



The Importance of Third Party Safety Certification

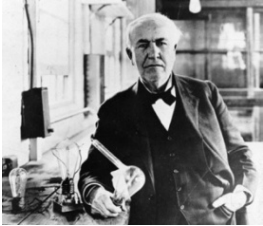
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EPA Energy Star Partner Meetings

October 2012



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

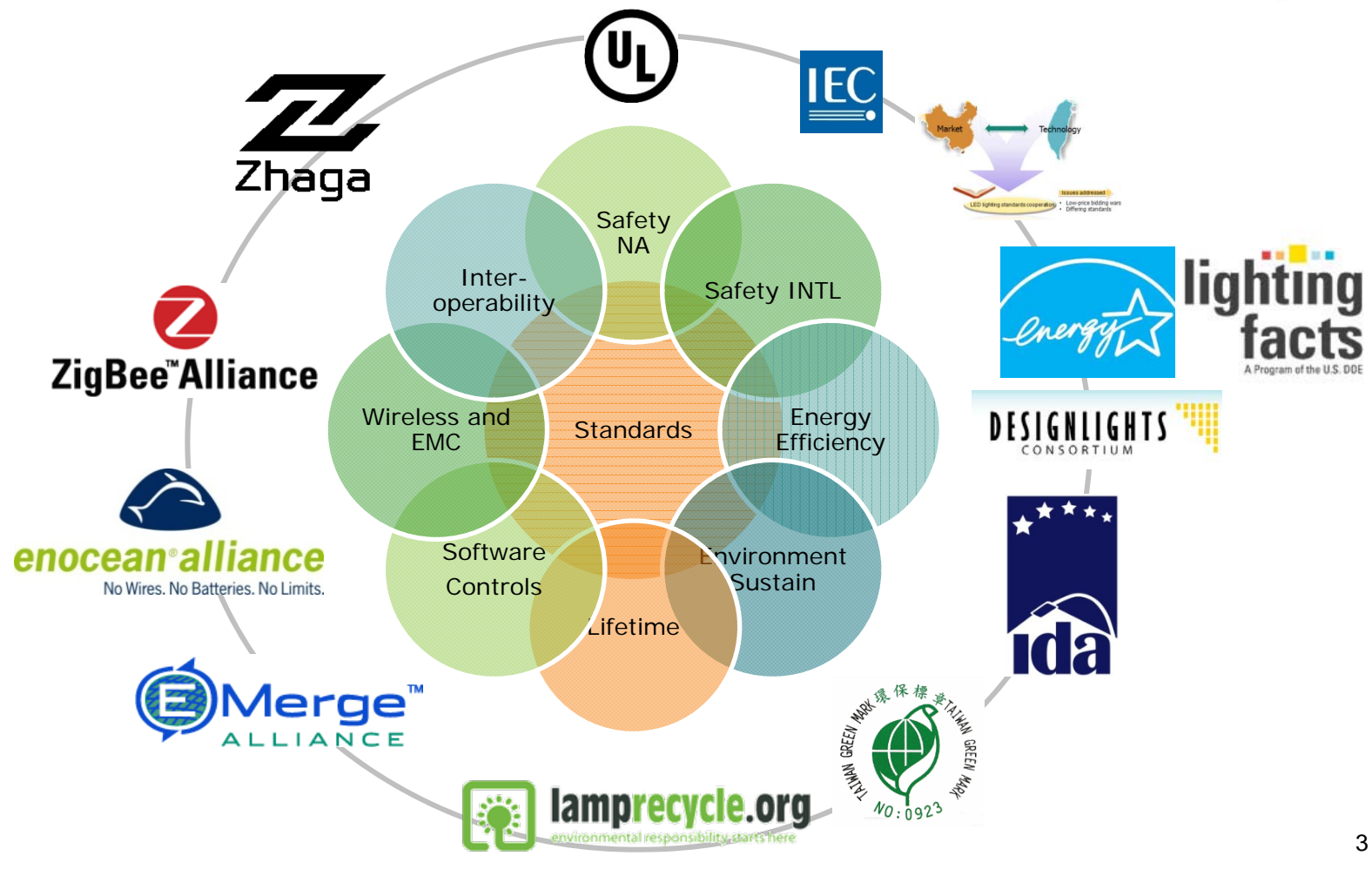
Software

- Programmable directions, plug and play recognizes led system, software safety is slow

