# Technical Requirements Tables (TRT)

## SSL V6.0 & LUNA V2.0

# SSL V6.0 & LUNA V2.0 Technical Requirements Tables

# Disclaimer for Using Technical Requirements Tables

The SSL V6.0 and LUNA V2.0 Technical Requirements Tables (TRT) contain only a subset of the information present in the main document [DLC Technical Requirements for LED Lighting: SSL V6.0 and LUNA V2.0](#).

Only the document linked above contains the full set of requirements and should be considered the primary resource for determining product eligibility, whereas the TRT should be used only as a shortcut for finding information present within the tables contained in the full Technical Requirements.

Without reading the full Technical Requirements, readers will miss key elements of requirements that may lead to less accuracy when products and programs are designed around these requirements.

*Table TRT-1: Categories, General Applications, and Primary Use Designations (PUD)*

| # | Category | General Application | Primary Use Designation (PUD) |
|---|---|---|---|
| 1 | *Outdoor* | Low Output | • *Outdoor Pole/Arm-Mounted Area and Roadway Luminaire*<br>• *Outdoor Pole/Arm-Mounted Decorative Luminaire*<br>• *Outdoor Zero-Uplight Wall-Mounted Area Luminaire*<br>• *Outdoor Uplight-Emitting Wall-Mounted Area Luminaire*<br>• *Turtle Lighting Zero-Uplight Pole/Arm-Mounted Area and Roadway Luminaire[3]*<br>• *Turtle Lighting Zero-Uplight Wall-Mounted Area Luminaires[3]*<br>• *Turtle Lighting Zero-Uplight Bollard[3]*<br>• *Bollard*<br>• *Parking Garage Luminaire*<br>• *Fuel Pump Canopy Luminaire*<br>• *Architectural Flood and Spot Luminaire*<br>• *Stairwell and Passageway Luminaire*<br>• *Hazardous Environment Area Luminaire*<br>• *Sports Lighting*<br>• Specialty: _____ |
| 2 | | Mid Output | |
| 3 | | High Output | |
| 4 | | Very High Output | |
| 5 | *Indoor* | Interior Directional | • *Wall Wash Luminaire*<br>• *Track or Mono-point Luminaire*<br>• Specialty: _____ |
| 6 | | Case Lighting | • *Display Case Luminaire*<br>• *Horizontal Refrigerated Case Luminaire*<br>• *Vertical Refrigerated Case Luminaire*<br>• Specialty: _____ |
| 7 | | Troffer | • *2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces*<br>• *1x4 Luminaires for Ambient Lighting of Interior Commercial Spaces*<br>• *2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces*<br>• Specialty: _____ |
| 8 | | Linear Ambient | • *Direct Linear Ambient Luminaire*<br>• *Linear Ambient Luminaires With Indirect Component*<br>• Specialty: _____ |

| # | Category | General Application | Primary Use Designation (PUD) |
|---|----------|---------------------|-------------------------------|
| 9 | | High-Bay | • *High Bay Luminaire*<br>• *High Bay Aisle Luminaire*<br>• *Hazardous Environment High-Bay Luminaire*<br>• *Indirect High-Bay Luminaire*<br>• Specialty: _____ |
| 10 | | Low-Bay | • *Low-Bay Luminaire*<br>• *Hazardous Environment Low-Bay Luminaire*<br>• Specialty: _____ |
| 11 | *Outdoor Retrofit Kits[1,2]* | Low Output | • *Retrofit Kits for Outdoor Pole/Arm-Mounted Area and Roadway Luminaires*<br>• *Retrofit Kits for Outdoor Pole/Arm-Mounted Decorative Luminaires*<br>• *Retrofit Kits for Large Outdoor Pole/Arm-Mounted Area and Roadway Luminaires*<br>• *Retrofit Kits for Outdoor Zero-Uplight Wall-Mounted Area Luminaires*<br>• *Retrofit Kits for Parking Garage Luminaires*<br>• *Retrofit Kits for Fuel Pump Canopy Luminaires* |
| 12 | | Mid Output | |
| 13 | | High Output | |
| 14 | | Very High Output | |
| 15 | *Indoor Retrofit Kit[1,2]* | Troffer | • *Linear Retrofit Kits for 2x2 Luminaires*<br>• *Integrated Retrofit Kits for 2x2 Luminaires*<br>• *Linear Retrofit Kits for 1x4 Luminaires*<br>• *Integrated Retrofit Kits for 1x4 Luminaires*<br>• *Linear Retrofit Kits for 2x4 Luminaires*<br>• *Integrated Retrofit Kits for 2x4 Luminaires* |
| 16 | | Linear Ambient | • *Retrofit Kits for Direct Linear Ambient Luminaires* |
| 17 | | High-Bay | • *Retrofit Kits for High-Bay Luminaires* |
| 18 | | Low-Bay | • *Retrofit Kits for Low-Bay Luminaires* |
| 11 | *Solar Powered Outdoor Luminaires[4]* | Low Output | • *Outdoor Pole/Arm-Mounted Area and Roadway Luminaire*<br>• *Outdoor Pole/Arm-Mounted Decorative Luminaire*<br>• *Outdoor Zero-Uplight Wall-Mounted Area Luminaire*<br>• *Outdoor Uplight-Emitting Wall-Mounted Area Luminaire*<br>• *Turtle Lighting Zero-Uplight Pole/Arm-Mounted Area and Roadway Luminaire[3]*<br>• *Turtle Lighting Zero-Uplight Wall-Mounted Area Luminaires[3]*<br>• *Turtle Lighting Zero-Uplight Bollard[3]*<br>• *Bollard*<br>• *Parking Garage Luminaire*<br>• *Fuel Pump Canopy Luminaire* |
| 12 | | Mid Output | |
| 13 | | High Output | |
| 14 | | Very High Output | |

| # | Category | General Application | Primary Use Designation (PUD) |
|---|---|---|---|
| | | | • *Architectural Flood and Spot Luminaire*<br>• *Stairwell and Passageway Luminaire*<br>• *Hazardous Environment Area Luminaire*<br>• *Sports Lighting*<br>• Specialty: _____ |
| 19 | *Linear Replacement Lamps* | *2' T8 Lamp* | • *Replacement Lamps ("Plug and Play") (UL Type A)*<br>• *Internal Driver/Line Voltage (UL Type B) Lamp*<br>• *1-Lamp External Driver (UL Type C) Lamp*<br>• *2-lamp External Driver (UL Type C) Lamp*<br>• *3-lamp External Driver (UL Type C) Lamp*<br>• *4-lamp External Driver (UL Type C) Lamp*<br>• *Dual Mode Internal Driver (UL Type A or B)* |
| 20 | | *4' T8 Lamp* | |
| 21 | | *4' T5 Lamp* | |
| 22 | | *3' T8 Lamp* | • *Replacement Lamps ("Plug and Play") (UL Type A)*<br>• *Internal Driver/Line Voltage (UL Type B) Lamp*<br>• *1-Lamp External Driver (UL Type C) Lamp*<br>• *2-lamp External Driver (UL Type C) Lamp*<br>• *Dual Mode Internal Driver (UL Type A or B)* |
| 23 | | *8' T8 Lamp* | |
| 24 | | *4' T5HO Lamp* | • *Replacement Lamps ("Plug and Play") (UL Type A)*<br>• *Internal Driver/Line Voltage (UL Type B) Lamp*<br>• *1-Lamp External Driver (UL Type C) Lamp*<br>• *2-lamp External Driver (UL Type C) Lamp*<br>• *3-lamp External Driver (UL Type C) Lamp*<br>• *4-lamp External Driver (UL Type C) Lamp*<br>• *6-lamp External Driver (UL Type C) Lamp*<br>• *Dual Mode Internal Driver (UL Type A or B)* |
| 25 | | *U-Bend Replacement Lamp* | • *Replacement Lamps ("Plug and Play") (UL Type A)*<br>• *Internal Driver/Line Voltage Lamp-Style Retrofit Kits (UL Type B)*<br>• *1-Lamp External Driver (UL Type C) Lamp*<br>• *2-lamp External Driver (UL Type C) Lamp*<br>• *3-lamp External Driver (UL Type C) Lamp*<br>• *Dual Mode Internal Driver (UL Type A or B)* |
| 26 | *Mogul Screw-Base (E39/E40) Replacements for HID Lamps[1]* | Outdoor – Low Output | • *Replacement Lamps for Outdoor Pole/Arm-Mounted Area and Roadway Luminaires (UL Type B)*<br>• *Replacement Lamps for Outdoor Pole/Arm-Mounted Decorative Luminaires (UL Type B)*<br>• *Replacement Lamps for Outdoor Zero-Uplight Wall-Mounted Area Luminaires (UL Type B)*<br>• *Replacement Lamps for Parking Garage Luminaires (UL Type B)*<br>• *Replacement Lamps for Fuel Pump Canopy Luminaires (UL Type B)* |
| 27 | | Outdoor – Mid Output | |
| 28 | | Outdoor – High Output | |
| 29 | | Outdoor – Very High Output | |

| # | Category | General Application | Primary Use Designation (PUD) |
|---|---|---|---|
| | | | • *Replacement Lamps for Outdoor Pole/Arm-Mounted Area and Roadway Luminaires (UL Type C)*<br>• *Replacement Lamps for Outdoor Pole/Arm-Mounted Decorative Luminaires (UL Type C)*<br>• *Replacement Lamps for Outdoor Zero-Uplight Wall-Mounted Area Luminaires (UL Type C)*<br>• *Replacement Lamps for Parking Garage Luminaires (UL Type C)*<br>• *Replacement Lamps for Fuel Pump Canopy Luminaires (UL Type C)* |
| 30 | | High-Bay | • *Replacement Lamps for High-Bay Luminaires (UL Type B)*<br>• *Replacement Lamps for High-Bay Luminaires (UL Type C)* |
| 31 | | Low-Bay | • *Replacement Lamps for Low-Bay Luminaires (UL Type B)*<br>• *Replacement Lamps for Low-Bay Luminaires (UL Type C)* |
| 32 | | Omnidirectional/Directional Lamps | • *Omnidirectional/Directional Replacement Lamps (UL Type B)* |
| 33 | *Medium Screw-Base (E26, E27) Replacement for HID Lamps[1]* | Omnidirectional/Directional Lamps | • *Omnidirectional/Directional Replacement Lamps (UL Type B)* |
| 35 | *Four Pin-Base Replacement Lamp for CFLs[1]* | Vertically Mounted Lamps | • *Replacement Lamps ("Plug and Play") (UL Type A)* |
| 36 | | Horizontally Mounted Lamps | |
| 37 | | 2G11 Base Lamps | • *Replacement Lamps ("Plug and Play") (UL Type A)*<br>• *Internal Driver/Line Voltage (UL Type B) Lamp*<br>• *1-Lamp External Driver (UL Type C) Lamp*<br>• *2-lamp External Driver (UL Type C) Lamp*<br>• *3-lamp External Driver (UL Type C) Lamp*<br>• *Dual Mode Internal Driver (UL Type A or B)* |

**Table TRT-2: DLC Standard Efficacy Requirements for Luminaires and Retrofit Kits Within Standardized CCT Quadrangles (1800 K to 6500 K as Applicable\*)**

| Category | General Application | Primary Use Designation | DLC Standard Minimum Efficacy (lumens per watt, lm/W) |
|---|---|---|---|
| Outdoor Luminaires and Solar Powered Outdoor Luminaires | All | Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 125 |
| | | Outdoor Pole/Arm-Mounted Decorative Luminaires | 115 |
| | | Outdoor Zero-Uplight Wall-Mounted Area Luminaires | 125 |
| | | Outdoor Uplight-Emitting Wall-Mounted Area Luminaires | 125 |
| | | Bollards | 115 |
| | | Parking Garage Luminaires | 115 |
| | | Fuel Pump Canopy Luminaires | 125 |
| | | Architectural Flood and Spot Luminaires | 125 |
| | | Stairwell and Passageway | 125 |
| | | Sports Lighting | 115 |
| | | Hazardous Environment Area Luminaires | 115 |
| Indoor Luminaires | Interior Directional | All | 95 |
| | Case Lighting | | 105 |
| | Troffer | | 120 |
| | Linear Ambient | | 125 |
| | High-Bay | All except Hazardous Environment High-Bay Luminaires | 135 |
| | | Hazardous Environment High-Bay Luminaires | 130 |
| | Low-Bay | All except Hazardous Environment Low-Bay Luminaires | 130 |
| | | Hazardous Environment Low-Bay Luminaires | 125 |
| Outdoor Retrofit Kits | All | Retrofit Kits for Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 125 |
| | | Retrofit Kits for Outdoor Pole/Arm-Mounted Decorative Luminaires | 115 |
| | | Retrofit Kits for Large Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 125 |
| | | Retrofit Kits for Outdoor Wall-Mounted Area Luminaires | 125 |
| | | Retrofit Kits for Parking Garage Luminaires | 115 |
| | | Retrofit Kits for Fuel Pump Canopy Luminaires | 125 |

| Category | General Application | Primary Use Designation | DLC Standard Minimum Efficacy (lumens per watt, lm/W) |
|---|---|---|---|
| Indoor Retrofit Kits | Troffer | All | 120 |
| | Linear Ambient | | 125 |
| | High-Bay | | 135 |
| | Low-Bay | | 130 |

