
# LUMEN INSIGHTS®

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FEATURED ARTICLE

# Horticultural Lighting Brief

## About UL 8800, Outline of Investigation for Horticultural Lighting Equipment

As concerns grow about the long-term sustainability of conventional farming and agricultural operations meeting the world's future food requirements, increased attention is being given to the potential advantages of what some are calling "controlled environmental agriculture," or "indoor farming." Luminaires and grow systems specifically designed for horticultural applications are a critical technology in these innovative agricultural environments because they are essential in achieving optimal plant development and growth. Appropriately, new standards are emerging to address the full range of safety issues posed by lighting technologies deployed in these environments.

### About UL 8800

Unlike UL 1598, *Standard for Safety of Luminaires, UL 8800, Outline of Investigation for Horticultural Lighting Equipment*, is intended to address the unique safety issues applicable to horticultural luminaires, lighting components and grow systems, and represents the first set of standardized requirements specifically designed for horticultural lighting equipment. As a result, UL is currently using the requirements of UL 8800 to evaluate horticultural lighting equipment from manufacturers seeking the UL safety Mark for their equipment and devices.

Introduced in 2017, UL 8800 provides a published set of safety requirements for lighting equipment and grow systems intended for use in a horticultural environment, and installed in accordance with the National Electrical Code. Lighting equipment covered under the scope of this Outline of Investigation includes luminaires and, when a horticultural system is employed, an assessment of lamp

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## Spotlight: Letter From Roberto

*As usual, in the last quarter of the year, in addition to working toward a strong close for the year, it also serves to reflect on the lighting market trends that are ending.*

*We saw several changes in 2018, including important acquisitions, segment spin-offs and the continuous search for a performance improvements, connectivity system integration and data management.*

*In 2019, we will hear more about eco-systems such as smart buildings and smart homes, human-centric lighting, the biological effect that light has on the circadian rhythm and how to reduce time to market.*

*While working on all three initiatives, 2019 will give us the opportunity to offer innovative services to help companies obtain the necessary certifications, differentiate the products in the market and use light to obtain maximum benefits at the biological level.*

*I thank you for your trust in having worked with us in 2018 and wish you Happy Holidays and a 2019 full of successes.*

*Warm Regards,*

*Roberto Inclinati*
*Global Business Development Manager*

## Upcoming UL Education & Training for the Lighting Industry

At UL Knowledge Solutions, our goal is to help you develop safe, useful products that meet and exceed your customers' needs. Here you will find dozens of training courses taught by qualified instructors, both Public Workshops and Online eLearning Courses.

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LED Equipment, UL 8750

Luminaire, UL 1598

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# Horticultural Lighting Brief

holders, wire harnesses, plugs and connectors, light-emitting diode (LED) packages, ballasts/LED drivers, lamps, and hardware and structures (also known as systems) specifically designed or intended for use in optimizing plant growth.

## Key Changes in UL 8800

The requirements of UL 8800 differ from those of UL 1598 in several significant ways. Key differences include:

- *Targeted scope*—The scope of UL 1598 addresses the safety issues of luminaires that are hardwired in a fixed location and designed for the purpose of general illumination. In contrast, the scope of UL 8800 specifically covers luminaires and grow systems intended for the active development and growth of plants.
- *Photobiological effects*—UL 8800 addresses safety considerations associated with the photobiological effects and potential hazards associated with human eye and skin exposure to light-source technology widely used in horticultural lighting systems. UL 8800 photobiological safety requirements are consistent with those found in IEC 62471, Photobiological safety of lamps and lamp systems, and provides the user with detailed information on what precautions to take regarding the potential exposure of the light output.
- *Wiring and connection methods*—Unlike luminaires installed in conventional industrial and commercial settings that remain fixed throughout their useful life, horticultural lighting systems are typically designed to be frequently raised, lowered or repositioned to optimize plant growth. As such, UL 8800 allows for specialized wiring and connection methods that support the required positioning flexibility.
- *Environmental considerations*—General environmental conditions within indoor agricultural operations can vary widely, with high humidity levels and temperature conditions. Under UL 8800, horticultural lighting systems are evaluated for their suitability in damp and/or wet environments, as well as in environments with elevated ambient temperatures. Lighting systems achieving UL 8800 Certification bear markings that verify these characteristics.
- *Ingress protection*—Equipment used in indoor agricultural operations are also at greater risk of infiltration from dust, moisture, and water that can compromise their reliability. UL 8800 addresses these risks with Ingress Protection (IP) testing that classifies and rates the degree of protection afforded by the equipment against both solid objects and water.
- *UV exposure of polymeric materials*—Finally, in a grow environment, polymeric materials associated with the equipment can be exposed to UV from the sun, such as within a greenhouse, or UV emanating from the light source within the luminaire. In either case, this exposure can cause polymeric materials to become brittle and more susceptible to breakage. UL 8800 sets forth requirements to address these concerns.