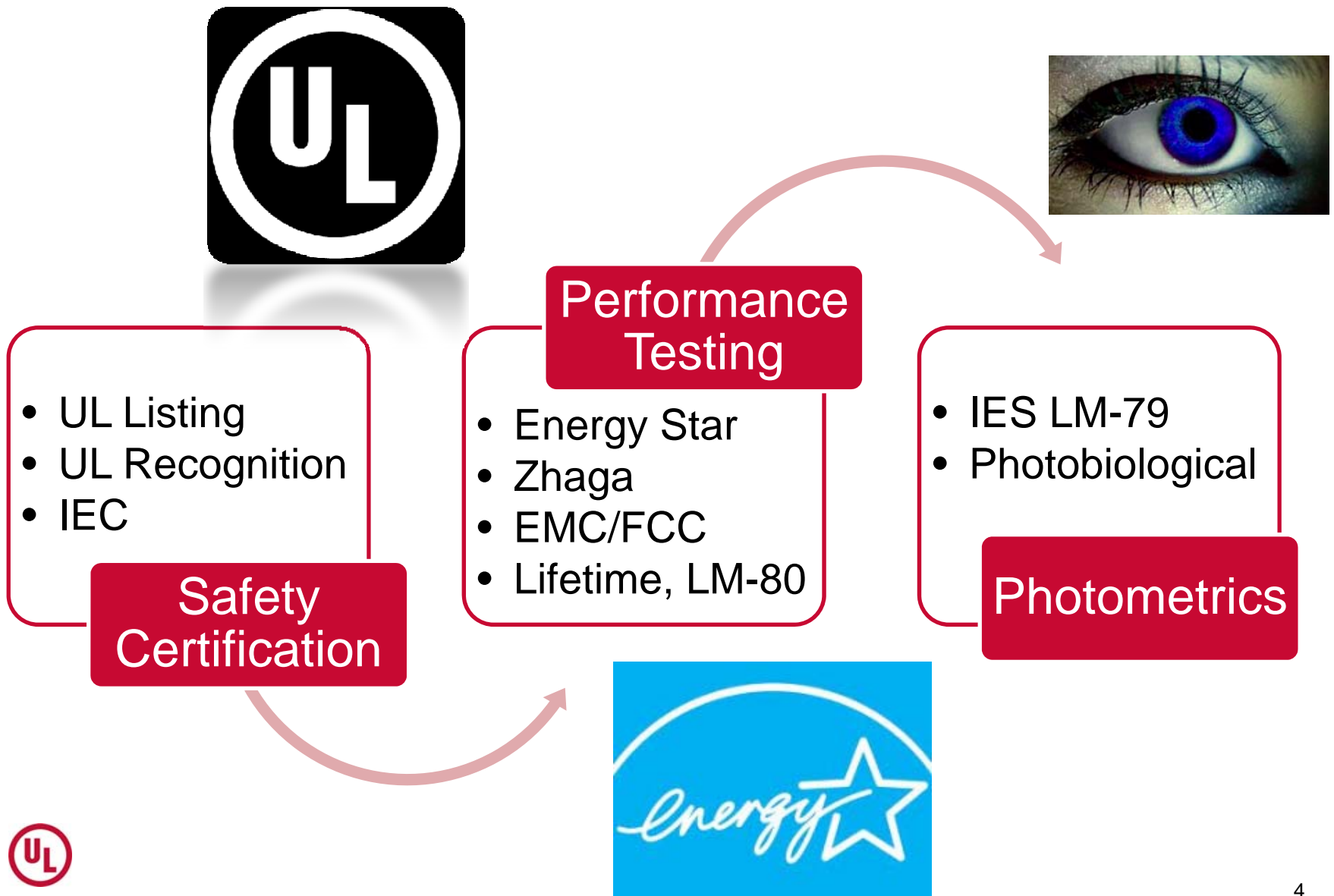


Rapid Development of Industry Standards

Challenge : **Remain Informed & Educated** as new technology and standards develop globally



The Path starts with Third Party Safety Certification



Specifically for Energy Star – The Path starts with Safety Certification

See **ENERGY STAR® Program Requirements for Luminaires V1.1**

Safety Requirements

Indoor Luminaire Safety: Portable Luminaires

Source Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Fluorescent <ul style="list-style-type: none"> • linear • compact • self ballasted compact (GU24) • circline 	Demonstrate compliance with ANSI/UL 153-2002.	Reference Documents: ANSI/UL 153-2002	Documentation shall be produced by an OSHA NRTL laboratory .
High Intensity Discharge <ul style="list-style-type: none"> • metal halide • ceramic metal halide • high pressure sodium 			
Solid State	Demonstrate compliance with ANSI/UL 153-2002 and ANSI/UL 8750-2009.	Reference Documents: ANSI/UL 153-2002ANSI/UL 8750-2009	
Halogen Incandescent (outdoor only)	Not applicable.		



Specifically for Energy Star - The Path starts with Safety Certification