*Table TRT-3: Standard Efficacy Requirements for Lamps Within Standardized CCT Quadrangles (1800 K to 6500 K as Applicable\*) [In-Luminaire and Bare-Lamp]*

| Category | General Application | DLC Standard Minimum Efficacy (lm/W) | |
|---|---|---|---|
| | | **In-Luminaire** | **Bare-Lamp** |
| Linear Replacement Lamps | 2' T8 Lamps | N/A | 130 |
| | 3' T8 Lamps | | 130 |
| | 4' T8 Lamps | | 130 |
| | 4' T5 Lamps | | 130 |
| | 4' T5HO Lamps | | 130 |
| | 8' T8 Lamps | | 130 |
| | U-Bend Lamps | | 130 |
| Mogul Screw-Base (E39/E40) Replacements for HID Lamps | Outdoor: Low Output | 115 | N/A |
| | Outdoor: Mid Output | 115 | |
| | Outdoor: High Output | 115 | |
| | Outdoor: Very High Output | 115 | |
| | High-Bay | 135 | |
| | Low-Bay | 130 | |
| | Omnidirectional/Directional | N/A | 145 |
| Medium Screw-Base (E26) Replacements for HID Lamps | Omnidirectional/Directional | N/A | 130 |
| Four Pin-Base Replacement Lamps for CFLs | Vertically-Mounted Lamps | 80 | 90 |
| | Horizontally-Mounted Lamps | 80 | 90 |
| | 2G11 Base Lamps | N/A | 125 |

*Table TRT-4: Testing and Reporting Requirements for Spectral Quality (DLC Standard)*

| Metric and/or Application | Applicable Products | SSL V6.0 & LUNA V2.0 Standard Requirements | QPL Listing | Method of Measurement or Evaluation |
|---|---|---|---|---|
| **Chromaticity (CCT & $D_{uv}$)** | Chromaticity must be consistent with at least one of the basic, flexible, or extended, nominal 7-step quadrangle CCTs detailed below: | | CCT and $D_{uv}$ for parent products from ANSI/IES LM-79 test reports are listed as Tested Data. Nominal CCT for child products is listed as Reported Data. | ANSI/IES LM-79 ANSI C78.377-2024 |
| | All indoor products including linear replacement lamps and replacements for CFLs | 1800 K – 6500 K | | |
| | All outdoor products including omnidirectional/ Directional E39 and E26 lamps, except Sports Lighting and Fuel Pump Canopy | 1800 K – 5000 K | | |
| | Sports Lighting and Fuel Pump Canopy | 1800 K – 5700 K | | |
| **Color Rendition** | Products are required to report data in terms of Option 1 and Option 2 but are only required to meet either Option 1 or Option 2 when thresholds are stipulated. | | All color rendition metrics for parent products from LM-79 test reports are listed as Tested Data. All color rendition metrics for child products are listed as Reported Data. | ANSI/IES LM-79 ANSI/IES TM-30 CIE 13.3-1995 |
| | All Indoor products (except high-bay and NWL) including linear replacement lamps and replacements for CFLs | **Option 1 - ANSI/IES TM-30:** <br>• IES $R_f \geq 70$ <br>• IES $R_g \geq 89$ <br>• $-12\% \leq$ IES $R_{cs,h1} \leq +23\%$ <br>**Option 2 - CIE 13.3-1995:** <br>• $R_a$ (CRI) $\geq 80$ <br>• $R_9 \geq 0$ | | |

| Metric and/or Application | Applicable Products | SSL V6.0 & LUNA V2.0 Standard Requirements | QPL Listing | Method of Measurement or Evaluation |
|---|---|---|---|---|
| | All Outdoor (except NWL), Omnidirectional /Directional E26 and E39 lamps, and high-bay products | **Option 1 - ANSI/IES TM-30:**<br>• IES $R_f$ ≥ 70<br>• IES $R_g$ ≥ 89<br>• -18% ≤ IES $R_{cs,h1}$ ≤ +23%<br>**Option 2 - CIE 13.3-1995:**<br>• $R_a$ (CRI) ≥ 70<br>• $R_9$ ≥ -40 (high-bay only)<br>Outdoor must report $R_9$ | | |
| | All NWL products | All NWL products must report the following metrics. No thresholds are stipulated.<br>**ANSI/IES TM-30:**<br>• IES $R_f$<br>• IES $R_g$<br>• IES $R_{cs,h1}$<br>**CIE 13.3-1995:**<br>• $R_a$ (CRI)<br>• $R_9$ | | |
| **Color Maintenance** [1] | All Indoor products (except high-bay and NWL) including linear replacement lamps and replacements for CFLs | Chromaticity shift from ~1,000-hour measurement to ~6,000-hour measurement shall be within a linear distance of 0.004 (Δu'v' ≤ 0.004) on the CIE 1976 (u', v') chromaticity diagram.<br>Optional reporting of CS4 and CS7 values (without thresholds) per ANSI/IES TM-35-19. | CS4 and CS7 values will be displayed as Reported Data when reported. | ANSI/IES LM-80, and/or IES LM-84-14 and ANSI/IES TM-35-19 |

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[1] It is important to note that optional reporting of ANSI/IES TM-35-19 CS4 and CS7 values is included in SSL V6.0 and LUNA V2.0, and that reporting pathways will be provided coinciding with the availability of a publicly available TM-35 calculator. Custom calculators will not be accepted for reporting CS4 and CS7 values.

| Metric and/or Application | Applicable Products | SSL V6.0 & LUNA V2.0 Standard Requirements | QPL Listing | Method of Measurement or Evaluation |
|---|---|---|---|---|
| | All Outdoor (except NWL), omnidirectional and directional E26 and E39 lamps, and high-bay products | Chromaticity shift from ≈1,000-hour measurement to ≈6,000-hour measurement shall be within a linear distance of 0.007 ($\Delta u'v' \leq 0.007$) on the CIE 1976 ($u'$, $v'$) chromaticity diagram. Optional reporting of CS4 and CS7 values (without thresholds) per ANSI/IES TM-35-19. | | |
| | All NWL products | *All NWL products must report the following metrics. No thresholds are stipulated.* Chromaticity shift on the CIE 1976 ($u'$, $v'$) chromaticity diagram from ~1,000-hour measurement to ~6,000-hour measurement shall be reported to the DLC. Optional reporting of CS4 and CS7 values per ANSI/IES TM-35-19. | | |

**Table TRT-5: Light Output Requirements by General Application for Outdoor Luminaires, Retrofit Kits and Lamps**

| Category | General Application | Light Output Range (lumens, lm) |
|---|---|---|
| Outdoor Luminaires, Solar Powered Outdoor Luminaires, Outdoor Retrofit Kits, Outdoor Mogul Screw-Base (E39/E40) Lamps | Low Output | 150 – 5,000 |
| | Mid Output | 5,000 – 10,000 |
| | High Output | 10,000 – 30,000 |
| | Very High Output | ≥30,000 |

*Table TRT-6: Light Output Requirements by Primary Use Designation*

| Category | General Application | Primary Use Designation | Minimum Light Output (lm) |
|---|---|---|---|
| Outdoor Luminaires and Solar Powered Outdoor Luminaires | Note: Light Output requirements vary by General Application type (e.g. Low, Mid, High and Very High Output) See Table 5 above | Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 1,000 |
| | | Outdoor Pole/Arm-Mounted Decorative Luminaires | 1,000 |
| | | Outdoor Zero-Uplight Wall-Mounted Area Luminaires | 300 |
| | | Outdoor Uplight Emitting Wall-Mounted Area Luminaires | 300 |
| | | Bollards | 150 |
| | | Parking Garage Luminaires | 2,000 |
| | | Fuel Pump Canopy Luminaires | 2,000 |
| | | Architectural Flood and Spot Luminaires | 250 |
| | | Stairwell and Passageway Luminaires | 750 |
| | | Hazardous Environment Area Luminaires | 1,000 |
| | | Sports Lighting | 1,000 |
| | | Turtle Lighting Zero-Uplight Pole/Arm-Mounted Area and Roadway Luminaires | 250 |
| | | Turtle Lighting Zero-Uplight Wall-mounted Area Luminaires | 250 |
| | | Turtle Lighting Zero-Uplight Bollards | 150 |
| | | Wall-Wash Luminaires | 575 |
| Indoor Luminaires | Interior Directional | Track or Mono-Point Directional Luminaires | 250 |
| | Case Lighting | Vertical Refrigerated Case Luminaires-center | 100 lm/ft |
| | | Vertical Refrigerated Case Luminaires-end | 50 lm/ft |
| | | Horizontal Refrigerated Case Luminaires | 100 lm/ft |
| | | Display Case Luminaires | 50 lm/ft |
| | Troffer | 2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces | 2,000 |
| | | 1x4 Luminaires for Ambient Lighting of Interior Commercial Spaces | 1,500 |
| | | 2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces | 3,000 |
| | Linear Ambient | Linear Ambient Luminaires (Indirect Component) | 500 lm/ft |
| | | Direct Linear Ambient Luminaires | 375 lm/ft |
| | High-Bay | High-Bay Luminaires | 10,000 |
| | | High-Bay Aisle Luminaires | 10,000 |
| | | Hazardous Environment High-Bay Luminaires | 10,000 |
| | | Indirect High-Bay Luminaires | 10,000 |
| | Low-Bay | Low-Bay Luminaires | 5,000 – 10,000 |

| Category | General Application | Primary Use Designation | Minimum Light Output (lm) |
|---|---|---|---|
| | | Hazardous Environment Low-Bay Luminaires | 5,000 |
| Outdoor Retrofit Kits | Note: Light Output requirements vary by General Application type (e.g. Low, Mid, High and Very High Output) See Table 5 above | Retrofit Kits for Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 1,000 |
| | | Retrofit Kits for Outdoor Pole/Arm-Mounted Decorative Luminaires | 1,000 |
| | | Retrofit Kits for Large Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 1,000 |
| | | Retrofit Kits for Zero-Uplight Outdoor Wall-Mounted Area Luminaires | 300 |
| | | Retrofit Kits for Parking Garage Luminaires | 2,000 |
| | | Retrofit Kits for Fuel Pump Canopy Luminaires | 2,000 |
| Indoor Retrofit Kits | Troffer | Retrofit Kits for 2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces (all PUDs) | 2,000 |
| | | Retrofit Kits for 1x4 Luminaires for Ambient Lighting of Interior Commercial Spaces (all PUDs) | 1,500 |
| | | Retrofit Kits for 2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces (all PUDs) | 3,000 |
| | Linear Ambient | Retrofit Kits for Direct Linear Ambient Luminaires | 375 lm/ft |
| | High-Bay | Retrofit Kits for High-Bay Luminaires | 10,000 |
| | Low-Bay | Retrofit Kits for Low-Bay Luminaires | 5,000 ( and l<10,000) |
| Linear Replacement Lamps | Four-Foot Linear Replacement Lamps (T8, T5) | All | 1,600 |
| | Four-Foot Linear Replacement Lamps (T5HO) | All | 3,200 |
| | Two-Foot Linear Replacement Lamps | All | 800 |
| | U-Bend Replacement Lamps | All | 1,400 |
| | Three-Foot Linear Replacement Lamps | All | 1,200 |
| | Eight-Foot Linear Replacement Lamps | All | 3,200 |
| Mogul Screw-Base (E39/E40) Replacements for HID Lamps (In Luminaire) | Note: Light Output requirements vary for outdoor products by General Application type (e.g. Low, Mid, High and | Mogul Screw-Base Replacements for HID Lamps in Outdoor Pole/Arm-mounted Area and Roadway Luminaires | 1,000 |
| | | Mogul Screw-Base Replacements for HID Lamps in Outdoor Pole/Arm-mounted Decorative Luminaires | 1,000 |

| Category | General Application | Primary Use Designation | Minimum Light Output (lm) |
|---|---|---|---|
| | Very High Output) See Table 5 above | Mogul Screw-Base Replacements for HID Lamps in Outdoor Zero-Uplight Wall-mounted Area Luminaires | 300 |
| | | Mogul Screw-Base Replacements for HID Lamps in Parking Garage Luminaires | 2,000 |
| | | Mogul Screw-Base Replacements for HID Lamps in Fuel Pump Canopy Luminaires | 2,000 |
| | High-Bay | Mogul Screw-Base Replacements for HID Lamps in High-Bay Luminaires (Commercial and Industrial) | 10,000 |
| | Low-Bay | Mogul Screw-Base Replacements for HID Lamps in Low-Bay Luminaires (Commercial and Industrial) | 5,000 |
| Four Pin-Base Replacement Lamps for CFLs | Vertically Mounted Four Pin-Base Replacement Lamps for CFLs | All | In luminaire: 575 (1-lamp configuration) |
| | | | Bare lamp: 675 |
| | Horizontally Mounted Four Pin-Base Replacement Lamps for CFLs | All | In luminaire: 800 (2-lamp configuration) |
| | | | Bare lamp: 675 |
| | 2G11 Base Replacement Lamps for CFLs | All | 1,900 |
| Mogul Screw-Base (E39/E40) Replacements for HID Lamps (Bare Lamp) | Omnidirectional/Directional Lamps | Omnidirectional/Directional Mogul Screw-Base Replacements for HID Lamps | 2,000 |
| Medium Screw-Base (E26) Replacements for HID Lamps (Bare Lamp) | Omnidirectional/Directional Lamps | Omnidirectional/Directional Medium Screw-Base Replacements for HID Lamps | 2,000 |

