

Energy · Quality · Controllability℠

V5.1产品申请网络研讨会

October 14, 2020

Date

议程

- 最近的更新
- 申请处理延迟的主要原因
- 问答
  - 通过聊天对话框提问
    - 具体的申请问题可以通过电子邮件发送至 applications@designlights.org
    - 对于正在处理的申请，请通过申请网站发送消息

注意:

该网络研讨会正在录制中，并将在网络研讨会之后发布在DLC网站上



DLC是一家非营利性组织，其任务是通过实现对产品质量，人员和环境的可控性来实现能源优化。

技术要求目标V5.1



New color quality requirements help provide good color rendering with better color consistency over time.



Lighting decision makers can use DLC Premium classification to have more confidence in the glare performance of listed products.



Virtually all listed products are dimmable, providing increased energy savings and improved user satisfaction.

最近的更新



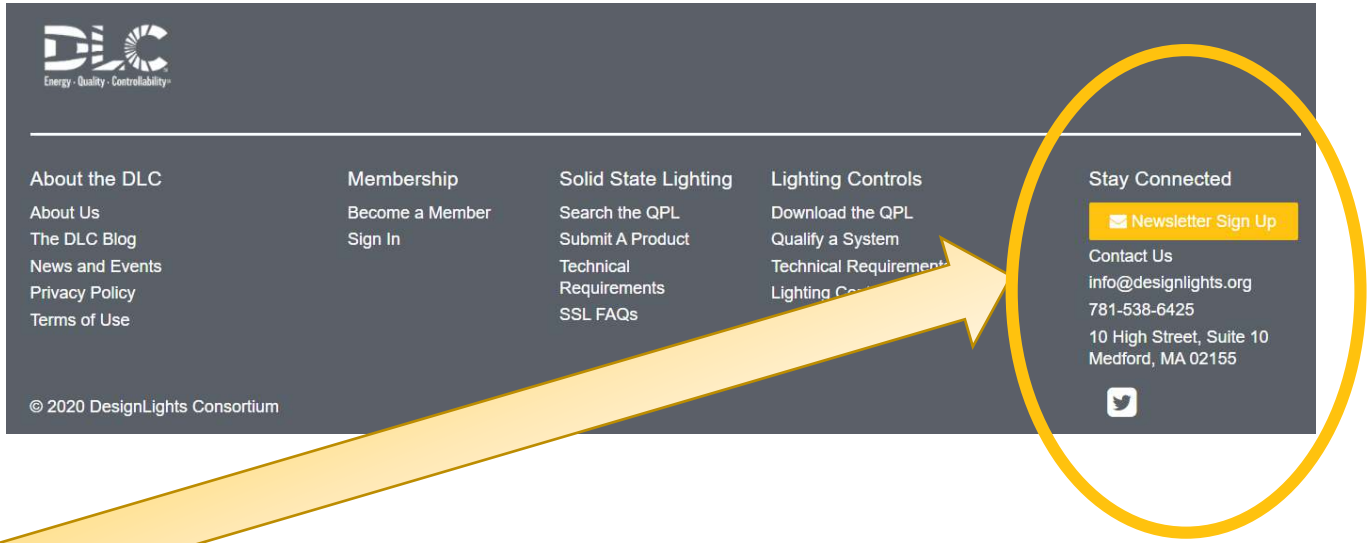
最新的申请材料

- 从DLC网站下载最新的申请表格

https://www.designlights.org/solid-state-lighting/submit-a-product/



政策更新



- 在DLC网站上注册新闻通讯
- 在网络上查看政策更新
  - 技术要求的最后一页
  - 网站上的摘要链接

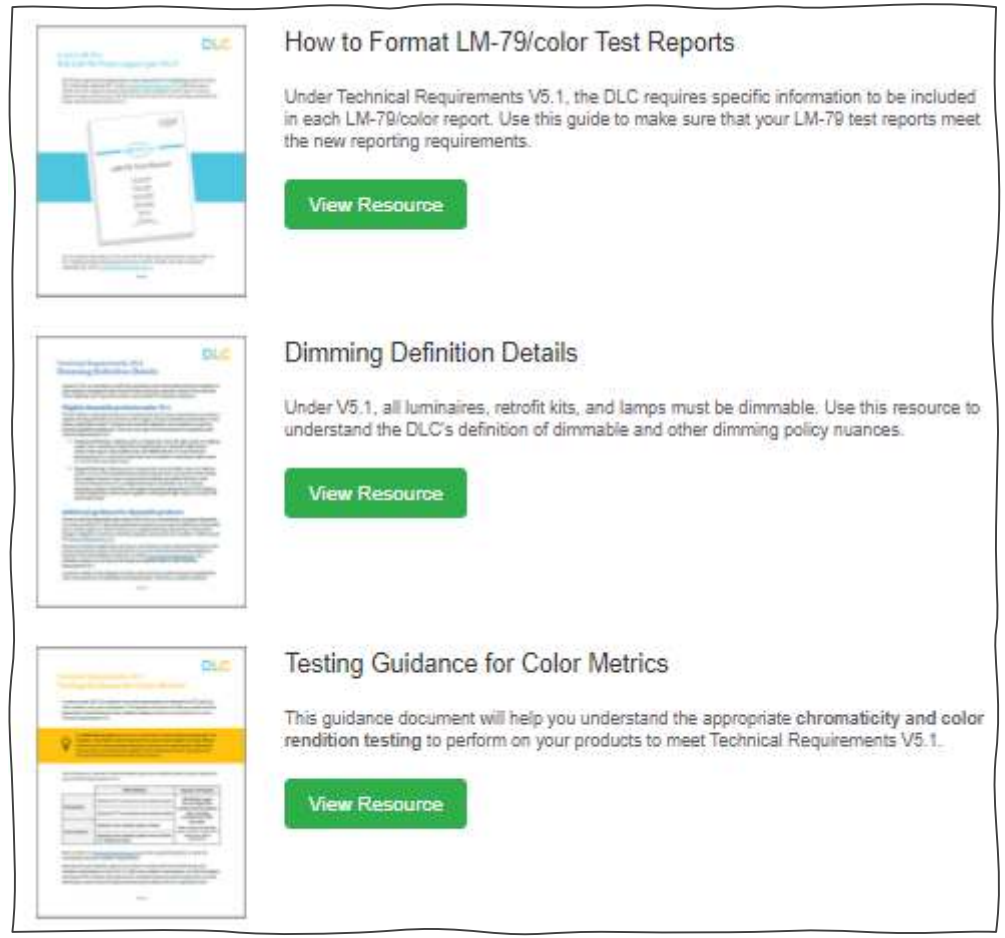


最近的更新

Date Updated	Subject	Change Type	Description	Affected Document	Affected Page(s)
8/20/2020	Outdoor R_9 Requirement	Policy Change	The R_9 requirement for outdoor products has been changed from a required threshold to a reporting requirement only. High-bay products must still meet $R_9 \geq -40$.	V5.1 Policy and TRT	8
7/30/2020	Color Maintenance reporting requirements	Guidance added	LM-80 reports may not include absolute D_{uv} information for each reporting interval, but only the change in D_{uv} from 0 hours. Guidance has been added to the policy document and Manufacturer Guidance that describes how to report maintenance in the case that average chromaticity coordinate data at the ≈ 1000-hour and ≈ 6000-hour measurement points are not provided and only chromaticity shift (Δu'v') data is available.	V5.1 Policy and Manufacturer and Industry Guidance	10
6/17/2020	White-tunable testing requirements	Clarification	Clarified requirements around testing and reporting at various CCT settings for all white-tunable products; not just DLC Premium.	V5.1 Policy	11

技术指导要求的资源

- https://www.designlights.org/solid-state-lighting/qualification-requirements/ssl-v5-1-resources/



How to Format LM-79/color Test Reports

Under Technical Requirements V5.1, the DLC requires specific information to be included in each LM-79/color report. Use this guide to make sure that your LM-79 test reports meet the new reporting requirements.