See **ENERGY STAR Program Requirements for Luminaires V1.1**

Indoor and Outdoor Luminaire Safety: Hardwired Luminaires

Source Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Fluorescent <ul style="list-style-type: none"> • linear • compact • self ballasted compact (GU24) • circline 	Demonstrate compliance with ANSI/UL 1574-2004, ANSI/UL 1598-2008, ANSI/UL 2108-2004, as applicable.	Reference Documents: ANSI/UL 1574-2004 ANSI/UL 1598-2008 ANSI/UL 2108-2004	Documentation shall be produced by an OSHA NRTL laboratory .
High Intensity Discharge <ul style="list-style-type: none"> • metal halide • ceramic metal halide • high pressure sodium 			
Solid State	Demonstrate compliance with ANSI/UL 1574-2004, ANSI/UL 1598-2008, ANSI/UL 1598B-2010, ANSI/UL 2108-2004, ANSI/UL 8750-2009, as applicable.	Reference Documents: ANSI/UL 1574-2004 ANSI/UL 1598-2008 ANSI/UL 1598B-2010 ANSI/UL 2108-2004 ANSI/UL 8750-2009	
Halogen Incandescent (outdoor only)	Demonstrate compliance with ANSI/UL 1598-2008, ANSI/UL 2108-2004, as applicable.	Reference Documents: ANSI/UL 1598-2008 ANSI/UL 2108-2004	

