

UNDERWRITERS LABORATORIES INC. CERTIFICATION REQUIREMENT DECISION

This Certification Requirement Decision is prepared by UL LLC. It is normative for the applicable UL Product Certification Program(s); however, it is currently not part of the UL Standard(s) referenced below.

Product Category (CCN): IFHD, IFHD7

Standard Number: UL 1598

Standard Title: Standard for Luminaires

Edition Date: August 28, 2018

Edition Number: 4

Section / Paragraph Reference: 1.4 (NEW), Annex L (NEW)

Subject: Germicidal Equipment

DECISION:

1.4 (NEW) The requirements in the main body of this standard are primarily intended for equipment that produce visible light for the purpose of area or task illumination. Additional requirements for germicidal equipment are located in Annex L.

Annex L (NEW)

Additional Requirements For Germicidal Equipment

SL1 Scope

SL1.1 These requirements apply to germicidal equipment intended to primarily emit electromagnetic energy in the UV region. These devices may or may not also produce visible light.

SL1.2 These requirements only address permanently mounted (i.e. fixed) equipment intended to be installed and operated in non-residential locations. These requirements do not cover:

- a) Equipment intended for use in dwellings; or
- b) Hand-held or portable equipment.

SL1.3 Products generating ultraviolet radiation are intended for use in accordance with the Federal Radiation Control for Health and Safety Act of 1968, the Federal Food, Drug and Cosmetic Act, and the Code of Federal Regulations, Part 1040, 21 CFR, Chapter 1, Subchapter J, Radiological Health.

SL1.4 Equipment whose primary function is to promote plant growth (i.e. horticultural luminaires) are excluded from the scope of this annex. These are covered under the scope of ANSI/CAN/UL 8800, Horticultural Lighting Equipment and Systems.

SL1.5 Equipment that emits electromagnetic energy with wavelengths greater than 780 nm or less than 200 nm are not addressed by this annex, and may require an additional evaluation.

SL1.6 All requirements in the main body of this standard also apply to this equipment unless specifically superseded by a requirement in this annex.

SL1.7 In this annex, the CSA standard reference applies to products intended for use in Canada, while

the UL standard reference applies to products intended for use in the United States. Combined references are commonly separated by a slash (" / ").

SL2 Glossary

EQUIPMENT INTENDED FOR OCCUPIED SPACES – UV Germicidal Equipment that are intended to operate when a space is occupied (or in use) by persons (e.g. Upper Room UVGI).

GENERAL USE DISTANCE – For equipment marked with a minimum mounting height, this is the shortest vertical distance between the lowest point on the equipment when mounted at this lowest marked height and a plane 2.1m (7 feet) above and parallel to the floor- see figure SL4.1.

OCCUPIED SPACE – The area in a room within 2.1 m (7 feet) of the floor.

ULTRAVIOLET (UV) RADIATION – Electromagnetic energy with a wavelength of 200 – 400 nm.

CONSTRUCTION

SL3 General

SL3.1 Equipment shall comply with all construction and test requirements in the main body of this standard applicable to the installation method and environmental location for which it is marked and intended. Equipment that uses low-pressure mercury-vapor discharge lamps shall comply with the requirements applicable to fluorescent luminaires.

SL3.2 Equipment shall be designed to be permanently mounted in a fixed location, such that it cannot be unmounted or relocated without the use of tools.

SL3.3 Equipment not intended to be adjusted by the end-user shall be designed such that it is not possible to re-orient or refocus the emission source using ordinary tools. In addition to the Glossary definition of ordinary tools, any tools designed to adjust hardware with flat, hex, Philips, square or Robertson configurations are also considered ordinary tools for the purpose of this requirement.

