The Importance of Third Party Safety Certification

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EPA Energy Star Partner Meetings
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Evolving Industry >>> Evolving Components >>> Evolving Standards

**Traditional Lighting**

- **Lamp / “bulb”**
  - Edison-era Technology
  - Filament / Vapor based
- **Luminaire**
  - “brass and glass”
- **Ballast**
  - Low-tech electronics
- **Switches & Dimmers**
  - Simple and mechanical

**Solid State Lighting**

- **Diode Package**
  - Solid-state semiconductor, easily shipped, not fragile like glass, low & line voltage
- **Driver**
  - Current regulating power supply
  - Breaks regional voltage barriers
- **Optics**
  - Integrated and standalone
  - Control light focus and beam spread
- **Thermal Management**
  - Most are passive heat sinks
  - Active in high power applications (fan, water, and gas based)
- **Enclosure**
  - New shapes, sizes, applications based on small packages and large relative output
- **Standardized Connectors**
  - Daisy chain diode arrays, drivers and control products
- **Power Generation and Storage**
  - ‘Green’ trends in power delivery
  - Solar powered, battery backup streetlights and landscape spikes
- **Lamp Holders / Sockets**
  - New interfaces for drivers, packages, enclosures, thermal management in development
- **Wireless, Power Free Control Gear**
  - Ceiling grids, fine wiring, T-bars, induction, power and control over microwave
- **Controls**
  - Electronic control light output, color temp, multiple locations, wireless implications, energy management
- **Software**
  - Programmable directions, plug and play recognizes led system, software safety is slow
Rapid Development of Industry Standards

Challenge: **Remain Informed & Educated** as new technology and standards develop globally
The Path starts with Third Party Safety Certification

- UL Listing
- UL Recognition
- IEC

Performance Testing
- Energy Star
- Zhaga
- EMC/FCC
- Lifetime, LM-80

Photometrics
- IES LM-79
- Photobiological
Specifically for Energy Star – The Path starts with Safety Certification
See ENERGY STAR® Program Requirements for Luminaires V1.1

### Safety Requirements

<table>
<thead>
<tr>
<th>Indoor Luminaire Safety: Portable Luminaires</th>
</tr>
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<tbody>
<tr>
<td><strong>Source Type</strong></td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
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Specifically for Energy Star - The Path starts with Safety Certification
See ENERGY STAR Program Requirements for Luminaires V1.1

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## Electronic Ballast or Driver Safety Requirements: Ballasts, Drivers and “Non-Edison Base Fluorescent Adapters” Source Type

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<tr>
<td>- linear</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- compact</td>
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<td></td>
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<tr>
<td>- circline</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- self ballasted compact (GU24)</td>
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<tr>
<td><strong>High Intensity Discharge</strong></td>
<td>- Demonstrate compliance with ANSI/UL 1029-2010.</td>
<td>- Reference Documents: ANSI/UL 1029-2010</td>
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<tr>
<td>- metal halide</td>
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<tr>
<td>- ceramic metal halide</td>
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<tr>
<td>- high pressure sodium</td>
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<tr>
<td>- replaceable LED light engine</td>
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<tr>
<td>- integrated LED lamp (GU24)</td>
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</tr>
<tr>
<td><strong>Halogen Incandescent</strong></td>
<td>Not applicable.</td>
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Why is Third Party Safety Certification important?

**Consumer Safety and Confidence**
(Retailers, Distributors, Municipalities, Insurers, and End Users)

Independent testing – without bias

Testing to the National Standard
American National Standards Institute (ANSI)

Conducted by an Accredited ISO 17025 Laboratory
Value to the manufacturer…..Protecting your Brand

At UL……
• 22 Billion UL Marks appear on customer products annually
• 67,798 manufacturers produce UL Certified Products
• 125 ave. number of UL certified products in a US home

Factory Inspections - Ensure continued compliance
• We conduct 560K factory inspections globally every year
• Conduct Supply Chain Quality Audits on behalf of our customers

Anti-Counterfeiting
• UL partners with US Customs, FBI, DOJ, INTERPOL, Europol, Hong Kong Customs, Mexico Customs, etc. verifying UL Markings
• UL has trained more than 2,000 customs officials around the world
• Invest approx. $2 million (USD) annually in anti-counterfeiting activities and education – costs that are not “charged back” to customers.
• Take steps to fight counterfeiting, including the introduction of holographic labels – which are much more difficult to counterfeit – 33 Lighting product types included.
• Continue to educate UL customers on how to protect their IP rights.
Our Global Lighting Technical Coverage

Safety (US & IEC)
20 locations in NA, EU, & Asia

Performance (Photometrics, Energy Eff. + Zhaga)
Allentown, PA, Scottsdale, AZ
Burago Italy, Manasar India, Nansha China
Stay Tuned with UL

Read Lumen Insights
Technical newsletter designed to keep you informed on UL, Standards, Energy Efficiency, LED and Solid State Lighting

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ul.com/signs
THANK YOU!

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UL Verification Services Business
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Appendix
UL Lighting Safety Standards

UL 8750
Standard for LED Equipment For Use in Lighting Products

- Luminaires: UL 1598
- Portable Luminaires: UL 153
- Stage and Studio Luminaires: UL 1573
- Signs: UL 48
- Emergency Lighting & Exit Signs: UL 924

- Self Ballasted Lamps: UL 1993
- Nightlights: UL 1786
- Low Voltage Systems: UL 2108
- Track Lighting Systems: UL 1574
- Submersible Luminaires: UL 676
Recent & Future LED Standards Development

- Organic LEDs (OLED)
  - UL 8752
- LED Light Engines
  - TBD
- E-Merge Alliance Products
  - TBD
- Bases, Holders, Connectors
  - TBD
- Other LED Components
  - TBD
UL’s Performance Labs & Experts – Americas

UL Allentown, PA - North American Region
Full Photometric Testing & Zhaga
UL’s Performance Labs & Experts – Americas

UL Scottsdale, AZ - North American Region
Full Photometric, Ballast Testing, & Manufacturing of Goniophotometers
UL’s Performance Labs & Experts - Europe

UL Burago, Italy - European Region
Photometric Testing and Safety Testing
Milan, Italy
UL’s Performance Labs & Experts – India/ASEAN

UL Manesar, India
Photometric Testing & HVAC Testing
UL’s Performance Labs & Experts – CHINA / ASIA

UL Nansha, China - Asia Region
Full Photometric Testing & Appliance Performance Testing
UL’s Performance Test Capabilities

Thought Leadership in Programs and Technical know how
UL Manufactures Type ‘C’ Goniophotometers

“A UNIQUE AND SIGNIFICANT ADVANCEMENT TO THE ART AND SCIENCE OF LIGHTING.”

– ILLUMINATING ENGINEERING SOCIETY

The 6400T Type C High Speed Moving Mirror Goniophotometer