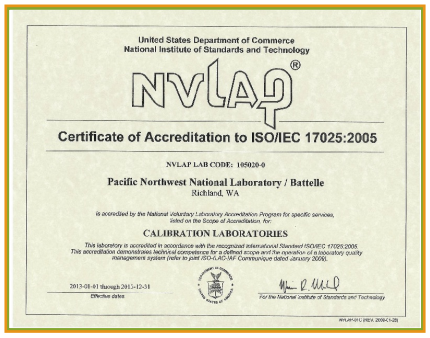
Pacific Northwest
NATIONAL LABORATORY

Proudly Operated by Battelle *Since 1965*

Lighting System Testing and Evaluation

PNNL Lighting Metrology Laboratory (LML)

PNNL maintains a nationally accredited lighting test laboratory and staff expertise to effectively evaluate advanced lighting systems and their applications. Evaluations and technology guidance often do not require testing but do make use of our extensive experience in assessing manufacturers' information and test data. When testing is needed to verify performance, our accredited Lighting Metrology Laboratory offers wide-ranging capabilities to perform photometric, photoelectric, long-term performance, and stress testing.



United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 105020-0

Pacific Northwest National Laboratory / Battelle
Richland, WA

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation for:

CALIBRATION LABORATORIES

This laboratory is accredited in accordance with the recognized international Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

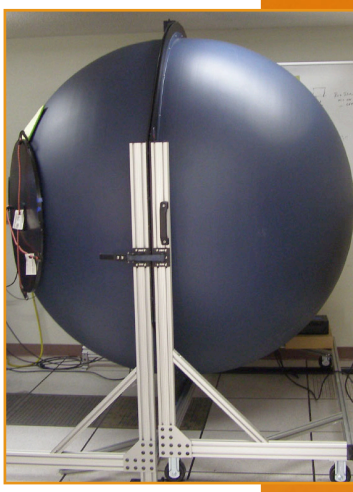
2013-01-01 through 2013-12-31
Effective dates

For the National Institute of Standards and Technology

PHOTOMETRIC – INTEGRATING SPHERE TESTING

Verification of the light output, color, and electrical input of lamps, luminaires, and other lighting products

- Absolute measurement
- Radiant flux (watts)
- Luminous flux (lumens)
- Luminous efficacy (lm/W)
- Chromaticity coordinates
- Correlated color temp (CCT) (K)
- Color rendering index (CRI)
- Current (A) and voltage (V)
- Spectral power distribution (SPD) from 350 nm—850 nm
- Beam/field angle

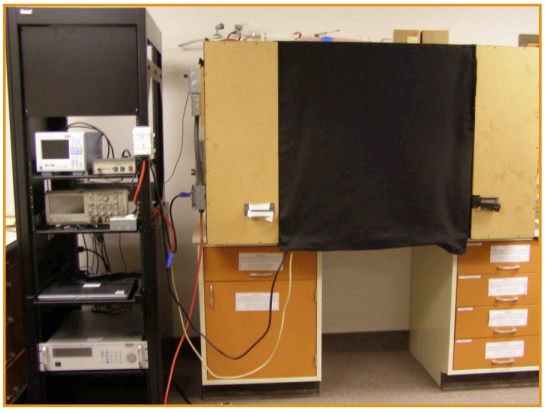


U.S. DEPARTMENT OF
ENERGY

PHOTOELECTRIC TESTING

Verification of the photometric and electrical characteristics of lighting and other products

- Relative light output, efficacy
- Input power, current
- Flicker (flicker index, percent flicker)
- Start-up operation
- Input power quality (power factor, THD-I)

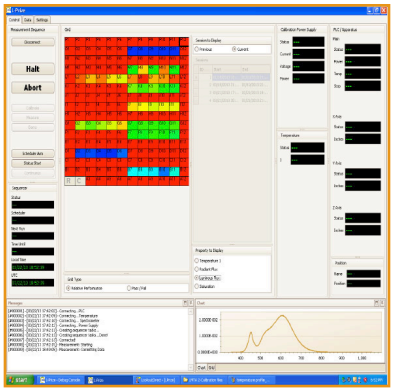


LONG-TERM PERFORMANCE TESTING

Evaluation of the change over time of the light output and color characteristics of lighting products

Automated relative measurement:

- Radiant flux (watts)
- Luminous FLUX (LUMENS)
- Luminous efficacy (lm/W)
- Chromaticity coordinates
- Correlated color temp (CCT) (K)



- Color rendering index (CRI)
- Current (A) and voltage (V)
- Spectral power distribution (SPD) from 350 nm—850 nm

STRESS TESTING

Evaluation of the robustness of lighting products

- Multi-stress (thermal, humidity, electrical, and vibration)
- Time to catastrophic failure
- Stress level (1–10)
- Time in level
- Parametric degradation
- Measured in between stress levels
- Illuminance, chromaticity (x,y), power quality

ABOUT PNNL

Pacific Northwest National Laboratory, located in southeastern Washington State, is transforming the world through courageous discovery and innovation. PNNL's science and technology inspires and enables the world to live prosperously, safely, and securely. Our researchers collaborate to advance science and solve complex problems in energy, the environment, and national security—as well as move technology solutions to market. PNNL employs more than 4,000 staff members, with an annual budget of $1 billion. Since 1965, PNNL has been operated by Battelle on behalf of the U.S. Department of Energy.

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