View Resource

Dimming Definition Details

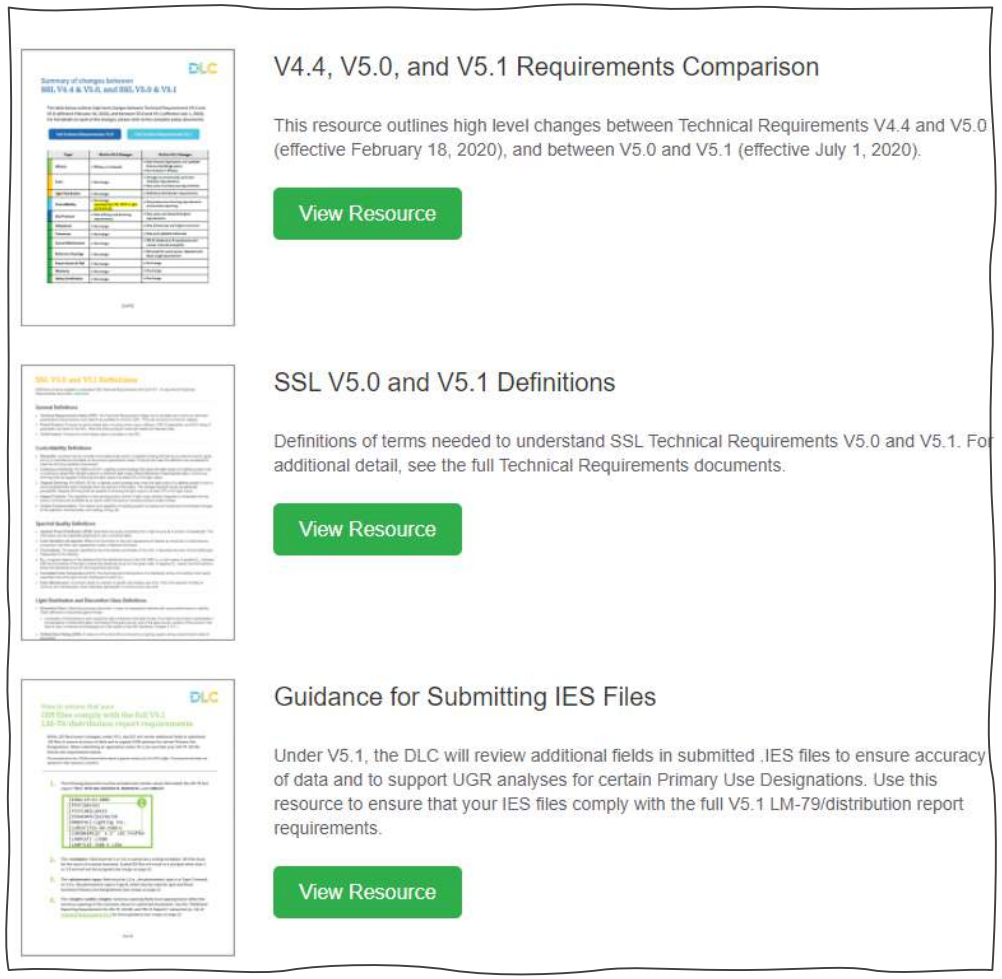
Under V5.1, all luminaires, retrofit kits, and lamps must be dimmable. Use this resource to understand the DLC's definition of dimmable and other dimming policy nuances.

View Resource

Testing Guidance for Color Metrics

This guidance document will help you understand the appropriate **chromaticity and color rendition testing** to perform on your products to meet Technical Requirements V5.1.

View Resource



V4.4, V5.0, and V5.1 Requirements Comparison

This resource outlines high level changes between Technical Requirements V4.4 and V5.0 (effective February 18, 2020), and between V5.0 and V5.1 (effective July 1, 2020).

View Resource

SSL V5.0 and V5.1 Definitions

Definitions of terms needed to understand SSL Technical Requirements V5.0 and V5.1. For additional detail, see the full Technical Requirements documents.

View Resource

Guidance for Submitting IES Files

Under V5.1, the DLC will review additional fields in submitted .IES files to ensure accuracy of data and to support UGR analyses for certain Primary Use Designations. Use this resource to ensure that your IES files comply with the full V5.1 LM-79/distribution report requirements.