Specifically for Energy Star - The Path starts with Safety Certification

See **ENERGY STAR Program Requirements for Luminaires V1.1**

Electronic Ballast or Driver Safety Requirements: Ballasts, Drivers and “Non-Edison Base Fluorescent Adapters” Source Type	ENERGY STAR Requirements	Methods of Measurement and/or Reference Documents	Supplemental Testing Guidance
Fluorescent 1. linear 2. compact 3. circline	Demonstrate compliance with ANSI/UL 935-2009, ANSI/UL 1310-2010, ANSI/UL 1993-2009, as applicable. Demonstrate compliance with CSA 22.2 Number 74, or IEC 61374-2-3-am2 ed1.0 b.2006, as appropriate.	Reference Documents: ANSI/UL 935-2009 ANSI/UL 1310-2010 ANSI/UL 1993-2009 End of life (linear T5): CSA 22.2 Number 74, or IEC 61374-2-3-am2 ed1.0 b.2006	Documentation shall be produced by an OSHA NRTL laboratory.
Fluorescent 1. self ballasted compact (GU24)	Demonstrate compliance with ANSI/UL 1310-2010, ANSI/UL 1993-2009, as applicable.	Reference Documents: ANSI/UL 1310-2010 ANSI/UL 1993-2009	
High Intensity Discharge 1. metal halide 2. ceramic metal halide 3. high pressure sodium	Demonstrate compliance with ANSI/UL 1029-2010.	Reference Documents: ANSI/UL 1029-2010	
Solid State: Non-Directional 1. replaceable LED light engine	Demonstrate compliance with ANSI/UL 1310-2010, ANSI/UL 2108-2004, ANSI/UL 8750-2009, as applicable.	Reference Documents: ANSI/UL 1310-2010 ANSI/UL 2108-2004 ANSI/UL 8750-2009	
Solid State: Non-Directional 1. integrated LED lamp (GU24)	Demonstrate compliance with ANSI/UL 1310-2010, ANSI/UL 1993-2009, ANSI/UL 2108-2004, ANSI/UL 8750-2009, as applicable.	Reference Documents: ANSI/UL 1310-2010 ANSI/UL 1993-2009 ANSI/UL 2108-2004 ANSI/UL 8750-2009	
Solid State: Directional	Demonstrate compliance with ANSI/UL 1310-2010, ANSI/UL 2108-2004, ANSI/UL 8750-2009, as applicable.	Reference Documents: ANSI/UL 1310-2010 ANSI/UL 2108-2004 ANSI/UL 8750-2009	
Halogen Incandescent (outdoor only)	Not applicable.		

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

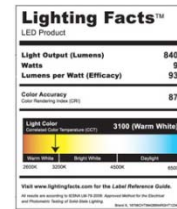
- UL partners with US Customs, FBI, DOJ, INTERPOL, Europol, Hong Kong Customs, Mexico Customs, etc. verifying UL Markings
- UL has trained more than 2,000 customs officials around the world
- Invest approx. \$2 million (USD) annually in anti-counterfeiting activities and education – costs that are not “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.