## Advantages of UL 8800 Horticultural Luminaire Certification

The failure of a horticultural lighting system design to address the safety criteria in UL 8800 can compromise the safety of the grow facility and workers in the grow environment and can have significant consequences for indoor horticultural operations.

Manufacturers who achieve certification to the requirements of UL 8800 will have met the most rigorous safety criteria currently applicable to horticultural luminaires and lighting systems. Achieving UL 8800 certification also demonstrates to prospective customers a manufacturer's commitment to providing state-of-the-art lighting technology that meets the unique requirements of horticultural lighting applications.

**For more information about UL 8800 and UL 8800 Horticultural Luminaire Certification, contact our team at LightingInfo@ul.com. Or visit UL.com/HorticulturalLighting.**

By: Joe Musso / UL Standards Program Manager

# Standards Corner

**Standards information link HERE.**

**Sign up for "What's New" at HERE** by selecting "Join Email List" on the What's New site to receive email notifications twice a month listing the various UL, UL Environment, and ULC Standards documents published during that timeframe.

## Standards Update

### UL 48 – Electric Signs

Several new proposals were posted for STP ballot August 24, 2018, closing October 8. One proposal addresses sign constructions employing receptacles providing auxiliary functions separate from the signage application. The others relate to reference standards and requirements for components used in PV signs. All proposals reached consensus, with several comments. Final recirculation will take place in Q4 2018, with publication of the revisions shortly thereafter.

### UL 1088 – Temporary Lighting Strings

A proposal for an additional exception to the metal lamp guard requirements was circulated for STP ballot closing in April 2018. The proposal did not initially reach consensus, but after a successful comment resolution and recirculation, consensus was finally reached. The revisions will proceed to publication during Q4 2018.

### UL 1598 – Luminaires (Tri-National Standard)

The most recent revision cycle included 27 proposal topics, which all reached final consensus, and were published in the standard on August 28, 2018. Several new proposals have been received and are being compiled in preparation for the next revision cycle to begin.

### UL 1993 – Self-Ballasted Lamps and Lamp Adapters

A series of 20 new proposals are currently under review by the technical harmonization committee in preparation for the revision cycle.

### UL 8750 – Light Emitting Diode (LED) Equipment for Use in Lighting Products

A 10-topic proposal ballot closed June 18, 2018, with all topics achieving consensus (with comments). The recirculation of responses to comments for topics 1-9 closed August 3, and those topics maintained consensus. Revisions associated with topics 1-9 were published in the standard on August 22. The remaining topic 10 was recirculated to the STP for 30 days ending October 30. Consensus was maintained, and the revision will be published in November. Several new proposals have been received and are being compiled in preparation for the next revision cycle to begin.

# UL Participates in Canton Fair and Hong Kong International Lighting Fair

*By Vicky Luo, communications specialist*

The 124th Canton Fair took place from October 15 – November 4, with 60,645 booths and 25,583 exhibiting companies from around the world. The Canton Fair is a comprehensive international trading event with the longest history (running since 1957), the largest scale, the most complete exhibit variety, the largest buyer attendance, the broadest distribution of buyers' source country and the greatest business turnover in China.