*Table TRT-7: Testing and Reporting Requirements for Light Distribution (DLC Standard)*

| Metric and/or Data Set | SSL V6.0 Requirements | | | Method of Evaluation |
|---|---|---|---|---|
| | Threshold | Reported | QPL Listing | |
| **Zonal Lumen Distributions (ZLD) & Spacing Criteria (SC**) *All products except replacement lamps* | *Table 8* | Separate ZLD and SC reporting required for each product per Table 8 | ZLD and SC information will not be published on the QPL | ANSI/IES LM-79 values produced by photometric analysis from tested IES-format files |
| **Beam Angle** *Linear replacement lamps and 2G11 lamps* <br><br> *Omnidirectional/directional medium screw-base and mogul screw-base replacement lamps* | *Table 8* | Bare-lamp beam angle for each product | Beam angles are reported by the applicants and listed under the Reported Data section. Beam angles for parent products will be verified by the DLC using LM-79 test reports and listed as Tested Data. | ANSI/IES LM-79 Beam angle per ANSI/IES LS-1-22 |
| **Backlight, Uplight, and Glare (BUG)** *Outdoor luminaires only* | None | BUG ratings for each product | BUG ratings for child products are reported by the applicants and listed under the Reported Data section. BUG ratings for parent products will be generated by the DLC using tested photometric data and listed as Tested Data | BUG ratings generated per Annex A of ANSI/IES TM-15-20 using luminaire photometric data |

*Table TRT-8: Primary Use Designation Technical Requirements: Light Distribution*

| Primary Use Letter | Primary Use Designation | Zonal Lumen Distribution (ZLD)/Spacing Criteria (SC)/Beam Angle (BA)* | ZL/SC/BA Nominal Requirement* | ZL/SC/BA Tolerance | ZLD/SC/BA Requirement with Tolerance |
|---|---|---|---|---|---|
| A | Outdoor Pole/Arm-Mounted Area and Roadway Luminaire | ZLD: 0º - 90º | 100% | -1% | ≥99% |
| | | ZLD: 80º - 90º | ≤10% | +3% | ≤13% |
| B | Outdoor Pole/Arm-Mounted Decorative Luminaire | ZLD: 0º - 90º | ≥65% | -3% | ≥62% |
| C | Outdoor Zero-Uplight Wall-Mounted Area Luminaire | ZLD: 0º - 90º | 100% | 0% | 100% |
| | | ZLD: 80º - 90º | ≤5% | +3% | ≤8% |
| D | Outdoor Uplight Emitting Wall-Mounted Area Luminaire | ZLD: 80º - 90º | ≤10% | +3% | ≤13% |
| | | ZLD: >90º | ≤20% | +3% | ≤23% |
| E | Bollard | ZLD: 90º - 110º | ≤15% | +3% | ≤18% |
| | | ZLD: >110º | 0% | +3% | ≤3% |
| F | Parking Garage Luminaire | ZLD: 60º - 80º | ≥30% | -3% | ≥27% |
| | | ZLD: 70º - 80º | ≤25% | +3% | ≤28% |
| G | Fuel Pump Canopy Luminaire | ZLD: 0º - 40º | ≥40% | -3% | ≥37% |
| | | ZLD: 40-70º | ≥40% | -3% | ≥37% |
| I | Architectural Flood and Spot Luminaire | ZLD: 0º - 90º | ≥85% | -3% | ≥82% |
| J | Stairwell and Passageway Luminaire | ZLD: 0º - 90º | ≥85%‡ | -3% | ≥82% |
| BA | Hazardous Environment Area Luminaire | ZLD: 0º- 90º | 100% | -1% | ≥99% |
| | | ZLD: 80º - 90º | ≤10% | +3% | ≤13% |
| BB | Sports Lighting | ZLD: 0º - 90º | 100% | 1% | ≥99% |
| K | Wall-wash Luminaire | ZLD: 0º - 90º | ≥60%‡‡ | -3% | ≥57% |
| L | Track or Mono-Point Directional Luminaire | ZLD: 0º - 90º | ≥85% | -3% | ≥82% |
| M | Vertical Refrigerated Case Luminaire - center | ZLD: 10º - 90º† | ≥95%† | -3% | ≥92% |
| N | Vertical Refrigerated Case Luminaire - end | ZLD: 10º - 90º‡‡ | ≥95%‡‡ | -5% | ≥90% |
| O | Horizontal Refrigerated Case Luminaire | ZLD: 0º - 90º | ≥95% | -3% | ≥92% |

| Primary Use Letter | Primary Use Designation | Zonal Lumen Distribution (ZLD)/Spacing Criteria (SC)/Beam Angle (BA)* | ZL/SC/BA Nominal Requirement* | ZL/SC/BA Tolerance | ZLD/SC/BA Requirement with Tolerance |
|---|---|---|---|---|---|
| P | Display Case Luminaire | ZLD: 0° - 80° | ≥95% | -5% | ≥90% |
| Q | 2x2 Luminaire for Ambient Lighting of Interior Commercial Spaces | SC: 0° - 180° | 1.0 – 2.0 | ±0.1 | 0.90 – 02.1 |
| | | SC: 90° - 270° | 1.0 – 2.0 | ±0.1 | 0.90 – 2.1 |
| | | ZLD: 0° - 60° | ≥75% | -3% | ≥72% |
| R | 1x4 Luminaire for Ambient Lighting of Interior Commercial Spaces | SC: 0° - 180° | 1.0-2.0 | ±0.1 | 0.9 – 2.1 |
| | | SC: 90° - 270° | 1.0-2.0 | ±0.1 | 0.9 – 2.1 |
| | | ZLD: 0° - 60° | ≥75% | -3% | ≥72% |
| S | 2x4 Luminaire for Ambient Lighting of Interior Commercial Spaces | SC:0° - 180° | 1.0-2.0 | ±0.1 | 0.9 – 2.1 |
| | | SC:90° - 270° | 1.0-2.0 | ±0.1 | 0.9 – 2.1 |
| | | ZLD:0° - 60° | ≥75% | -3% | ≥72% |
| T | Linear Ambient Luminaire (Indirect Component) | ZLD: 90° - 150° | ≥35% | -3% | ≥32% |
| U | Direct Linear Ambient Luminaire | ZLD: 0° - 60° | ≥40% | -3% | ≥37% |
| V | High-Bay Luminaire | ZLD: 20° - 50° | ≥30% | -10% | ≥20% |
| W | High-Bay Aisle Luminaire | ZLD: 20° - 50° | ≥50% | -10% | ≥40% |
| | | ZLD: 0° - 20° | ≥30% | -10% | ≥20% |
| BC | Hazardous Environment High-Bay Luminaire | ZLD: 20° - 50° | ≥30% | -10% | ≥20% |
| BD | Indirect High-Bay Luminaire | ZLD: 90° - 180° | >90% | -3% | ≥87% |
| X | Low-Bay Luminaire | ZLD: 20° - 50° | ≥30% | -10% | ≥20% |
| BE | Hazardous Environment Low-Bay Luminaire | ZLD: 20° - 50° | ≥30% | -10% | ≥20% |
| Y | Retrofit Kit for Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | ZLD: 0° - 90° | 100% | -1% | ≥99% |
| | | ZLD: 80° - 90° | ≤10% | 3% | ≤13% |
| Z | Retrofit Kit for Outdoor Pole/Arm-Mounted Decorative Luminaire | ZLD: 0° - 90° | ≥65% | -3% | ≥62% |
| AA | Retrofit Kit for Large Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | ZLD: 0° - 90° | 100% | -1% | ≥99% |
| | | ZLD: 80° - 90° | ≤10% | 3% | ≤13% |
| AB | Retrofit Kit for Zero-Uplight Outdoor Wall-Mounted Area Luminaires | ZLD: 0° - 90° | 100% | 0% | 100% |
| | | ZLD: 80° - 90° | ≤5% | +3% | ≤8% |
| AC | Retrofit Kit for Parking Garage Luminaires | ZLD: 60° - 80° | ≥30% | -3% | ≥27% |
| | | ZLD: 70° - 80° | ≤25% | +3% | ≤28% |
| AD | Retrofit Kit for Fuel Pump Canopy Luminaires | ZLD: 0° - 40° | ≥40% | -3% | ≥37% |
| | | ZLD: 40° - 70° | ≥40% | -3% | ≥37% |

| Primary Use Letter | Primary Use Designation | Zonal Lumen Distribution (ZLD)/Spacing Criteria (SC)/Beam Angle (BA)* | ZL/SC/BA Nominal Requirement* | ZL/SC/BA Tolerance | ZLD/SC/BA Requirement with Tolerance |
|---|---|---|---|---|---|
| AE | Retrofit Kit for 2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces (all PUDs) | SC:0º - 180º | 1.0 – 2.0 | ±0.1 | 0.90 – 2.1 |
| | | SC:90º - 270º | 1.0 – 2.0 | ±0.1 | 0.90 – 2.1 |
| | | ZLD:0º - 60º | ≥75% | -3% | ≥72% |
| AF | Retrofit Kit for 1x4 Luminaires for Ambient Lighting of Interior Commercial Spaces (all PUDs) | SC:0º - 180º | 1.0 – 2.0 | ±0.1 | 0.90 – 2.1 |
| | | SC:90º - 270º | 1.0 – 2.0 | ±0.1 | 0.90 – 2.1 |
| | | ZLD:0º - 60º | ≥75% | -3% | ≥72% |
| AG | Retrofit Kit for 2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces (all PUDs) | SC:0º - 180º | 1.0 – 2.0 | ±0.1 | 0.90 – 2.1 |
| | | SC:90º - 270º | 1.0 – 2.0 | ±0.1 | 0.90 – 2.1 |
| | | ZLD:0º - 60º | ≥75% | -3% | ≥72% |
| AH | Retrofit Kit for Direct Linear Ambient Luminaires | ZLD: 0º - 60º | ≥40% | -3% | ≥37% |
| AI | Retrofit Kit for High-Bay Luminaires | ZLD: 20º - 50º | ≥30% | -10% | ≥20% |
| AJ | Retrofit Kit for Low-Bay Luminaires | ZLD: 20º - 50º | ≥30% | -10% | ≥20% |
| AK | Four-Foot Linear Replacement Lamp (T8, T5: all PUDs) | Beam Angle | ≥140º | -5º | ≥135° |
| AL | Four-Foot Linear Replacement Lamp (T5HO: all PUDs) | Beam Angle | ≥140º | -5º | ≥135° |
| AM | Two-Foot Linear Replacement Lamp (all PUDs) | Beam Angle | ≥140º | -5º | ≥135° |
| AN | U-Bend Replacement Lamp (all PUDs) | Beam Angle | ≥140º | -5º | ≥135° |
| AO | Three-Foot Linear Replacement Lamp (all PUDs) | Beam Angle | ≥140º | -5º | ≥135° |
| AP | Eight-Foot Linear Replacement Lamp (all PUDs) | Beam Angle | ≥140º | -5º | ≥135° |
| AQ | Mogul Screw-Base Replacement for HID Lamp in Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | ZLD: 0º - 90º | ≥100% | -1% | ≥99% |
| | | ZLD: 80º - 90º | ≤10% | 3% | ≤13% |
| AR | Mogul Screw-Base Replacement for HID Lamp in Outdoor Pole/Arm-Mounted Decorative Luminaires | ZLD: 0º - 90º | ≥65% | -3% | ≥62% |
| AS | Mogul Screw-Base Replacement for HID Lamp in Outdoor Zero-Uplight Wall-Mounted Area Luminaires | ZLD: 0º - 90º | 100% | 0% | 100% |
| | | ZLD: 80º - 90º | ≤10% | 3% | ≤13% |

| Primary Use Letter | Primary Use Designation | Zonal Lumen Distribution (ZLD)/Spacing Criteria (SC)/Beam Angle (BA)* | ZL/SC/BA Nominal Requirement* | ZL/SC/BA Tolerance | ZLD/SC/BA Requirement with Tolerance |
|---|---|---|---|---|---|
| AT | Mogul Screw-Base Replacement for HID Lamp in Parking Garage Luminaires | ZLD: 60º - 80º | ≥30% | -3% | ≥27% |
| | | ZLD: 70º - 80º | ≤25% | +3% | ≤28% |
| AU | Mogul Screw-Base Replacement for HID Lamp in Fuel Pump Canopy Luminaires | ZLD: 0º - 40º | ≥40% | -3% | ≥37% |
| | | ZLD: 40º - 70º | ≥40% | -3% | ≥37% |
| AV | Mogul Screw-Base Replacement for HID Lamp in High-Bay Luminaires | ZLD: 20º - 50º | ≥30% | -10% | ≥20% |
| AW | Mogul Screw-Base Replacement for HID Lamp in Low-Bay Luminaires | ZLD: 20º - 50º | ≥30% | -10% | ≥20% |
| AX | Vertically Mounted Four-Pin Base Replacement Lamp for CFLs | ZLD:0º - 60º | ≥75% | -3% | ≥72% |
| AY | Horizontally Mounted Four-Pin Base Replacement Lamp for CFLs | ZLD:0º - 60º | ≥75% | -3% | ≥72% |
| AZ | 2G11 Base Replacement Lamp for CFLs | Beam Angle | ≥140º | -5º | ≥135° |
| BF | Turtle Lighting Zero-Uplight Pole/Arm-Mounted Area and Roadway Luminaire | ZLD: 0º - 90º | 100% | 0% | 100% |
| BG | Turtle Lighting Zero-Uplight Wall-Mounted Area Luminaire | ZLD: 0º - 90º | 100% | 0% | 100% |
| BH | Turtle Lighting Zero-Uplight Bollard | ZLD: 0º - 90º | 100% | 0% | 100% |
| BI | Omnidirectional/Directional Mogul Screw-Base Replacement for HID Lamps | Beam Angle | ≥80º | -5º | ≥75° |
| BJ | Omnidirectional/Directional Medium Screw-Base Replacement for HID Lamps | Beam Angle | ≥80º | -5º | ≥75° |