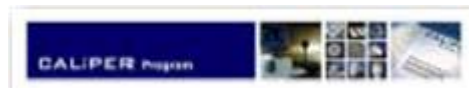
Our Global Lighting Technical Coverage

SAFETY

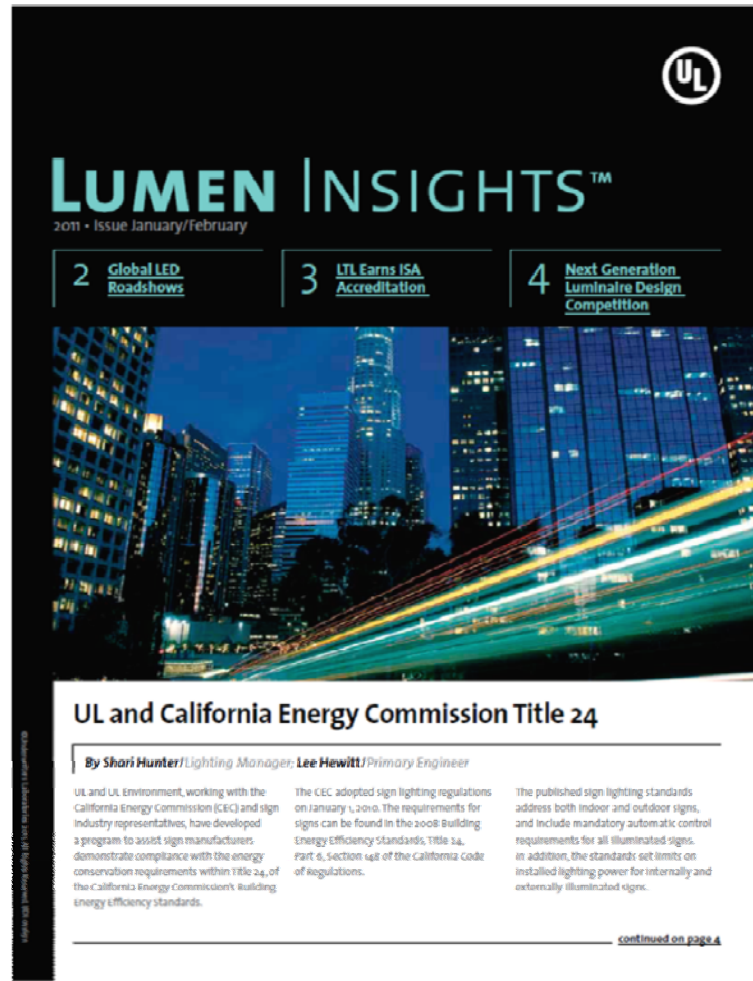
ENERGY EFFICIENCY & PERFORMANCE



-  **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



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

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THANK YOU!



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Appendix



UL Lighting Safety Standards

Luminaires

UL1598

**Portable
Luminaires**

UL 153

**Stage and
Studio
Luminaires**

UL 1573

Signs

UL 48

**Emergency
Lighting &
Exit Signs**

UL 924

UL 8750

Standard for LED Equipment For Use in Lighting Products

**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

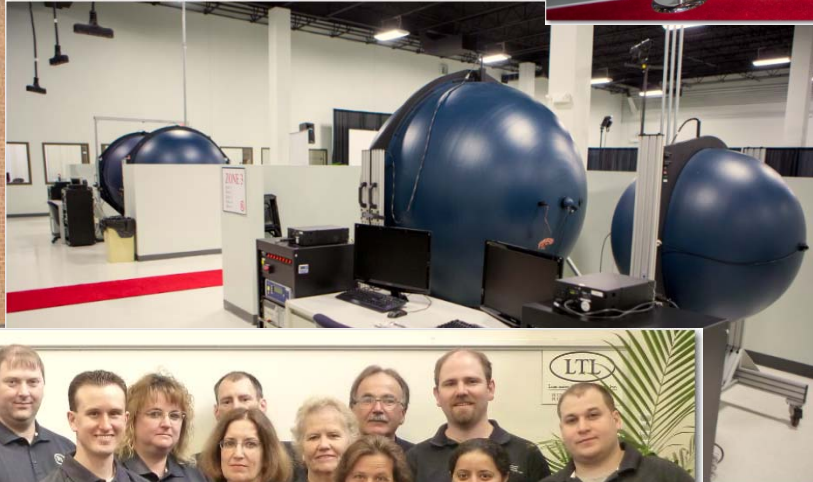
**Other
LED
Components**

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

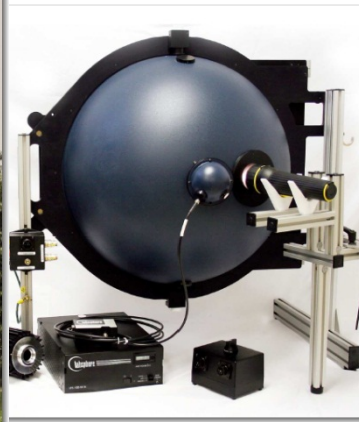
UL Manesar, India Photometric Testing & HVAC Testing