UL exhibited at the fair and attracted quite a few customers to stop by and learn more about UL's offerings. During this fair, UL introduced to customers our Global Market Access service and Appliances, HVAC/R and Lighting, Conntected Technologies and Building and Life Safety Technologies testing and certification services.

In addition to UL's exhibit, we also led directors from INMETRO, ABILUS and ABILUMI to visit Canton Fair, specifically our customers' booths related to the lighting and appliance industry. The team included the Manufactures Association; Delzuite Ferreira, operation manager in Brazil for UL; Marcos Oliveiva, INMETRO accreditation director; Leonardo Rocha, INMETRO regulatory manager; Georges Blum, Brazilian Importers Association president; Rubens Rosado, Brazilian Importers Association technical director; Roberto Saheli, vice president of Brazilian Manufactures Association; Marcos Vertuoso, director of Brazilian Manufactures Association; and Carlos Ferreira, China agent of Brazilian Importers. This was a great opportunity for both Brazilian officials and Chinese manufacturers to have direct conversations with each other to solve existing problems and show Chinese manufactures the strong relationship UL has with INMETRO and how UL can support and assist with their efforts to get into the Brazilian market.

## Hong Kong International Lighting Far

The Hong Kong International Lighting Fair took place from October 27-30, with approximately 600 exhibitors and around 37,000 buyers. With China being an important manufacturing base for global LED luminaire production (making up about 80percent of the total production worldwide), this Lighting Fair plays an important role in the Chinese lighting market.


With the rapid development of the LED luminaire industry and the continuous innovation of technology, Internet of Things (IoT) will be a new trend for all products. Luminaire products, as one important member of the IoT family, will change its development model from providing lamps or lanterns to providing lighting as a service. However, growing safety risks arise when using computers. After being dedicated to the field of computer safety for many years, UL issued the UL 2900

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## UL Participates in Canton Fair and Hong Kong International Lighting Fair

Series Standards to address software cybersecurity for network-connectable products. UL can provide the related training for our customers and conduct the relevant tests for the products (like random data intrusion, analysis on the original code, simulated hacker attacks, etc.). This Standard applies to all products related to IoT, including luminaries.

In addition to UL's exhibit, UL's Sam Wang, Asian-Pacific lighting business development manager, delivered a speech about UL's Cybersecurity Assurance Program (CAP).

UL, as a globalsafety science leader, has been dedicated to the certification market for many years and will continue its endeavor to help relevant industries seize market opportunities, break technical trade barriers, and expand the international market with a global view.


## Brea Lighting Performance Lab Lunch n' Learn

In late October, over 55 lighting industry project engineers, manufacturers and marketers gathered at UL's Lighting Performance Testing Lab in Brea, CA. Guests sat in on several presentations including timely industry updates related to today's lighting landscape, DLC ®, CEC Title 24, Horticultural standards, cybersecurity outlooks for lighting and controls and more.

**For more information about the services offered at our Brea Lab, contact** PerformanceLighting@ul.com

# INMETRO Official China Roadshow

*By Flora Chen, marketing specialist*

The UL and Brazil 20th Anniversary INMETRO Certification Dialogue Seminar was recently held in Guangzhou and Suzhou. Representatives from the National Institute of Metrology Standardization and Industrial Quality (INMETRO) of Brazil, Brazilian Association of Manufacturers and Importers of Lighting Products (ABILUMI), Brazilian Association of Lighting Industry (ABILUX) and a group of guests traveled to the UL's Guangzhou and Suzhou offices and introduced at the seminar the market situation and INMETRO regulations for lighting products in Brazil.

The past 20 years have witnessed the rapid development of bilateral trade between China and Brazil, with China becoming Brazil's largest import and export trading partner. This year also marks UL's 20th anniversary in the Brazilian market. With outstanding ability and unremitting pursuit of professionalism, UL has always been trusted by the Brazilian government and customers domestically and internationally. UL is one of the first certification authorities recognized by the Brazilian government and also has the most widely recognized INMETRO product certification category.