*Table TRT-9: Controls Categories*

| ALL PRODUCTS | | |
|---|---|---|
| **Category** | **Name** | **Description** |
| **0** | No Integral Controls | A luminaire, lamp, or retrofit kit with no integral control capabilities. |
| **1** | Controls Ready Product | A luminaire, lamp, or retrofit kit with controls-ready capability as defined in *Controls Ready (Controls Category 1)*. |
| **2** | Product With Non-DLC Listed NLC Controller | A luminaire, lamp, or retrofit kit with an integral networked controller installed at the factory that operates as part of NLC system that is not listed on the DLC NLC QPL. |
| **3A** | Product With Integral Occupancy or Traffic* Sensor Function Only | A non-networked luminaire, lamp, or retrofit kit (or a networked controller that operates as part of a NLC system that is not listed on the DLC NLC QPL) with only an integral occupancy or traffic sensor function, installed at the factory. |
| **3B** | Product With Integral Daylight/Photocell Sensor Function Only | A non-networked luminaire, lamp, or retrofit kit (or a networked controller that operates as part of a NLC system that is not listed on the DLC NLC QPL) with only an integral daylight/photocell sensor function, installed at the factory. |
| **4A** | Product With Occupancy or Traffic* and Daylight or Photocell Integral Sensor Functions | A non-networked luminaire, lamp, or retrofit kit (or a networked controller that operates as part of a NLC system that is not listed on the DLC NLC QPL) with occupancy and daylight/photocell integral sensor functions, installed at the factory. The sensor functions may be accomplished with a single device or multiple devices. |
| **4B** | Product With Traffic* or Photocell and/or Part-Night Dim Integral Sensor Functions | A non-networked luminaire, lamp, or retrofit kit (or a networked controller that operates as part of a NLC system that is not listed on the DLC NLC QPL) with photocell and part-night dim integral sensor functions, installed at the factory. The sensor functions may be accomplished with a single device or multiple devices. |
| **5** | Product With DLC NLC QPL Listed Networked Controller | A luminaire, lamp, or retrofit kit with an integral networked controller installed at the factory. The networked controller must operate as part of a DLC NLC QPL-listed control system. |
| **6** | Product With DLC NLC QPL Listed Networked Controller and Two or More Integral Sensor Functions (LLLC) | A luminaire, lamp, or retrofit kit with an integral networked controller and two or more sensor functions installed at the factory. The sensor functions may be accomplished with a single device or multiple devices. The networked controller must operate as part of a DLC NLC QPL- listed control system. |

*Table TRT-10: Controls Ready Receptacle Types*

| Receptacle Type | Definition | Acceptable Terms on the Product Specification Sheet or Supplemental Literature |
|---|---|---|
| None | No controls-ready receptacle is present on the luminaire. Products without a receptacle are not eligible for the Controls Ready category. | N/A |
| 3-Pin Twistlock | A receptacle with three conducting pins that is installed at the factory and meets the NEMA/ANSI C136.10 standard.<br><br>Please note that luminaires with 3-pin receptacles are NOT eligible for listing. This option is included here for completeness and to clearly communicate when specific controls options are *not* eligible. | N/A<br><br>Please note that luminaires with 3-pin receptacles are NOT eligible for listing. |
| 5-Pin Twistlock | A receptacle with five conducting pins that is installed at the factory and meets the NEMA/ANSI C136.41 standard. | NEMA 5-pin<br>NEMA/ANSI 5-pin<br>NEMA 5-pin twistlock<br>NEMA/ANSI 5-pin twistlock |
| 7-Pin Twistlock | A receptacle with 7 conducting pins that is installed at the factory and meets the NEMA/ANSI C136.41 standard. | NEMA 7-pin<br>NEMA/ANSI 7-pin<br>NEMA 7-pin twistlock<br>NEMA/ANSI 7-pin twistlock |
| 3.5 mm Phono Jack | A receptacle with three, four, or five contact points that is similar in shape or size to standard headphone jacks for consumer use. | 3.5 mm Phono Jack<br>1/8" Phono Jack<br>AUX Port |
| USB-C Port | A receptacle that is installed at the factory and meets the USB-C requirements for physical characteristics as specified in the IEC 62680-1-3 standard. The electrical characteristics of the receptacle may be proprietary. | USB-C<br>USB Type-C |
| Zhaga Book 18 | A receptacle installed at the factory that meets Zhaga Book 18 requirements. Designed for outdoor installations. | Zhaga Book 18 |
| Zhaga Book 20 | A receptacle installed at the factory that meets the Zhaga Book 20 requirements. Designed for indoor installations. | Zhaga Book 20 |
| Other | Other receptacle type as specified by the luminaire manufacturer. | N/A |

*Table TRT-11: Controls Options Table Details*

| Controls Information | Description | Available Options |
|---|---|---|
| **Controls Option Code** | A text string that represents the controls options available for each driver and integral control variation within a model number. Each Controls Options Code must be orderable and shown on the specification sheet. Non-controls portions of model numbers that fall in between controls portions of model number codes may utilize wildcards in controls options codes. | As displayed on the specification sheet. For products without controls options, use "None." |
| **Driver Type** | The type of driver, designated by communication method, that is installed in the product, or ordered with the product in the case of remote-mounted drivers.<br><br>Available options must be indicated on the specification sheet, but an exact match is not required. | • 10V (wired)<br>• BACnet (wired)<br>• D4i (wired)<br>• DALI-2 (wired)<br>• DALI (wired)<br>• Dimmable Ballast (Type A lamps)<br>• DMX512 (wired)<br>• Integrated Driver and Controller<br>• KNX (wired)<br>• Modbus (wired)<br>• Other analog (wired, proprietary)<br>• Other digital (wired, proprietary)<br>• Phase Cut (wired)<br>• Phase Cut/10V (wired)<br>• FALO (lamps only) |
| **Dimming Capability** | The type of dimming the driver associated with this option code is capable of performing. | • Continuous<br>• Stepped<br>• Not dimmable |
| **Minimum Dimming Level** | The lowest level a driver is capable of dimming to, expressed as a percentage of total output. | • Minimum dimming level (e.g., 10%) |
| **Integral Controller or Sensor Type** | The type of integral controller or sensor, designated by communication method, that is installed in the product.<br><br>Available options must be indicated on the specification sheet, but an exact match is not required. | • None<br>• Bluetooth (wireless, proprietary)<br>• Bluetooth NLC (wireless)<br>• DALI-2 (wired)<br>• DALI (wired)<br>• DALI+ (wireless)<br>• Wi-Fi (wireless)<br>• Zigbee (wireless, proprietary)<br>• DMX512 (wired)<br>• EnOcean (wireless)<br>• 4G Cellular (wireless)<br>• 5G Cellular (wireless) |

| Controls Information | Description | Available Options |
|---|---|---|
| | | • BACnet (wired)<br>• Modbus (wired)<br>• KNX (wired)<br>• Other (wireless, proprietary)<br>• Other analog (wired, proprietary)<br>• Other digital (wired, proprietary)<br>• PoE (wired)<br>• TALQ (wireless)<br>• Infrared (wireless, proprietary) |
| **Top or Side Controls Receptacle Type** | The type of controls ready receptacle, installed at the factory, that is present on the top or side of the product when mounted in operating orientation.<br><br>Available options must be indicated on the specification sheet or supplemental materials, but an exact match is not required.<br><br>Product variations with 3-pin twistlock receptacles are not eligible for V6.0 qualification. Option is shown here for data integrity. | • None<br>• 7-Pin twistlock<br>• 5-Pin twistlock<br>• 3-Pin twistlock (not eligible)<br>• Zhaga Book 18<br>• Zhaga Book 20<br>• USB C Port<br>• 3.5 mm Phono Jack<br>• Other |
| **Bottom or Side Controls Receptacle Type** | The type of controls ready receptacle, installed at the factory, which is present on the bottom or side of the product when mounted in operating orientation.<br><br>Available options must be indicated on the specification sheet or supplemental materials, but an exact match is not required.<br><br>Product variations with 3-pin twistlock receptacles are not eligible for V6.0 qualification. Option is shown here for data integrity. | • None<br>• 7-Pin twistlock<br>• 5-Pin twistlock<br>• 3-Pin twistlock (not eligible)<br>• Zhaga Book 18<br>• Zhaga Book 20<br>• USB C Port<br>• 3.5 mm Phono Jack<br>• Other |
| **Integral Sensor Function** | The lighting control strategy or strategies that are performed by the integral sensor installed at the factory.<br><br>Available options must be indicated on the specification sheet or supplemental materials, but an exact match is not required. | • None<br>• Occupancy only<br>• Daylight only<br>• Photocell only<br>• Traffic only<br>• Occupancy + Daylight<br>• Occupancy + Photocell<br>• Photocell + Part-Night Dim<br>• Occupancy + Photocell + Part-Night Dim<br>• Traffic + Photocell |

| Controls Information | Description | Available Options |
|---|---|---|
| | | • Traffic + Photocell + Part-Night Dim |
| Integral Sensor Technology | The type of sensing technology that the integral sensor installed at the factory uses.<br><br>Available options must be indicated on the specification sheet or supplemental materials, but an exact match is not required. | • None<br>• Passive Infrared (PIR)<br>• Ultrasonic<br>• Dual-Tech<br>• Microphonic<br>• Microwave<br>• Millimeter Wave<br>• Camera<br>• Bluetooth Beacon<br>• Light-dependent Resistor<br>• Other |
| Integral Sensor Maximum Mounting Height (ft) | The manufacturer-provided maximum mounting height for effective operation of the sensor. | One- or two-digit integer. Value to be submitted in feet. Both feet and meters will be displayed on the QPL. |
| NLC QPL Product ID | The NLC QPL Product ID of the networked lighting control system that the integral control product communicates with. | As displayed on the NLC QPL. |
| Controls Ready Accessory Model Numbers | Model numbers for the controls-ready accessories provided by the manufacturer that are compatible with the listed product. This field is optional for manufacturers to report. | As displayed on the specification sheet. |

*Table TRT-12: Standard Dimming Requirements*

| Product Type | Standard Dimming Requirements | QPL Listing | Method of Evaluation |
|---|---|---|---|
| Indoor luminaires and retrofit kits (excluding Case Lighting, Specialty and Hazardous Primary Use Designations) | **Continuous dimming capability to a minimum output level of 20% or lower\*** | 1. Dimming capability (i.e., continuous, stepped, or none)<br>2. Minimum dimming level (e.g., 10%) | Product specification sheet shall clearly identify dimming capability |
| Indoor Case Lighting, Specialty and Hazardous Primary Use Designations | **Reporting of dimming capability** | | |
| Outdoor luminaires, retrofit kits, (excluding Sports Lighting, Specialty and Hazardous Primary Use Designations) | **Continuous or stepped dimming capability to a minimum output level of 20% or lower\*** | | |
| Outdoor Sports Lighting, Specialty and Hazardous Primary Use Designations | **Reporting of dimming capability** | | |
| All lamps | **Continuous dimming capability to a minimum output level of 20% or lower\* or FALO** | | |
| All other products | **Required reporting of dimming capability** | | |

*Table TRT-13: V6.0 Integral Sensor Functions*

| Integral Sensor Functions | Definition | Acceptable Terms on the Product Specification Sheet or Supplemental Literature |
|---|---|---|
| None | A product that has no integral sensor functions. | N/A |
| Occupancy Only | A control device that detects occupant presence and automatically turns luminaires and/or other equipment on and, after a preset delay during which no presence is detected, turns them off. Also called a motion detector. | Occupancy, Vacancy, Motion, Exterior Motion |
| Daylight Only | A control device that can automatically affect the operation of lighting or other equipment through dimming based on the amount of daylight and/or ambient light that is present in a space or area. | Daylight, Daylight Harvesting, Daylight Dimming, Daylight Response, Photosensor, Ambient Light |
| Photocell Only | A control device that can automatically affect the operation of lighting or other equipment based on the amount of daylight and/or ambient light that is present in an exterior environment. | Photocell, Photo, PCR, Dusk-to-Dawn, Photocontrol |
| Traffic | A control device that can automatically affect the operation of lighting or other equipment based upon detecting the presence or absence of moving vehicles in an area. | Traffic, Adaptive Traffic |
| Occupancy + Daylight | A control device that detects occupant presence and automatically turns luminaires and/or other equipment on and, after a preset delay during which no presence is detected, turns them off, in addition to automatically raising or lowering the dimming levels of lighting or other equipment based on the amount of daylight and/or ambient light that is present in a space or area. | Must include one or more terms from each of the following lists: Occupancy terms: Occupancy, Vacancy, Motion, Exterior Motion. Daylight terms: Daylight, Daylight Harvesting, Daylight Dimming, Daylight Response, Photosensor, Ambient Light. |
| Occupancy + Photocell | A control device that detects occupant presence and automatically turns luminaires and/or other equipment on and, after a preset delay during which no presence is detected, turns them off, in addition to automatically affecting the operation of lighting or other equipment based on the amount of daylight and/or ambient light that is present in an exterior environment. | Must include one or more terms from each of the following lists: Occupancy terms: Occupancy, Vacancy, Motion, Exterior Motion. Photocell terms: Photocell, Photo, PCR, Dusk-to-Dawn, Photocontrol. |

| Integral Sensor Functions | Definition | Acceptable Terms on the Product Specification Sheet or Supplemental Literature |
|---|---|---|
| **Photocell + Part-Night Dim** | A control device that can automatically affect the operation of lighting or other equipment based on the amount of daylight and/or ambient light that is present in an exterior environment and is capable of dimming the luminaire, lamp, or retrofit kit for a portion of nighttime hours without input from another device. | Must include one or more terms from each of the following lists:<br><br>Photocell terms: Photocell, Photo, PCR, Dusk-to-Dawn, Photocontrol.<br><br>Part-Night Dim terms: Part Night Dim, Stand-Alone Dimming. |
| **Occupancy + Photocell + Part-Night Dim** | A control device that detects occupant presence and can automatically affect the operation of lighting or other equipment based on the amount of daylight and/or ambient light that is present in an exterior environment and is capable of dimming the luminaire, lamp, or retrofit kit for a portion of nighttime hours without input from another device. | Must include one or more terms from each of the following lists:<br><br>Occupancy terms: Occupancy, Vacancy, Motion, Exterior Motion.<br><br>Photocell terms: Photocell, Photo, PCR, Dusk-to-Dawn, Photocontrol.<br><br>Part-Night Dim terms: Part-Night Dim, Stand-Alone Dimming. |
| **Traffic + Photocell** | A control device that detects the presence of moving vehicles and automatically turns luminaires and/or other equipment on and, after a preset delay during which no presence is detected, turns them off, in addition to automatically affecting the operation of lighting or other equipment based on the amount of daylight and/or ambient light that is present in an exterior environment. | Must include one or more terms from each of the following lists:<br><br>Traffic terms: Traffic Sensing, Vehicle Sensing.<br><br>Photocell terms: Photocell, Photo, PCR, Dusk-to-Dawn, Photocontrol. |
| **Traffic + Photocell + Part-Night Dim** | A control device that detects the presence of moving vehicles and can automatically affect the operation of lighting or other equipment based on the amount of daylight and/or ambient light that is present in an exterior environment and is capable of dimming the luminaire, lamp, or retrofit kit for a portion of nighttime hours without input from another device. | Must include one or more terms from each of the following lists:<br><br>Traffic terms: Traffic Sensing, Vehicle Sensing.<br><br>Photocell terms: Photocell, Photo, PCR, Dusk-to-Dawn, Photocontrol.<br><br>Part-Night Dim terms: Part Night Dim, Stand-Alone Dimming. |