View Resource

申请处理延迟的主要原因



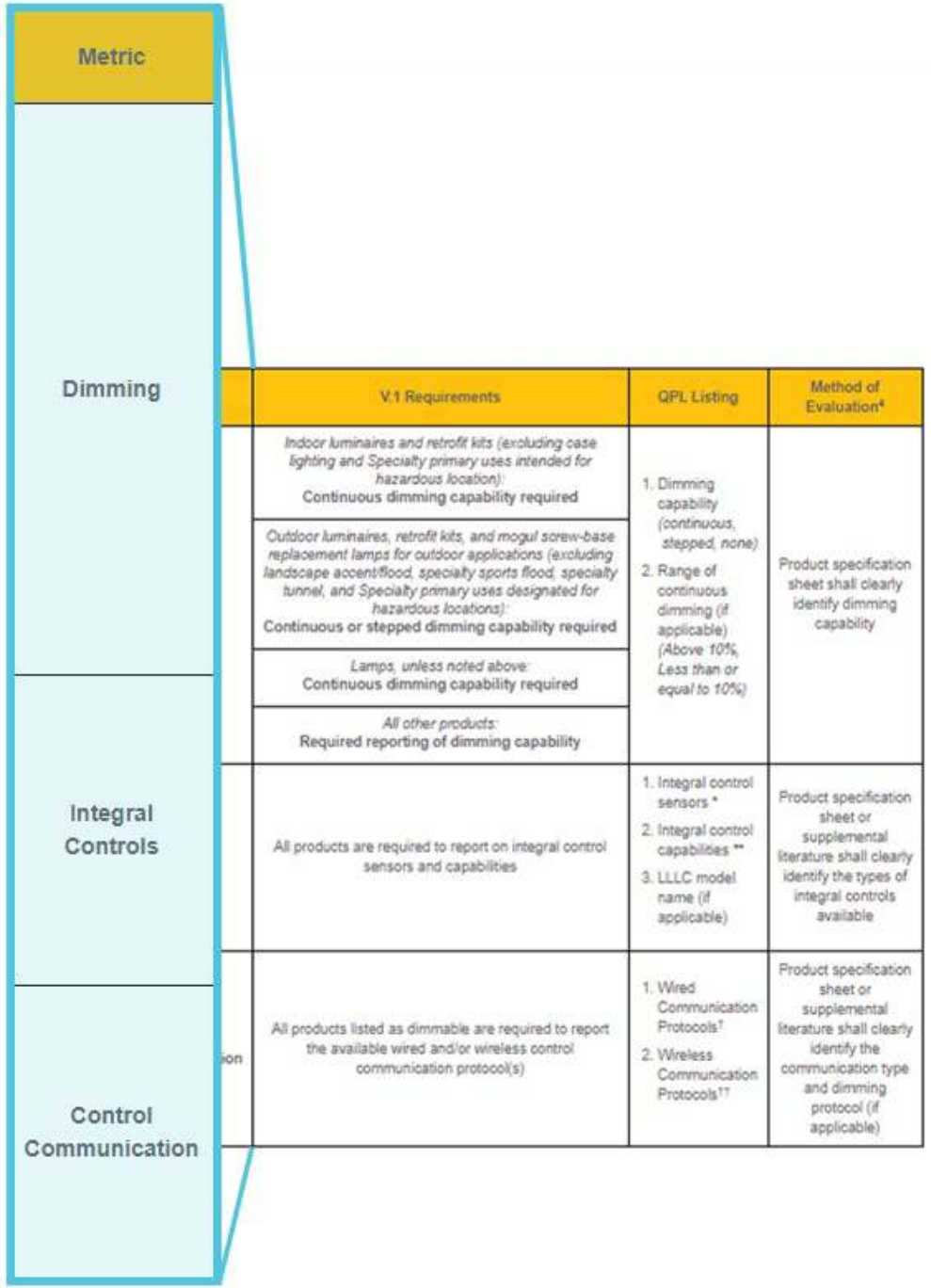
报告产品的可控能力

- 完整填写申请表，控制“报告的数据”选项
- 除“ LLLC型号名称”外的所有列均需输入
  - 应该选择“否”而不是留空

AD	AE	AF	AG	AH	AI	AJ	AK
Sensor Type	**Control Capability**	**LLLC Model Name**	**Dimming Capability and Range** ***(Continuous Below 10, Continuous Above 10, Stepped, Not Dimmable)***	**Wired Communication Protocol**	**Other Wired Protocol Name**	**Wireless Communication Protocol**	**Other Wireless Protocol Name**
Exterior Photocell	LLLC	LLLC Control	Stepped Dimmable	Phase-Cut		WiFi	
Occupancy Sensor; Daylight Sensor; Multifun	Integral Sensor Receptacle		Continuous Dimmable <10%	0-10V		Zigbee; Bluetooth	
Multifunction Sensor	Energy Monitoring; High-end Trim		Not Dimmable	No Wired Communication Protocol		No Wireless Protocol	
Traffic Sensor; Exterior Photocell	LLLC; Energy Monitoring	TestLLLC	Continuous Dimmable >10%	0-10V; Phase-cut	TestWiredProtocol	Bluetooth; WiFi	TestWirelessProtocol