UL's Performance Labs & Experts – CHINA / ASIA

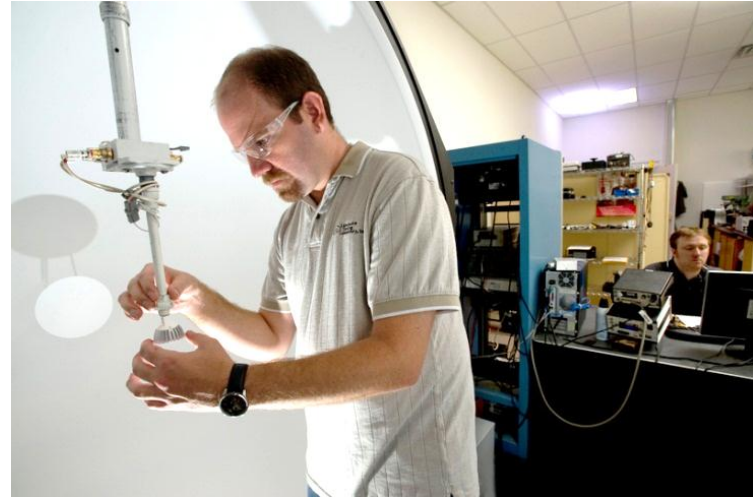
UL Nansha, China - Asia Region

Full Photometric Testing & Appliance Performance Testing

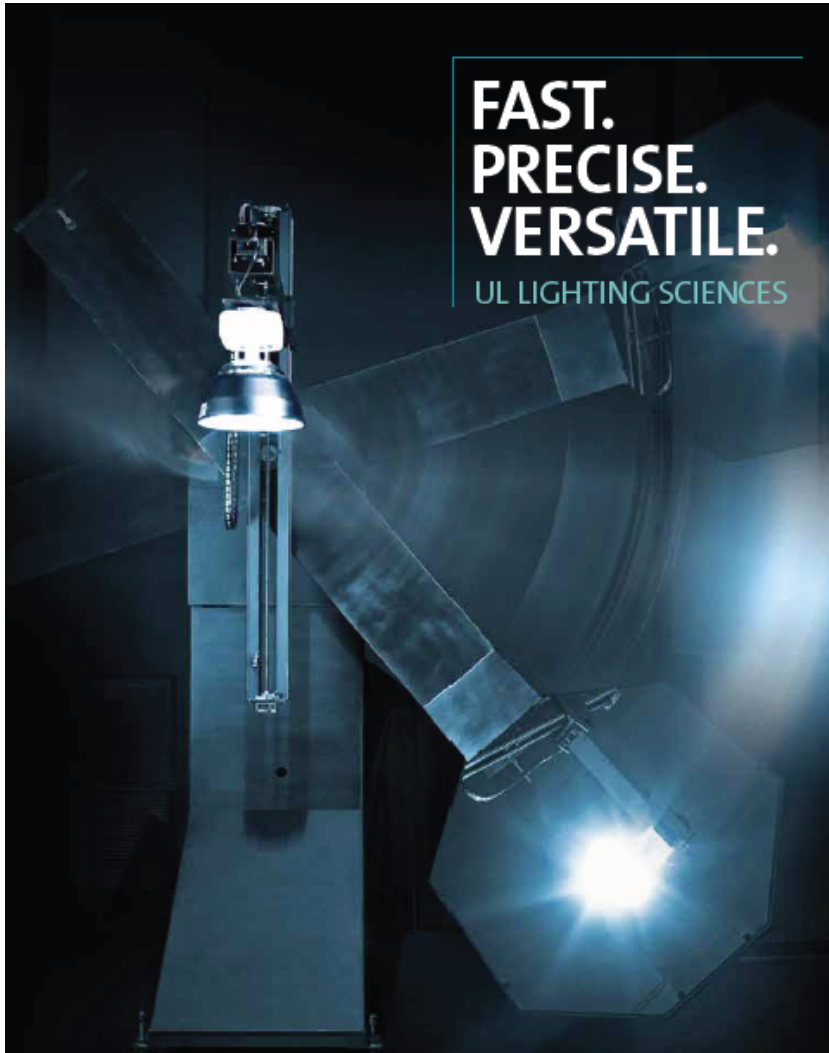


UL's Performance Test Capabilities

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