*Table TRT-14: V6.0 Integral Sensor Technologies*

| Integral Sensor Technologies | Definition | Acceptable Terms on the Product Specification Sheet or Supplemental Literature |
|---|---|---|
| **Passive Infrared** | Presence sensors that detect the movement of heat emitted by people in motion. Detection requires line of sight and does not function behind obstacles or through glass. Sensors typically have distance ratings for effectiveness at detecting major and minor motion. | Passive Infrared, PIR |
| **Ultrasonic** | Presence sensors that emit high-frequency acoustic waves and then monitor the pattern of reflections in a space. When the pattern is interrupted, the sensor registers movement. Ultrasonic sensors do not require a direct line of sight to function. | Ultrasonic |
| **Microwave** | Presence sensors that emit extremely low-power electromagnetic radiation in the range of 300 MHz to 300 GHz and then monitor the pattern of reflections in a space. When the pattern is interrupted, the sensor registers movement. Microwave sensors do not require a direct line of sight to function and can sometimes "see" through walls. Thus, proper adjustment of sensitivity settings is crucial to avoid false activations. | Microwave |
| **Microphonic** | Presence sensors that use a sensitive microphone to detect sounds in a space, e.g., human activity such as talking, typing, or movement -- then applying advanced digital filtering to distinguish these sounds from constant background noises such as those from HVAC systems. | As indicated on Manufacturer specification sheet |
| **Millimeter Wave** | Presence sensors that emit electromagnetic radiation in the range of 30 to 300 GHz. Unlike ultrasonic and microwave sensors, millimeter wave radar sensors are able to detect movement, acceleration, and angles as small as a fraction of a millimeter and are sometimes capable of detecting multiple people in a space. | Millimeter Wave, mmWave |
| **Camera** | Presence sensors that utilize captured images, whether high or low resolution, and image processing software to determine human proximity. | As indicated on Manufacturer specification sheet |
| **Dual Technology** | Presence sensors that utilize two or more technologies to increase detection reliability. | Dual-Technology, Dual-Tech, Dual Technology, Dual Tech |
| **Bluetooth Beacon** | A Bluetooth device, normally battery powered, that broadcasts typically static data at preset | Bluetooth Beacon |

| Integral Sensor Technologies | Definition | Acceptable Terms on the Product Specification Sheet or Supplemental Literature |
|---|---|---|
| | intervals. Beacons are one-way communication devices that are not capable of receiving information over a Bluetooth network. | |
| **Other** | Presence sensors that utilize another technology, not listed above. | As indicated on Manufacturer specification sheet |

*Table TRT-15: Driver and Integral Controller or Sensor Type Descriptions*

| Driver and Integral Controller or Sensor Type | | Definition | Acceptable Terms on the Product Specification Sheet or Supplemental Literature |
|---|---|---|---|
| **WIRED** | 10V (Wired) | Wired analog low-voltage control that varies DC voltage between 0 and 10 volts (or 1 and 10 volts) to produce varying light output. | 0-10 V, 1-10 V, 10V |
| | BACnet | A communication protocol for building automation and control networks that uses the ISO 16484-5 standards protocol. | BACnet |
| | D4i | An extension of the DALI-2 standard intended for use within luminaires. D4i control devices include requirements for power and control, to simplify selection of up to two devices for use on a D4i luminaire. | D4i |
| | DALI | A standard protocol for bi-directional digital communication between lighting control devices. Developed and maintained by the Dali Alliance. The US standard is C137.4 and is maintained by NEMA. | DALI, DALI version-1, Digital Addressable Lighting Interface |
| | DALI-2 | The certification program based on the latest version of the DALI protocol. DALI-2 certification is created and maintained by the DALI Alliance. The US standard is C137.4 and is maintained by NEMA. | DALI-2 |
| | DMX512 | Lighting control protocol initially created for use in theatrical installations but in common use in architectural lighting installations where color changing or tuning effects are desired. It describes a method of digital data transmission between a controller and a dimmer or relay panel, or to DMX512-compatible luminaires. Wiring is Class 2 and is required to be a daisy-chain configuration. | DMX512, Digital Multiplex |
| | Modbus | A client/server data communications protocol developed and maintained by the Modbus Organization. Commonly used in industrial applications. | Modbus |

| Driver and Integral Controller or Sensor Type | | Definition | Acceptable Terms on the Product Specification Sheet or Supplemental Literature |
|---|---|---|---|
| | KNX | A peer-to-peer communication standard used for building automation. Developed and maintained by knx.org | KNX |
| | Other Analog (Proprietary) | A closed wired analog communication protocol as specified by the manufacturer. | N/A |
| | Other Digital (Proprietary) | A closed wired digital communication protocol as specified by the manufacturer. | N/A |
| | Power Over Ethernet | A specific subset of DC products that comply with the IEEE 802.3 Standards for carrying both power and communication signals on Ethernet cables. | PoE, POE |
| | Phase-Cut | Modification, or cutting, of the leading or trailing edge of the AC mains sinusoidal waveform to produce varying light output. | Phase-cut, phase, forward phase, leading edge, reverse phase, trailing edge, TRIAC, magnetic low-voltage (MLV), electronic low-voltage (ELV) |
| | Integrated Driver + Controller | A driver and networked controller device where both functions are contained within the same luminaire component housing. | Integrated Driver + Controller |
| WIRELESS | 4G Cellular | Fourth Generation cellular network designed to support all-IP communications and broadband services. Developed by the International Telecommunication Union. | 4G, 4G LTE |
| | 5G Cellular | Fifth Generation cellular network designed to support all-IP communications and broadband services. Developed by the International Telecommunication Union. | 5G |
| | Bluetooth (Proprietary) | Wireless digital communication protocol developed and maintained by the Bluetooth Special Interest Group (SIG). Uses short-range RF to communicate with other nearby Bluetooth-enabled devices. | Bluetooth, Bluetooth Low Energy, BLE, BLE Mesh |
| | Bluetooth NLC | Wireless digital communication protocol developed and maintained by the Bluetooth Special Interest Group (SIG) specifically for Networked Lighting Control systems. Uses short-range RF to communicate with other nearby Bluetooth-enabled devices. | Bluetooth NLC |
| | DALI+ | DALI+ is the certification program for the wireless or IP-based version of DALI. DALI+ with Thread is the first implementation, using Thread's low-power IP-based, wireless mesh networking protocol. | DALI+ with Thread |

| Driver and Integral Controller or Sensor Type | Definition | Acceptable Terms on the Product Specification Sheet or Supplemental Literature |
|---|---|---|
| | The US standard is C137.4 and is maintained by NEMA. | |
| EnOcean | Wireless digital communication protocol developed and maintained by the EnOcean Alliance and based on the ISO/IEC 14543-3-10/11 standard. Geared to wireless sensors and wireless sensor networks with ultra-low power consumption that utilize energy harvesting technology. | EnOcean, Enocean |
| Infrared Remote | A device which uses infrared radiation to communicate with and program standalone sensors. Usually limited to one-way communication. | IR, Infrared Remote |
| Other (Proprietary) | A closed wireless communication protocol as specified by the manufacturer. | N/A |
| TALQ | An open communication standard aimed at smart city applications, including for uses beyond lighting. | TALQ |
| Wi-Fi | A wireless protocol similar to the protocols that computers use and is a very robust wireless option. It also functions similarly to PoE in that it assigns IP addresses to each device and luminaire and is dependent on the user interface for granularity of dimming range. | Wi-Fi, Wireless Internet |
| Zigbee (proprietary) | Low-power wireless protocol. It uses an IP address for devices, has a parallel full-duplex communication, and uses short- to medium-range RF to communicate. Networked Lighting Control systems with this designation typically do not allow third-party devices. | ZigBee, ZigBee HA, ZigBee 3.0 |
| FALO (Lamps Only) | Field Adjustable Light Output allowed for lamps only. | As indicated by the Manufacturer |

*Table TRT-16: Lumen Maintenance Requirements for DLC Standard*

| Metric | Applicable Products | DLC Standard | Method of Evaluation |
|---|---|---|---|
| Lumen Maintenance | All products of 2200 K – 6500 K, including Filtered Amber products | $L_{70} \geq 50{,}000$ hours | LM-80 and TM-21 ISTMT and LM-98-24 report OR LM-84 and TM-28 |
| | All NWL products except for Filtered Amber | $L_{70} \geq 36{,}000$ hours | |

*Table TRT-17: Optionally Reported Sustainability Fields*

| Certification Body or Organization | Certification Level | Method of Evaluation |
|---|---|---|
| Environmental Product Declaration (EPD) | ISO 14025 compliant | EPD document (must be registered with an EPD program operator) |
| Declare | Declared | Declare Label |
| | Red List Approved | |
| | Red List Free | |
| Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) | RoHS Compliant | Product documentation with RoHS label or RoHS Declaration of Conformity |
| | RoHS 2 | |
| | RoHS 3 | |
| Lighting for Good | Fair | Product documentation with Lighting for Good label |
| | Good | |
| | Best | |
| Cradle to Cradle | Bronze | Product documentation with C2C label or C2C Certification document |
| | Silver | |
| | Gold | |
| | Platinum | |
| UL GREENGUARD | GREENGUARD Certified | Product documentation with GREENGUARD label or GREENGUARD Certification document |
| | GREENGUARD Gold | |
| TÜV Rheinland | Green Product Mark | Product documentation with Green Product Mark or Green Product Mark Certificate |

*Table TRT-18: Efficacy Allowances*

| Feature | Category or General Application | Performance Metric | Allowance Percentage | Method of Evaluation |
|---|---|---|---|---|
| Low CCT | All Products Within Standardized CCT Quadrangles | ≤2700 K | -8% | Same as V6.0 Standard |
| | | ≤2200 K | -10% | |
| | | ≤2000 K | -20% | |
| | | ≤1800 K | -25% | |
| High Color Rendition | All Indoor products (except high-bay and NWL) including linear replacement lamps and replacements for CFLs | **Option 1 - ANSI/IES TM-30:**<br>• IES $R_f$ ≥ 75<br>• IES $R_g$ ≥ 92<br>• -7% ≤ IES $R_{cs,h1}$ ≤ +19%<br>**Option 2 - CIE 13.3-1995:**<br>• $R_a$ (CRI) ≥ 90 and $R_9$ ≥ 50 | -5% | Same as V6.0 Standard |
| | | **ANSI/IES TM-30:**<br>• IES $R_f$ ≥ 78<br>• IES $R_g$ ≥ 95<br>• -1% ≤ IES $R_{cs,h1}$ ≤ +15% | -10% | |
| | All Outdoor (except NWL), including Omnidirectional /Directional E26 and E39 lamps, and high-bay products | **Option 1 - ANSI/IES TM-30:**<br>• IES $R_f$ ≥ 70<br>• IES $R_g$ ≥ 89<br>• -12% ≤ IES $R_{cs,h1}$ ≤ +23%<br>**Option 2 - CIE 13.3-1995:**<br>• $R_a$ (CRI) ≥ 80 and $R_9$ ≥ 0 | -5% | |
| Enhanced Discomfort Glare Control | Troffer (Luminaires and Integrated Retrofit Kits only) | Corrected UGR < 16.0 | -10% | Corrected UGR values generated per CIE 190-2010 at the following reference condition:<br>• Room dimensions: X = 4H, Y = 8H<br>• Spacing to height ratio (S/H): 1<br>• Reflectances: 70/50/20 |
| | Linear Ambient, (Luminaires and Retrofit Kits only) | Corrected UGR < 16.0 | -10% | |
| | Low-Bay (Luminaires and Retrofit Kits only) | Corrected UGR < 19.0 | -10% | |

| Feature | Category or General Application | Performance Metric | Allowance Percentage | Method of Evaluation |
|---|---|---|---|---|
| | High-Bay, (Luminaires and Retrofit Kits only) | Corrected UGR < 22.0 | -10% | |