PROTECTION AGAINST INJURY TO PERSONS

SL4 Photobiological Assessment - Equipment Intended for Occupied Spaces

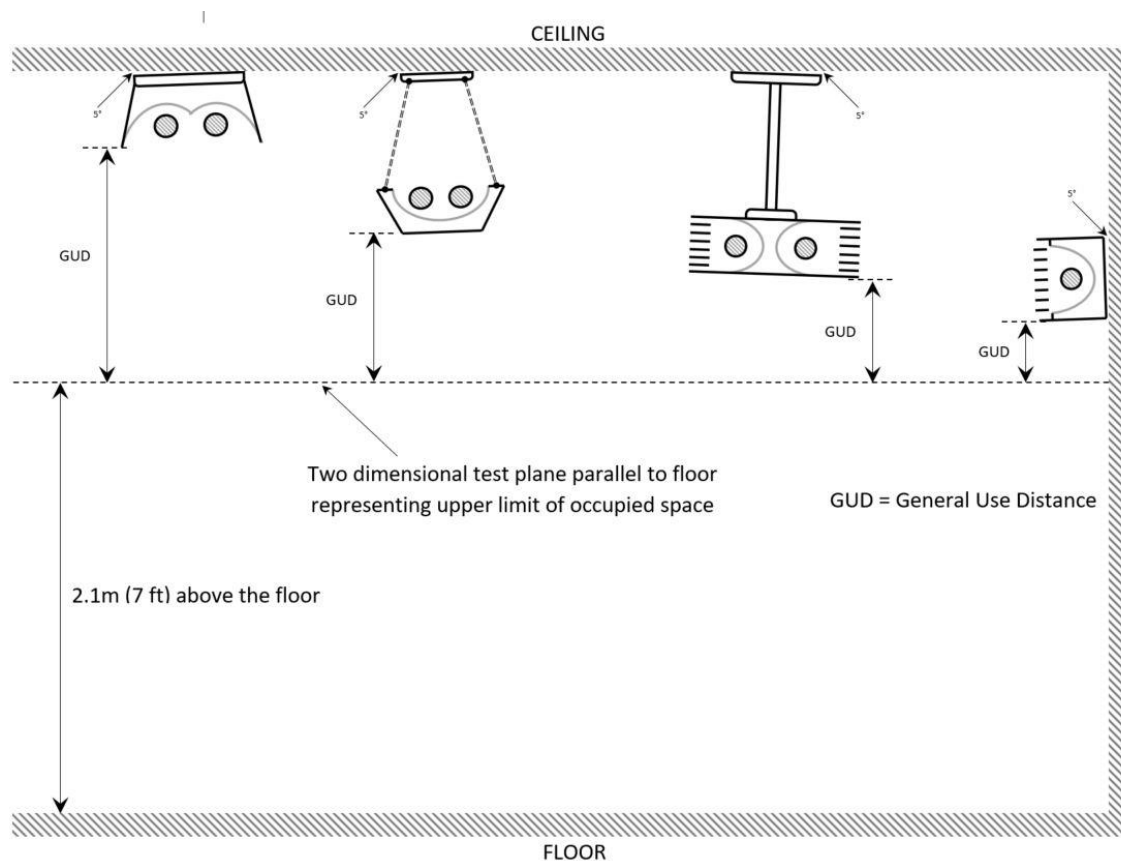
SL4.1 Equipment shall not pose a risk of optical injury to persons due to exposure when installed and operated as intended and during maintenance and servicing.

SL4.2 In order to determine compliance with SL4.1, a light source shall be subjected to a photobiological assessment across the UV and visible wavelength range from 200 nm through 780 nm in accordance with the requirements in CAN/CSA-C22.2 No. 62471 (in Canada) or IEC 62471 (in the United States). This assessment shall be used to determine the risk group of the equipment in accordance with IEC TR 62471-2.

The measurement distance from the light source to the measuring instrument shall be as described in SL4.3 to SL4.7.

SL4.3 For equipment marked with a minimum mounting height of at least 2.1m (7 feet) the risk group shall be determined using the highest reading anywhere along the 2-dimensional test plane defined in Figure SL4.1.

Figure SL4.1
Equipment Mounting Relative to Test Plane



SL4.4 With regard to clause SL4.3, the equipment shall be oriented and operated to produce the most severe test result permitted by its construction and installation instructions. In addition, the equipment shall be offset from its intended mounting surface angle by 5 ± 1 degrees whenever such an offset is likely to produce a more severe test result. See Figure SL4.1.

Note: The 5-degree offset represents equipment mounted on uneven or poorly levelled surfaces

SL4.5 With regard to clause SL4.3 for equipment with sources that emit radiation at wavelengths shorter than 400 nm, an additional reference irradiance measurement shall be taken at a distance of 500 mm (18.3 in) from the equipment's radiation source in the direction that produces the highest value. This peak emission value is not used for the risk group assessment, but shall be provided to the installer in accordance with SL7.8.

SL4.6 Controls intended to permit intermittent equipment operation (e.g. motion sensors, timers, etc.) shall be bypassed or disabled so that the equipment will operate continuously during the assessment.

SL4.7 For equipment not marked with a minimum mounting height, or marked with one that is less than 2.1m (7 feet), the risk group assessment shall be conducted using a measurement distance from the radiation source of 200 mm (8 in) in the direction likely to produce the most severe test result.

SL4.8 The results of these assessments are considered acceptable if the equipment achieves a risk group classification of Exempt or 1 for blue light hazards, and Exempt for all other hazards, at the