quality Assurance Testing Program (QA4) and CFL Third-Party Testing and Verification Program will continue until Luminaires and Lamps specifications take effect
- EPA-recognized CBs will be required to implement verification testing under the new Luminaires and Lamps specifications

Common Problems with Lighting Submissions

CFLs



- Lumen claims on packaging do not match test results within the 3% tolerance or -100 lumen rules
- Product is initially qualified after 40% rated life, full life test has <50% of samples still burning at “rated life”
- Packaging is missing model number or Correlated Color Temperature
- Packaging compares reflector or decorative wattage but does not provide side-by-side lumen comparison

SSL Luminaires



- Submission doesn't include a photo or diagram in order to verify proper eligibility
- Power supply warranty doesn't include the maximum operating temperature under which the product is covered
- Model number on test report does not match submission
- Inappropriate and/or incomplete LM-80 reports

Integral LED Lamps



- Inappropriate and/or incomplete LM-80 reports
- 3,000 hour report shows the product does not meet the color maintenance requirement
- Report shows product failures that were identified and repaired
- Early initial qualification products are allowed max/min life claims of 25K hours (or 15K hours if Decorative); whereas Applicant packaging has 50K hour life claim

Residential Light Fixtures



- Product packaging does not include all required information for product type
- Outdoor fixtures do not contain integrated photosensors
- Warranty information is incomplete or does not meet the requirements
- Fixture does not have a replaceable ballast or has incomplete information regarding the replacement of the ballast

Upcoming Specification Changes

Planning for Specification Revisions



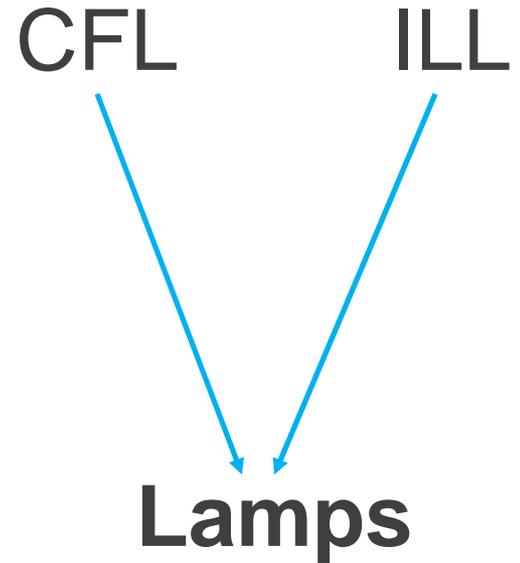
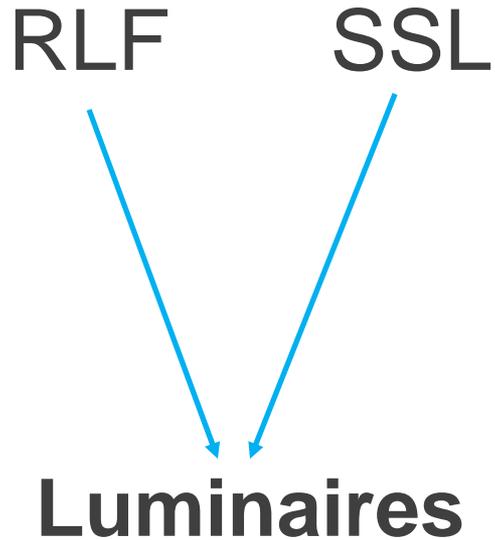
- EPA-recognized CBs are encouraged to plan ahead for specification revisions
 - CBs will receive EPA correspondence on specification development efforts relevant to all program requirements for which the CB has been recognized by EPA
- Products must meet new specifications as of effective date to be ENERGY STAR qualified
- Products must be tested by an EPA-recognized lab and qualified by an EPA-recognized CB
- Retesting for existing models is often required with specification revisions

Revising and Consolidating Specifications



- The existing RLF and SSL specifications are being combined into a technology-neutral Luminaires specification (includes ceiling and ventilating fan light kits)
 - Existing RLF and SSL specifications will be sunset prior to effective date of the Luminaire specification
- The existing CFL and ILL specifications will be combined into a technology-neutral Lamps specification (will include GU 24 as well)
 - Existing CFL and ILL specifications will be sunset prior to the effective date of the Lamps specification

Revising and Consolidating Specifications (cont.)



Test Method Changes



- EPA will be referencing the most recent and updated industry standard test methods in each upcoming specification
- Each technology-neutral specification will reference the appropriate test method for each requirement and type of technology (as applicable)

Timeline



- **Luminaires** specification will be finalized in late 2010 and become **effective in Fall 2011** (exact date TBD)

www.energystar.gov/luminaires

- **Lamps** specification first draft will be released for comment in early 2011; 3 drafts and 3 comment periods before finalized; **effective in 2012** (exact date TBD)
www.energystar.gov/lamps (*coming soon*)

Key Implications of Specification Changes



- Luminaires, Lamps categories will change
- Labs' EPA recognition may change
- New matrix (in development) will be expanded to include LED Light Engines



Luminaires by Category

- SSL Luminaires
- Fluorescent Luminaires
- HID Luminaires
- Halogen Luminaires

Lamps by Category



- CFL
- Integral LED
- Integral LED Decorative

Sub-Components in New Matrix



- Ballasts
- Lamps
- LED Light Engines

Thank You!



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