*Table TRT-19: Tolerances*

| Performance Metric | Product Type | Tolerance |
|---|---|---|
| Light Output | All | ±10% |
| Luminaire Efficacy | All | -3% |
| Color Rendition | All | CIE $R_a$ (CRI): -1 Point<br>CIE $R_9$: -1 Point<br>IES $R_f$: -1 Point<br>IES $R_g$: -1 Point<br>IES $R_{cs,h1}$: +/- 1% |
| Color Maintenance | All | $\Delta u'v'$: +0.0004 points* |
| Power Factor | All | -3 percentage points |
| Total Harmonic Distortion | All | +5 percentage points |
| Beam Angle | Medium screw-base,<br>Mogul screw-base,<br>Linear replacement lamps,<br>2G11 lamps | -5° |
| Dominant Wavelength | de-Amber,<br>pc-Amber | + 10 nm |
| Full-Width Half-Maximum (FWHM) | de-Amber,<br>pc-Amber | +/- 10 nm |

*Table TRT-20: DLC Premium Efficacy Requirements*

| Category | General Application | Primary Use Designation | DLC Premium Minimum Efficacy (lm/W) |
|---|---|---|---|
| Outdoor Luminaires and Solar Powered Outdoor Luminaires | Note: Light Output requirements vary by General Application type (e.g. Low, Mid, High and Very High Output) See Table 5 | Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 140 |
| | | Outdoor Pole/Arm-Mounted Decorative Luminaires | 130 |
| | | Outdoor Zero-Uplight Wall-Mounted Area Luminaires | 140 |
| | | Outdoor Uplight-Emitting Wall-Mounted Area Luminaires | 140 |
| | | Bollards | 130 |
| | | Parking Garage Luminaires | 130 |
| | | Fuel Pump Canopy Luminaires | 140 |
| | | Architectural Flood and Spot Luminaires | 140 |
| | | Stairwell and Passageway | 140 |
| | | Sports Lighting | 130 |
| | | Hazardous Environment Area Luminaires | 130 |
| Indoor Luminaires | Interior Directional | All | 110 |
| | Case Lighting | | 120 |
| | Troffer | | 135 |
| | Linear Ambient | | 140 |
| | High-Bay | All except Hazardous Environment High-Bay Luminaires | 150 |
| | | Hazardous Environment High-Bay Luminaires | 145 |
| | Low-Bay | All except Hazardous Environment Low-Bay Luminaires | 145 |
| | | Hazardous Environment Low-Bay Luminaires | 140 |

| Outdoor Retrofit Kits | Note: Light Output requirements vary by General Application type (e.g. Low, Mid, High and Very High Output) See *Table 5* | Retrofit Kits for Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 140 |
|---|---|---|---|
| | | Retrofit Kits for Outdoor Pole/Arm-Mounted Decorative Luminaires | 130 |
| | | Retrofit Kits for Large Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 140 |
| | | Retrofit Kits for Outdoor Zero-Uplight Wall-Mounted Area Luminaires | 140 |
| | | Retrofit Kits for Parking Garage Luminaires | 130 |
| | | Retrofit Kits for Fuel Pump Canopy Luminaires | 140 |
| Indoor Retrofit Kits | Troffer | All | 135* |
| | Linear Ambient | | 140 |
| | High-Bay | | 150 |
| | Low-Bay | | 145 |

*Table TRT-21: DLC Premium Testing and Reporting Requirements*

| Metric | Applicable Product(s) | SSL V6.0 & LUNA V2.0 Premium Requirements* | Method of Evaluation |
|---|---|---|---|
| Chromaticity (CCT & $D_{uv}$) | All Indoor products, except High-Bay | Products shall exhibit chromaticity consistent with at least one of the basic, flexible, or extended nominal **4-step quadrangle** CCTs from 2200 K – 6500 K | Same as V6.0 Standard |
| | All outdoor and High-Bay products, except Sports Lighting and Fuel Pump Canopy | Products shall exhibit chromaticity consistent with at least one of the basic, flexible, or extended nominal **7-step quadrangle** CCTs from 2200 K – 5000 K | |
| | Sports Lighting and Fuel Pump Canopy | Products shall exhibit chromaticity consistent with at least one of the basic, flexible, or extended nominal **7-step quadrangle** CCTs from 2200 K – 5700 K | |
| Discomfort Glare | Troffer (Luminaire and Integrated Retrofit Kits only) | **Corrected UGR < 22.0** | Corrected UGR values generated per CIE 190-2010 at the following reference condition: Room dimensions: X = 4H, Y = 8H Spacing to height ratio (S/H): 1 Reflectances: 70/50/20 |
| Controllability | All products | • Must be capable of continuous dimming down to 10% of initial output or lower. • Must meet requirements for any controls category excluding Category 0 | Same as V6.0 Standard |
| Lumen Maintenance | All products | (In addition to $L_{70}$ thresholds) $L_{90} \geq 36,000$ hours | Same as V6.0 Standard |
| Driver Lifetime | All products | ≥50,000 hours | |

*Table TRT-22: PUDs Eligible for LUNA V2.0 Qualification and Respective U Rating Maximums*

| Primary Use Letter | PUDs Eligible for LUNA Qualification | Maximum U Rating | Maximum Light Output (Lumens) |
|---|---|---|---|
| A | Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 1 | N/A |
| B | Outdoor Pole/Arm-Mounted Decorative Luminaires | 2 | N/A |
| C | Outdoor Zero-Uplight Wall-Mounted Area Luminaires | 1 | N/A |
| E | Bollards | 1 | N/A |
| G | Fuel Pump Canopy Luminaires | 2 | N/A |
| Y | Retrofit Kits for Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 1 | 10,000 |
| Z | Retrofit Kits for Outdoor Pole/Arm-Mounted Decorative Luminaires | 2 | 10,000 |
| AA | Retrofit Kits for Large Outdoor Pole/Arm Mounted Area and Roadway Luminaires | 1 | 10,000 |
| AB | Retrofit Kits for Zero-Uplight Outdoor Wall Mounted Area Luminaires | 1 | 10,000 |
| AD | Retrofit Kits for Fuel Pump Canopy Luminaires | 2 | 10,000 |
| BI | Omnidirectional/Directional Mogul Screw-Base Replacements for HID Lamps (Type B) | N/A | 10,000 (bare lamp) |
| BJ | Omnidirectional/Directional Medium Screw-Base Replacements for HID Lamps (UL Type B) | N/A | 10,000 (bare lamp) |
| BF | Turtle Lighting Zero-Uplight Pole/Arm-Mounted Area and Roadway Luminaires | 0 | 8000 |
| BG | Turtle Lighting Zero-Uplight Wall-Mounted Area Luminaires | 0 | 2500 |
| BH | Turtle Lighting Zero-Uplight Bollards | 0 | 1000 |

| BA | Hazardous Environment Area Luminaires | 1 | N/A |
|---|---|---|---|
| N/A | Specialty: Hazardous Environment Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | 1 | N/A |
| | Specialty: Hazardous Environment Wall Mounted Luminaire | 1 | N/A |
| | Specialty: Canopy Lighting | 2 | N/A |
| | Specialty: Directional Fuel Pump Canopy Luminaires | 2 | N/A |
| | Specialty: Transportation | 2 | N/A |

*Table TRT-23: LUNA V2.0 Light Distribution Requirements*

| Metric or Application | LUNA V2.0 Requirements | QPL Listing | Method of Evaluation |
|---|---|---|---|
| **Uplight Rating (From the IES BUG Rating system)** | Products must have a U rating of 0, 1, or 2, depending on Primary Use Designation indicated in Table 22.<br><br>ANSI/IES LM-63 IES-format files (and optionally ANSI/IES TM-33-18 or -23 XML documents[‡]) containing luminous intensity distribution data must be submitted for a representative LUNA qualifying product for each unique distribution pattern included in the application. (See additional details below.) | BUG ratings for parent products will be generated by the DLC using the tested photometric data provided and will be listed under the Tested Data section. BUG ratings for child products are reported by the applicant and listed under the Reported Data section. | ANSI/IES LM-79 per the Additional Requirements for LM-79, LM-80, and TM-21 Test Reports*.*<br><br>BUG ratings generated per Annex A in ANSI/IES TM-15-20 using luminaire photometric data (.ies files).<br><br>*Note:* For LUNA qualification, LM-79 and distribution testing must be provided on a LUNA-qualifying product (highest light output at highest LUNA-eligible CCT). |
| **Luminous intensity distribution image** | Using the LUNA pre-submission tool, the submitter will create a PNG luminous intensity distribution image for the representative LUNA qualifying product for each unique distribution pattern included in the application. | For each distribution parent product, images from the LUNA pre-submission tool will be listed under the Tested Data section. | Submitted Luminous intensity distribution images generated by the LUNA pre-submission tool from the submitted IES files. |
| **Aiming** | Products may only include mounting options that will not allow tilt angles beyond ±10 degrees, in order to level the luminaire parallel with the roadway surface (see *Figure 1*). | Model number will include allowed mounting options. Products with mounting accessories are eligible for LUNA and will be listed on the QPL with the mounting accessories that meet all of the technical requirements. Eligible mounting accessories will be listed in parentheses on the QPL. | Specification sheet, supplemental documentation, or installation instructions must include photos or illustrations of mounting options or accessories with allowable tilt angles (and degree values), or fixed mounting options clearly documented, as per **Figure 1**. |

| Metric or Application | LUNA V2.0 Requirements | QPL Listing | Method of Evaluation |
|---|---|---|---|
| Shielding | Shielding as an available accessory or option must be included on specification sheets or supplemental documentation (e.g., house side shields (HSS), cul-de-sac shields (CSS), front-side shields (FSS), or glare shields) for pole/arm-mounted area/roadway/decorative PUDs (Primary Use letters A and B), and for specialty hazardous environment pole/arm-mounted area and roadway PUDs. | Specific product configurations without shielding will be listed on the QPL per the LUNA requirements as long as a shield is available as an accessory or option. For those who voluntarily choose to list their shielded products and are seeking efficacy allowances, within each given shielding subgroup, shielded products with the lowest efficacy will be listed as worst-case efficacy parent products on the QPL. Shielded products with the highest house-side lumens for products with a HSS or CSS, or street-side lumens for products with a FSS, will be listed as worst-case distribution parent products on the QPL. | Specification sheet or supplemental documentation review to determine that at least one shielding accessory or option is available. |
| Field Adjustable Light Output (FALO) | All LUNA Products with selectable wattage and/or lumen output must be shipped at the lowest wattage or output setting to be LUNA qualified | N/A | Specification sheet, supplemental documentation, or installation instructions |

*Table TRT-24: LUNA V2.0 Spectral Quality Requirements*

| Metric and/or Application | Applicable Products | LUNA V2.0 Spectral Quality Requirements | QPL Listing | Method of Measurement or Evaluation |
|---|---|---|---|---|
| **Chromaticity (CCT & D$_{uv}$)** | Non-Amber LUNA products, except lamps and retrofit kits | LUNA products shall exhibit chromaticity consistent with at least one of the basic, flexible, or extended nominal 7-step quadrangle CCTs from 1800 K – 3000 K. | Parent products: CCT, and D$_{uv}$ for parent products is listed as Tested Data.<br><br>Nominal CCT for child products is listed as Reported Data. | ANSI/IES LM-79 (See *Additional Requirements for LM-79, LM-80, and TM-21 Test Reports*)<br>ANSI/IES TM-27-20 or IES TM-27-14 |
| **Chromaticity (CCT & D$_{uv}$)** | Non-Amber LUNA eligible lamps and retrofit kit products | LUNA products shall exhibit chromaticity consistent with at least one of the basic, flexible, or extended nominal 7-step quadrangle CCTs from 1800 K – 2700 K. | Parent products: CCT, and D$_{uv}$ for parent products is listed as Tested Data.<br><br>Nominal CCT for child products is listed as Reported Data. | Optionally: ANSI/IES TM-33-18 (or -23)<br><br>*Note:* For LUNA qualification, LM-79 and/or color testing must be provided on a LUNA-qualifying product. |
| **S/P Ratio** | All LUNA parent products | All LUNA parent products will show the calculated S/P ratio. No threshold is stipulated. | Parent products:<br><br>S/P ratio for parent products is listed as Tested Data. | S/P Ratio calculated with the LUNA pre-submission tool per the 2-degree scotopic and photopic luminous efficiency functions in ANSI/IES LS-2-20. |
| **Percent Blue** | All LUNA parent products | All LUNA parent products will show the calculated percent blue. No threshold is stipulated, except for Hawaii code compliance. | Parent products:<br><br>% blue for parent products is listed as Tested Data. | % blue, per DLC's definition, calculated with the LUNA pre-submission tool. |
| **Traffic compliance and Hawaii code compliance (Spectral Compliance Information)** | All LUNA parent products | Traffic color compliant: LUNA parents that have chromaticities outside of ITE Yellow (amber) (per SAE J578 APR2020) per the DLC's definition.<br>Hawaii code compliance: LUNA parents that are Hawaii code compliant will be traffic color compliant AND have percent blue ≤ 2%. | LUNA parents:<br><br>Will report traffic color compliance and Hawaii code compliance. Will be listed using outputs from the LUNA pre-submission tool in the Tested Data section | Traffic compliance and Hawaii code compliance will be calculated with the LUNA pre-submission tool |

| Metric and/or Application | Applicable Products | LUNA V2.0 Spectral Quality Requirements | QPL Listing | Method of Measurement or Evaluation |
|---|---|---|---|---|
| **Chromaticity (Spectral Compliance Information)** | LUNA Amber products (luminaires, lamps, and retrofit kits) | Chromaticity consistent with technology-specific definitions provided in the *Amber Products* section. | Nomenclature for *Amber Products* (de-Amber, pc-Amber, Filtered Amber) for parent and child products. | ANSI/IES LM-79 ANSI/IES TM-27-20 or IES TM-27-14 Optionally: ANSI/IES TM-33-18 |
| **SPDX Document** | All LUNA parent products | LUNA qualifying products tested to meet LUNA spectral quality requirements must submit an ANSI/IES TM-27 SPDX document containing spectral power distribution data in increments of 5 nm or less. ANSI/IES TM-33 (-18 or -23) XML documents are also acceptable in addition to SPDX files but are not required at this time. | LUNA parent products will display the SPDX document ‡ under the Tested data section. | ANSI/IES TM-27-20 or IES TM-27-14 Optionally: ANSI/IES TM-33-18 (or-23) |
| **SPD Image** | All LUNA parent products | Using the LUNA pre-submission tool, the submitter will create a PNG SPD image for the representative LUNA qualifying products included in the application. | For each color parent product, images from the LUNA pre-submission tool will be listed under the Tested Data section. | ANSI/IES TM-27-20 or IES TM-27-14 Optionally: ANSI/IES TM-33-18 (or -23) Submitted SPD images generated by the LUNA pre-submission tool from the submitted SPDX files. |