"China and Brazil both belong to the 'BRIC countries' which are the five emerging markets with great development potential in the world. Among them, the bilateral trade performance between China and Brazil is very eye-catchin," said Jun Shi, General Manager of UL-CICC. "However, compared with some developed countries in Europe and North America, the mutual understanding of the two markets is still relatively limited due to a series of difficulties, such as long geographical distance, foreign exchange control of Brazilian government and low English penetration rate, which pose great challenges along with great opportunities for Chinese companies aiming at the Brazilian market."

To give customers a clear understanding of the Brazilian certification system, the official representative of INMETRO provided an in-depth analysis of the Brazilian conformity assessment system, the composition of the Brazilian certification system, international supervision and cooperation, technical regulations and certification processes.

*Jun Shi, General Manager of UL-CICC*

In addition, the official representative of ABILUX and ABILUMI introduced their organizations and the current situation in the Brazilian lighting market.

INMETRO is the government agency responsible for standardization in Brazil, and its regulation ranges from food packaging to oil and gas, covering all aspects of the Brazilian market. According to the government requirements, products must have a mandatory INMETRO logo and an approved third-party certification body (OCP) logo to obtain market access. Therefore, INMETRO certification is a veritable threshold for the Brazilian market and a crucial, but challenging initial step for companies expanding to Brazil.

As a leading global safety science organization in product safety testing and certification, UL is committed to working with our customers to help their products and services be globally recognized and create a safer world. With our professional experiences and a long history of more than 120 years, we use our integrity, professional technology and global resources to bring one-stop solutions to our customers.

## New Lighting Performance Label

UL is pleased to introduce a new label available to horticultural luminaire manufacturers as part of the UL's Horticultural Performance report. Manufacturers can now request and use this special label to help differentiate their products from the competition. This new UL label offers a quick and easy way for buyers and consumers to understand the vital performance aspects of a luminaire and is an exciting way for manufacturers to demonstrate performance.

"This new label is just one of the ways UL is making the horticultural lighting industry more accessible and more efficient for everyone," said engineering leader Zach Mooney at UL. "By making performance metrics easier to read and available to use in marketing materials, we are ensuring that consumers know exactly what to expect from a product in one place."

Horticultural lighting is one of the fastest growing segments in the lighting market. UL already helps manufacturers bring horticultural lighting equipment to the market while ensuring the highest levels of safety and performance by certifying products and writing standards the industry has come to trust. This new label furthers UL's commitment by providing an effective and transparent way for manufacturers to share independently verified data with consumers and buyers. The label now comes standard with the UL's Horticultural Performance report, and can be used on product packaging, websites, marketing materials and more to offer buyers a user-friendly way of reading into advanced characteristics to better understand luminaire performance.

To learn more, click here.

## Spotlight: UL Product iQ™

UL Product iQ™ brings you databases that help you find products that meet your needs with quick, intuitive searches. Choose from a variety of databases such as appliance wiring material, labels, certified water products and more. To visit the site, click here.

# Global Market Access Corner:

*UL maintains a global presence and a focus on helping customers access markets around the world that matter most to them. With unmatched technical expertise, a worldwide network of CB testing laboratories and localized staff who can offer services and expertise in the local language, we deliver technical assessments and reports that cover the latest editions of applicable international standards.*

*Our Global Market Access team is prepared to help you achieve compliance with new requirements and works diligently to remain aware of updates and revisions. For more information or to contact our experts, visit our Global Market Access site at ul-certification.com.*

## Saudi Arabia – SASO IECEE Recognition Certificate Update

*By: Ariel Amandi - Argentina Regulatory Program Expert*

The new Metrology and Quality Organization (SASO) IEC Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE) Recognition Certificate, formerly known as SASO Certificate of Product Conformity (SASO CoPC), is already mandatory for the following product categories:

- Mobile phones
- Mobile chargers
- Adaptors and cables, wireless, power banks
- Mobile USB cables
- Mobile batteries
- Water pumps
- Dishwashers
- TVs
- Laptops
- Smartwatches

The implementation date of the following product categories, soon to be introduced by SASO, was unofficially announced to be December 1, 2018, but SASO is postponing its implementation to the first quarter of 2019:

- Luminaires and lamps
- PV panels (solar panels)
- Tablets

The SASO IECEE Recognition Certificate is the Saudi National Conformity Certificate issued based on a valid CB Test Certificate and CB Test Report. This certificate guarantees that the appliance is compliant with the standards of IECEE and take into consideration the Saudi National Differences. Submittal of the required information must be via the SASO online system. The SASO IECEE Recognition Certificate will be valid for one year and requires annual renewal.

### How UL can help

UL is providing technical expertise, a worldwide network of CB testing laboratories and qualified staff that can support in delivering technical assessment and reports to cover the applicable international standards, national differences and regulatory requirements. UL's NCBs in all regions can supply CB Test Certificates in a reliable and effective way. UL laboratories are fully equipped and accredited to carry out tests and issue valid test reports according to SASO, International Electrical Safety Standards and the latest Saudi Energy Efficiency Standards. UL also has Arabic speaking staff who are experts in SASO's processes, online systems and requirements.

# Europe – Draft Regulations on Energy Labeling and Eco-design for Lighting Products

*By: Elena Andreula – EMEA Regulatory Program Expert*

The European Commission released draft Regulations on Energy Labelling and Eco-design requirements for Lighting products, repealing Regulations (EU) No 874/2012, (EC) No 244/2009, (EC) 245/2009 and (EU) No 1194/2012.

## New requirements for energy labelling according to the draft Regulation

1. The current energy label for lamps is reviewed and updated, introducing the QR code linking the model information to the public part of the database and the reference to the applicable EU regulation
2. The limits for the energy efficiency classes have been revised: all light sources above 210 lm/W are class A, all light sources below 85 lm/W are class G
3. The scope now covers organic light emitting diodes (OLED)
4. If a containing product (for example, a luminaire) cannot be taken apart for verification of the light source and separate control gear, the entire containing product is to be considered a light source
5. Light sources are always in the scope, even when they are parts of a containing product. However, the containing products themselves are not in the scope of the act. This means that the energy labeling requirement for luminaires set out in Regulation (EU) No 874/2012 is deleted.
6. If the light source is sold inside a containing product, a label is not required, but the packaging of the containing product must display text declaring the energy efficiency class of the contained light source
7. A list of lighting parameters and other information has been specified and needs to be entered, prior to marketing the products, on the product and in the compliance database established pursuant to Regulation (EU) 2017/1369 starting from January 2019

## New requirements for energy efficiency and eco-design according to the draft Regulation

The European Commission introduced:

1. New testing procedures and measurement methods
2. New functional requirements like flicker and stroboscopic effect metric (SVM)
3. Minimum energy efficiency requirements for separate control gears

Note: The requirement for mercury content of light sources has been deleted and the RoHS Directive 2011/65/EU will remain the only applicable regulation for hazardous substances.

## Key dates:

1. The public consultation closed November 9, 2018
2. The final drafts are agreed December 17-20, 2018
3. The regulations are voted by member states in Spring 2019
4. The regulations come into force 2021


*Layout of the new Energy Label for light sources*

### How UL can help

UL continues to monitor the energy efficiency and labelling standards and regulations as test methods move toward finalization. In addition to providing testing and certification for lighting products in accredited laboratories, we keep our customers aware of changes by becoming one trusted source of compliance information and support.

Our Global Market Access team is prepared to help you achieve compliance with new requirements and works diligently to remain aware of updates and revisions. For more information or to contact our experts, visit our Global Market Access site at **ul-certification.com**.

# 2018 Tradeshows

**Our 2018 Tradeshow season has come to an end, but here's a look at what's coming up in early 2019:**

### Strategies in Light 2019

February 27-March 1, 2019
Las Vegas, NV
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