*Table TRT-25: Turtle Lighting PUD Requirements: Light Output and Distribution*

| Primary Use Letter | Primary Use Designation | Maximum Light Output (lm) | Amber LED type | Maximum U Rating | Maximum G Rating |
|---|---|---|---|---|---|
| BF | Turtle Lighting Zero-Uplight Pole/Arm-Mounted Area and Roadway Luminaires | 8,000 | de-Amber | U0 | G1 |
| BG | Turtle Lighting Zero-Uplight Wall-Mounted Area Luminaires | 2,500 | de-Amber | U0 | G0 |
| BH | Turtle Lighting Zero-Uplight Bollards | 1,000 | de-Amber | U0 | G0 |

**Table TRT-26: Efficacy Allowances Specific to LUNA Products**

| Feature | Primary Use Designation | Performance Metric | Allowance Under V6.0 |
|---|---|---|---|
| All Bollards | Bollards | N/A | -25% |
| Shielding | • Outdoor Pole/Arm-Mounted Area and Roadway Luminaires<br>• Outdoor Pole/Arm-Mounted Decorative Luminaires<br>• Hazardous Environment Area Lighting<br>• Specialty: Hazardous Environment Outdoor Pole/Arm-Mounted Area and Roadway Luminaires | Luminaires with internal or external house-side shields (HSS) that reduce the house-side lumens by at least 50% compared to those from an unshielded equivalent product. | -20% |
| | | Luminaires with internal or external cul-de-sac shields (CSS) that reduce the house-side lumens by at least 70% compared to those from an unshielded product. | -35% |
| | | Luminaires with internal or external front-side shields (FSS) that reduce the street-side lumens by at least 30% compared to those from an unshielded product. | -20% |

*Table TRT-27: Field Adjustable Color Temperature Reported Data*

| Field | Definition | Acceptable Terms Denoting CCT on the Product Specification Sheet or in Supplemental Literature |
|---|---|---|
| Default CCT Setting | The setting at which the product emerges from production and is shipped, with no adjustments to CCT. | xxxxK<br>xxxx K<br>x K<br>x.x K |
| CCT Setting 1 | The CCT of the luminaire at the lowest setting. | xxxxK<br>xxxx K<br>x K<br>x.x K |
| CCT Setting 2 | The CCT of the luminaire at the second lowest setting. | xxxxK<br>xxxx K<br>x K<br>x.x K |
| CCT Setting 3 | The CCT of the luminaire at the third lowest setting. | xxxxK<br>xxxx K<br>x K<br>x.x K |
| CCT Setting 4 | The CCT of the luminaire at the fourth lowest setting, if needed. | xxxxK<br>xxxx K<br>x K<br>x.x K |
| CCT Setting 5 | The CCT of the luminaire at the fifth lowest setting, if needed. | xxxxK<br>xxxx K<br>x K<br>x.x K |
| CCT Setting 6 | The CCT of the luminaire at the sixth lowest setting, if needed. | xxxxK<br>xxxx K<br>x K<br>x.x K |
| CCT Setting 7 | The CCT of the luminaire at the seventh lowest setting, if needed. | xxxxK<br>xxxx K<br>x K<br>x.x K |
| CCT Setting 8 | The CCT of the luminaire at the eighth lowest setting, if needed. | xxxxK<br>xxxx K<br>x K<br>x.x K |

*Table TRT-28: Field Adjustable Light Output and Wattage Reported Data*

| Field | Definition | Acceptable Terms on the Product Specification Sheet or in Supplemental Literature |
|---|---|---|
| Default Lumen Output | The setting at which the product is shipped, with no adjustments to lumen output. | xxxxx lm<br>xxxxx lumens |
| Lumen Output Setting 1 | The lumen output of the luminaire at the lowest setting. | xxxxx lm<br>xxxxx lumens |
| Lumen Output Setting 2 | The lumen output of the luminaire at the second-lowest setting. | xxxxx lm<br>xxxxx lumens |
| Lumen Output Setting 3 | The lumen output of the luminaire at the third lowest setting. | xxxxx lm<br>xxxxx lumens |
| Lumen Output Setting 4 | The lumen output of the luminaire at the fourth lowest setting, if needed. | xxxxx lm<br>xxxxx lumens |
| Lumen Output Setting 5 | The lumen output of the luminaire at the fifth lowest setting, if needed. | xxxxx lm<br>xxxxx lumens |
| Lumen Output Setting 6 | The lumen output of the luminaire at the sixth lowest setting, if needed. | xxxxx lm<br>xxxxx lumens |
| Lumen Output Setting 7 | The lumen output of the luminaire at the seventh lowest setting, if needed. | xxxxx lm<br>xxxxx lumens |
| Lumen Output Setting 8 (Highest) | The lumen output of the luminaire at the eighth lowest setting, if needed. | xxxxx lm<br>xxxxx lumens |
| Default Wattage | The setting at which the product is shipped, with no adjustments to lumen output. | xxxx W<br>xxxx Watts |
| Wattage Setting 1 (Lowest) | The power demand of the luminaire at the lowest setting. | xxxx W<br>xxxx Watts |
| Wattage Setting 2 | The power demand of the luminaire at the second lowest setting. | xxxx W<br>xxxx Watts |
| Wattage Setting 3 | The power demand of the luminaire at the third lowest setting. | xxxx W<br>xxxx Watts |
| Wattage Setting 4 | The power demand of the luminaire at the fourth lowest setting, if needed. | xxxx W<br>xxxx Watts |
| Wattage Setting 5 (Highest) | The power demand of the luminaire at the fifth lowest setting, if needed. | xxxx W<br>xxxx Watts |
| Wattage Setting 6 | The power demand of the luminaire at the sixth lowest setting, if needed. | xxxx W<br>xxxx Watts |
| Wattage Setting 7 | The power demand of the luminaire at the seventh lowest setting, if needed. | xxxx W<br>xxxx Watts |

| Field | Definition | Acceptable Terms on the Product Specification Sheet or in Supplemental Literature |
|---|---|---|
| Wattage Setting 8 (Highest) | The power demand of the luminaire at the eighth lowest setting, if needed. | xxxx W<br>xxxx Watts |

*Table TRT-29: Field Adjustable Light Distribution Reported Data*

| Field | Definition | Acceptable Terms on the Product Specification Sheet or in Supplemental Literature |
|---|---|---|
| Field Adjustable Distribution Type | Either Integral Field Adjustable Light Distribution or Standard Component Field Adjustable Light Distribution | N/A |
| Field Adjustable Distribution Metric | The metric by which FALD setting information will be submitted. | Degree Range<br>IES Distribution Types (Outdoor only)<br>NEMA Flood Types (Outdoor only) |
| Distribution Setting Default | The setting at which the product emerges from production and is shipped, with no adjustments to distribution settings. | xxx°<br>xxx degrees<br>Type x<br>NEMA x |
| Distribution Setting 1 (Narrowest) | The distribution of the luminaire at the narrowest or most concentrated setting. | xxx°<br>xxx degrees<br>Type x<br>NEMA x |
| Distribution Setting 2 | The distribution of the luminaire at the second narrowest or most concentrated setting. | xxx°<br>xxx degrees<br>Type x<br>NEMA x |
| Distribution Setting 3 | The distribution of the luminaire at the third narrowest or most concentrated setting. | xxx°<br>xxx degrees<br>Type x<br>NEMA x |
| Distribution Setting 4 | The distribution of the luminaire at the fourth narrowest or most concentrated setting, if needed. | xxx°<br>xxx degrees<br>Type x<br>NEMA x |
| Distribution Setting 5 (Widest) | The distribution of the luminaire at the fifth narrowest or most concentrated setting, if needed. | xxx°<br>xxx degrees<br>Type x<br>NEMA x |

*Table TRT-30: Efficacy Requirements for All Amber LED Products*

| Amber LED Technology | DLC Standard Minimum Efficacy (lm/W) |
|---|---|
| de-Amber | 30 |
| pc-Amber | 70 |
| Filtered Amber | 95 |

**Table TRT-31: Testing and Reporting Requirements for Spectral Quality for Products with Amber LEDs (DLC Standard)**

| Metric and/or Application | Applicable Products | SSL V6.0 & LUNA V2.0 Standard Requirements | QPL Listing | Method of Measurement/ Evaluation |
|---|---|---|---|---|
| **Chromaticity (Spectral Compliance Information)** | All Amber LED products | Chromaticity consistent with technology-specific definitions provided in the *Amber Products* section | *Amber Products* (de-Amber, pc-Amber, Filtered Amber) for parent and child products.<br>• Amber parent products will also display the following from the LM-79/Color report under Tested Data:<br><br>• Dominant wavelength and<br>• Chromaticity coordinates | ANSI/IES LM-79<br>ANSI/IES TM-27<br>SPDX file |
| **SPDX Document** | All Amber parent products | Qualifying products with amber LEDs tested to meet Amber spectral quality requirements must submit an ANSI/IES TM-27 SPDX document containing spectral power distribution data in increments of 5 nm or less.<br>ANSI/IES TM-33 (-18 or -23) XML documents are also acceptable in addition to SPDX files but are not required at this time. | Amber parent products will display the SPDX document under the Tested data section. | ANSI/IES TM-27-20 or IES TM-27-14<br><br>Optionally:<br>ANSI/IES TM-33-18 |
| **SPD Image** | All Amber parent products | Using the SPDX document in the Amber pre-submission tool, the submitter will create a PNG SPD image for the representative Amber qualifying products included in the application. | For each Amber color parent product, images from the Amber pre-submission tool will be listed under the Tested Data section. | ANSI/IES TM-27-20 or IES TM-27-14<br><br>Submitted SPD images are generated by the Amber pre-submission tool from the submitted SPDX documents. |

| Metric and/or Application | Applicable Products | SSL V6.0 & LUNA V2.0 Standard Requirements | QPL Listing | Method of Measurement/ Evaluation |
|---|---|---|---|---|
| **Color Rendition** | All Amber products | Products are required to report data in terms of Option 1 and Option 2, but are not required to meet any thresholds.<br><br>**Option 1: ANSI/IES TM-30:**<br>• IES $R_f$<br>• IES $R_g$<br>• IES $R_{cs,h1}$<br>**Option 2: CIE 13.3-1995:**<br>• $R_a$ (CRI)<br>• $R_9$ | All color rendition metrics for parent products from LM-79 test reports are listed as Tested Data.<br><br>All color rendition metrics for child products are listed as Reported Data. | ANSI/IES LM-79<br>*ANSI/IES TM-30*<br>*CIE 13.3-1995* |
| **Color Maintenance[2]** | All Amber products | All Amber products must report the following metrics. No thresholds are stipulated.<br><br>Chromaticity shift on the CIE 1976 ($u'$, $v'$) chromaticity diagram from ≈1,000-hour measurement to ≈6,000-hour measurement shall be reported to the DLC.<br><br>Optional reporting of CS4 and CS7 values per ANSI/IES TM-35-19. | V6.0 listed products will display CS4 and CS7 values for all products when reported. | ANSI/IES LM-80, and/or IES LM-84-14 and ANSI/IES TM-35-19 |

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[2] It is important to note that optional reporting of ANSI/IES TM-35-19 CS4 and CS7 values is included in SSL V6.0 and LUNA V2.0, and that reporting pathways will be provided coinciding with the availability of a publicly available TM-35 calculator. Custom calculators will not be accepted for reporting CS4 and CS7 values.

**Table TRT-32: Additional Reported Fields Required for Solar Powered Outdoor Luminaires**

| Reported Field | Options* | Description | Acceptable Terms |
|---|---|---|---|
| Configuration | Integrated | The solar panel, battery, and luminaire are installed as one unit. Generally, the solar panel is embedded in the top of the luminaire. | Integrated, All-in-one, Self-contained |
| | Split-type | The solar panel and battery are mounted separately from the luminaire, but all components are marketed as one product. | Split-type, Split-component, Two-piece, All-in-two Pole-integral Pole integrated |
| | Luminaire only | The luminaire is sold separately from any battery or solar panel components but is designed to be integrated into a solar luminaire system. | Solar-ready, Solar compatible |
| Grid Connection | Off grid | The luminaire receives 100% of its energy from a solar panel. | Off grid, Standalone, Autonomous, Grid free |
| | Hybrid | The luminaire is designed to receive energy from both a solar panel and the electric grid. | Hybrid, Dual input, Grid assisted, Grid connected, Grid tied |
| PV Wattage | Value in watts | Only applicable for products with "Integrated" or "Split-Type" indicated in the Configuration field. | N/A |

| Reported Field | Options* | Description | Acceptable Terms |
|---|---|---|---|
| Recommended Install Height | Range in feet | The recommended height from the ground to the luminaire. Only applicable for products with "Integrated" or "Split-Type" indicated in the Configuration field. | N/A |
| Battery Type | Lithium iron phosphate (LiFePO4) | Only applicable for products with "Integrated" or "Split-Type" indicated in the Configuration field. | Lithium iron phosphate, Lithium ferro phosphate, $LiFePO_4$, LFP |
| | Lead acid | | Lead acid, Gel |
| | Nickel-metal hydride (NiMH) | | Nickel-metal hydride, NiMH |
| | Lithium nickel manganese cobalt oxide (NMC) | | Lithium nickel manganese cobalt oxide, NMC, NCM, Lithium-ion, Li-ion, Ternary lithium |
| | Lead crystal® | | Lead crystal, Silicon dioxide, $SiO_2$ |
| Battery Capacity | Value in amp-hours | Only applicable for products with "Integrated" or "Split-Type" indicated in the Configuration field. | N/A |
| Battery Lifetime | Value in years | Time until battery degenerates to 80% capacity. Only applicable for products with "Integrated" or "Split-Type" indicated in the Configuration field. | N/A |

| Reported Field | Options* | Description | Acceptable Terms |
|---|---|---|---|
| Solar Panel Lifetime | Value in years | Time until the panel generates 80% of initial capacity.<br><br>Only applicable for products with "Integrated" or "Split-Type" indicated in the Configuration field. | N/A |

*Table TRT-33: Powered Device Minimum Input Voltage\**

| Powered Device Assigned Class | Power Sourcing Equipment Type | | | |
|---|---|---|---|---|
| | Type 1 | Type 2 | Type 3 | Type 4 |
| Class 1 | 42.9 | 49.0 | 49.0 | 51.1 |
| Class 2 | 42.1 | 48.3 | 48.3 | 50.4 |
| Class 3 | 39.9 | 46.5 | 46.5 | 48.7 |
| Class 4 | — | 42.5 | 42.5 | 44.9 |
| Class 5 | — | — | 44.4 | 46.6 |
| Class 6 | — | — | 42.5 | 44.9 |
| Class 7 | — | — | — | 44.9 |
| Class 8 | — | — | — | 43.0 |

*Table TRT-34: Compatibility Testing Requirements: G24q- and GX24q-Base Lamps*

| Requirement | Methods of Measurement and/or Reference Document | Testing Guidance |
|---|---|---|
| Lamp light output shall have a frequency of ≥120 Hz | **Method of Measurement:** None<br><br>**Reference Document:** IEEE Std 1789™- 2015 | Sample Size: One unit per model.<br><br>Light output waveform shall be measured with a photodetector with a rise time of 10 microseconds or less, transimpedance amplifier, and oscilloscope. Employed equipment models and methods of measurement shall be documented. Temporal response, amplification, and filtering characteristics of the system shall be suitably designed to capture the photometric waveform. Digitized photometric waveform data and an image of the relative photometric amplitude waveform shall be recorded. Measured data shall be recorded to a digital file with an interval between each measurement no greater than 0.00005 sec (50 microseconds), corresponding to an equipment measurement rate of no less than 20 kHz and capture at least 1 second of data. |

*Table TRT-35: Type A and Dual Mode Reference Ballast Criteria*

| Type A and Dual Mode Reference Ballast Criteria | |
| --- | --- |
| **General Applications** | **Reference Ballast for Type A and Dual Mode Type A/B** |
| **T8 Linear Replacement Lamps** | T8 electronic instant-start ballast with 0.88 ballast factor |
| **T5 and T5HO Linear Replacement Lamps** | T5/T5HO electronic programmed-start ballast with 1.0 ballast factor |

**Table TRT-36: Required Testing to Demonstrate Compliance With SSL V6.0 and LUNA V2.0**

| Metric | Tested Models | Required Test |
|---|---|---|
| Minimum Light Output | Worst-case light output | Full LM-79/Color report, including accompanying SPDX document |
| Minimum Efficacy | Worst-case efficacy | Full LM-79/Color report, including accompanying SPDX document |
| Maximum CCT | Highest CCT in family at lowest color rendition option | Full LM-79/Color report, including accompanying SPDX document |
| Minimum CCT | Lowest CCT in family at lowest color rendition option | LM-79/Color report, including accompanying SPDX document |
| Minimum Color Rendering | Lowest color rendition option in family | LM-79/Color report, including accompanying SPDX document |
| Chromaticity | • Lowest CCT at lowest color rendition option<br>• Highest CCT at lowest color rendition option<br>• Lowest CCT at highest color rendition option (Premium only) | Full LM-79/Color report, including accompanying SPDX document |
| Minimum $L_{70}$ Lumen Maintenance for Standard and $L_{90}$ for Premium | • ISTMT at worst-case thermal conditions of LED<br>• LM-80 for single LED package/module/array as required for lumen maintenance projection | ISTMT, LM-80, LM-84, TM-21, TM-28 |
| Color Maintenance | LM-80 for single LED package/module/array that is evaluated for color shift | LM-80, LM-84 |
| Driver Lifetime (Premium only) | Worst-case driver temperature for each unique driver | Driver spec, ISTMT |

| Metric | Tested Models | Required Test |
|---|---|---|
| Zonal Lumen Distribution (ZLD), Spacing Criteria (SC) | Each unique optical and distribution pattern | Tested LM-79/Distribution report, including accompanying IES file |
| BUG Ratings (outdoor only) | Each unique optical and distribution pattern | Tested LM-79/Distribution report, including accompanying IES file |
| UGR (Specific Indoor PUDs and Premium Only) | Each unique optical and distribution pattern at the highest lumen output without consideration of the effect of color properties | Tested LM-79/Distribution report, including accompanying IES file |
| THD, PF | Worst-case performing driver in family | Benchtop Electrical Testing |

**Table TRT-37: Example of Shielded Products and Identified Worst-Case Efficacy and Distribution Parents**

| Family Name | Optic | Luminaire Efficacy w/o Shielding (lm/W) | House-Side (or Street-Side) Lumens w/o Shield | Shield Type | Shielding Angle | Shield Type Subgroup | Luminaire efficacy With Shield (lm/W) | House-Side (or Street-Side) Lumens With Shield | House-Side (or Street-Side) Reduction | Test Required |
|---|---|---|---|---|---|---|---|---|---|---|
| AXBXC | Type II | 125 | 3,000 | HSS | 30 | A | 85 | 1,400 | 53% | LM-79/ Color |
| AXBXC | Type II | 125 | 3,000 | HSS | 45 | A | 88 | 1,200 | 60% | |
| AXBXC | Type III | 125 | 3,500 | HSS | 30 | A | 87 | 1,700 | 51% | LM-79/ Distribution |
| AXBXC | Type III | 125 | 3,500 | HSS | 45 | A | 89 | 1,500 | 57% | |
| AXBXC | Type II | 125 | 10,000 | FSS | 30 | B | 88 | 6,500 | 32% | LM-79/Color |
| AXBXC | Type II | 125 | 10,000 | FSS | 45 | B | 90 | 5,000 | 47% | |
| AXBXC | Type III | 125 | 9,500 | FSS | 30 | B | 89 | 7,000 | 30% | LM-79/ Distribution |
| AXBXC | Type III | 125 | 9,500 | FSS | 45 | B | 91 | 6,000 | 40% | |

**_Table TRT-38: FALD Testing and Reporting Requirements_**

| Technical Requirement | FALD Testing Required |
|---|---|
| LM-79 Report Required: | <ul><li>Worst-case efficacy</li><li>Maximum power consumption</li><li>Worst-case light output</li><li>Representative highest CCT</li><li>Representative lowest CCT</li><li>Representative lowest CRI</li></ul> |
| Bench Test Required: | <ul><li>Worst-case power quality (THD and PF)</li></ul> |
| In-Situ Temperature Measurement Test (ISTMT) Required: | <ul><li>Worst-case thermal condition</li><li>For Premium classification, worst-case driver thermal condition</li></ul> |
| Photometric Distribution data required: | <ul><li>All optical variations, excluding variations due to Integral FALD adjustability</li><li>One FALD setting designated for meeting ZLD requirements and listing on QPL</li></ul> |

*Table TRT-39: Data Reporting Format for FACT, CCT-Tunable, and Full Color-Tunable Product Submissions*

| ANSI CCT Quadrangle or Worst-Case Value | Measured CCT (K) | Power Consumption (W) | Lumen Output (lm) | Input Control Signal Applied |
|---|---|---|---|---|
| 1800 K | | | | |
| 2000 K | | | | |
| 2200 K | | | | |
| 2500 K | | | | |
| 2700 K | | | | |
| 3000 K | | | | |
| 3500 K | | | | |
| 4000 K | | | | |
| 4500 K | | | | |
| 5000 K | | | | |
| 5700 K | | | | |
| 6500 K | | | | |
| Lowest Efficacy | | | | |
| Maximum Power | | | | |

*Table TRT-40: SSL V6.0 and LUNA V2.0 Technical Requirement Corrections and Clarifications (Published as Needed)*

| Date Updated | Subject | Change Type | Description | Affected Page(s) |
|---|---|---|---|---|
| 12/5/2025 | Table 24: LUNA V2.0 Spectral Quality Requirements | Clarification | Added max CCT for lamps and retrofits to this section, was previously only in FACT. | 78, 79 |
| 12/5/2025 | Minimum Testing Requirements: LUNA Spectral Quality | Formatting | Fixed formatting to align with other cross references. | 132 |
| 12/5/2025 | Table 8: Primary Use Designation Technical Requirements: Light Distribution | Correction | Updated PUD AB distribution requirements to match PUD C. | 26, 27 |
| 12/5/2025 | Table 20: DLC Premium Efficacy Requirements | Correction | Changed incorrect PUD name "Retrofit Kits for Outdoor Wall-Mounted Area Luminaires" to "Retrofit Kits for Outdoor Zero-Uplight Wall-Mounted Area Luminaires." | 68 |
| 12/5/2025 | 15.6 LUNA Turtle Lighting PUD Requirements | Correction | Updated cross reference to correct table and fixed typo. | 81 |
| 12/5/2025 | Table 31: Testing and Reporting Requirements for Spectral Quality for Products with Amber LEDs (DLC Standard) | Correction | Section referenced LUNA products where it should have referenced amber products. | 101 |
| 12/5/2025 | Table 18: Efficacy Allowances | Correction | Eligible indoor products was duplicated and outdoor products missing. Added eligible outdoor products. | 59 |
| 12/5/2025 | How to Navigate this Document | Clarification | Changed "specialized" to "specific" and added roman numerals to Part V description | Between cover page and ToC |
| 12/5/2025 | 28.1.14 Sports Lighting Luminaires | Formatting | Moved section up one heading level | 162 |
| 12/5/2025 | 14.2 Premium Eligibility & 14.4 14.4 Premium Requirements | Clarification | Removed "and Requirements" from heading; requirements in 14.4 | 65, 66 |

| Date Updated | Subject | Change Type | Description | Affected Page(s) |
|---|---|---|---|---|
| 12/5/2025 | Table 36: Required Testing to Demonstrate Compliance With SSL V6.0 and LUNA V2.0 | Correction | Changed "Driver Lifetime (Standard and Premium)" to "Driver Lifetime (Premium only)." | 125 |
| 12/5/2025 | 5.7 Special Controllability Considerations for Dimmable Lamps | Correction | Removed paragraph on UL Type Lamps | 40 |
| 12/5/2025 | Table 6: Light Output Requirements by Primary Use Designation | Correction | Table erroneously showed wall wash luminaires as outdoor products | 22 |
| 12/5/2025 | Table 18: Efficacy Allowances | Clarification | Merged cells in method of evaluation column for High Color Rendition and Enhanced Discomfort Glare Control rows. | 59 |
| 12/5/2025 | Table 39: Data Reporting Format for FACT, CCT-Tunable, and Full Color-Tunable Product Submissions | Formatting | Header row did not repeat | 140 |
| 12/5/2025 | 18.2 Specifications for Amber LED Luminaires, Retrofit Kits, and Lamps | Correction | Removed references to narrowband and broadband SPD from amber definitions. | 99, 100 |
| 12/5/2025 | 15.2 LUNA Eligibility and Requirements | Correction | Corrected cross referenced table from 23 to 22 | 72 |
| 12/5/2025 | 15.7.1 LM-79 Testing | Typo | Corrected SSDL to SSL | 82 |
| 12/5/2025 | Table 8: Primary Use Designation Technical Requirements: Light Distribution | Correction | Restored maximum lumen output for the low bay PUD, which had been erroneously removed | 27 |
| 12/5/2025 | 4.4 Interactions With Other DLC Policies: Field Adjustable Light | Clarification, Typo | Added cross reference to light output section and removed dimming language. Added "FALO" acronym to section heading. | 30, 31 |

| Date Updated | Subject | Change Type | Description | Affected Page(s) |
|---|---|---|---|---|
| | Distribution (FALD) and Field Adjustable Light Output | | | |
| 12/5/2025 | 17.3 CCT-Tunable and Full Color-Tunable Eligibility | Formatting, clarification | Removed erroneous line breaks and "except chromaticity" language which confused the intent of the policy. | 96 |
| 12/5/2025 | 22.5 Four Pin-Base Replacement Lamps for CFLs & 28.9 Four Pin-Base Replacement Lamp for CFLs | Clarification | Clarified that dual mode is ineligible under this category | 179 |
| 12/5/2025 | Appendix B, Table 4, 7.2 Lumen Maintenance | Correction | Removed "-21" throughout document and added "LM-80-08" to list of referenced standards | 18 – 19, 52, 185 - 187 |
| 12/5/2025 | Table 10: Controls Ready Receptacle Types | Clarification | State that products without a receptacle are not controls ready | 35 |
| 12/5/2025 | Table 1, Appendix A | Correction | Restored singular PUD names to plural versions, restored "Commercial and Industrial" to High-Bay and Low-Bay PUDs | 8, 160 - 184 |