产品可控性

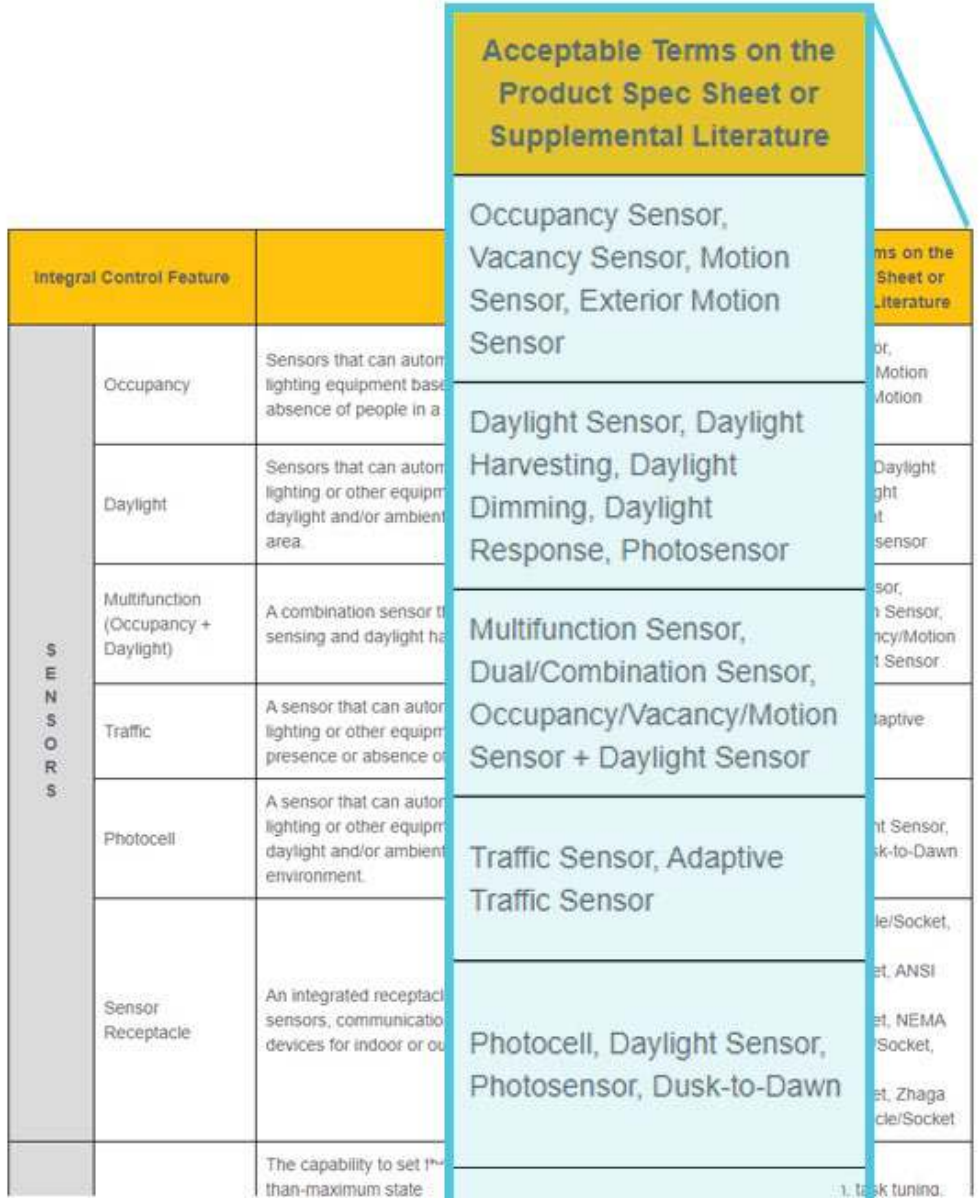
- 3种不同的可控性报告要
  - Dimming （调光）
  - Integral Controls （自载调控）
  - Control Communication （控制协议）
- 必须填写在申请表上
- 必须反映在产品规格书上，并在申请表上报告数据

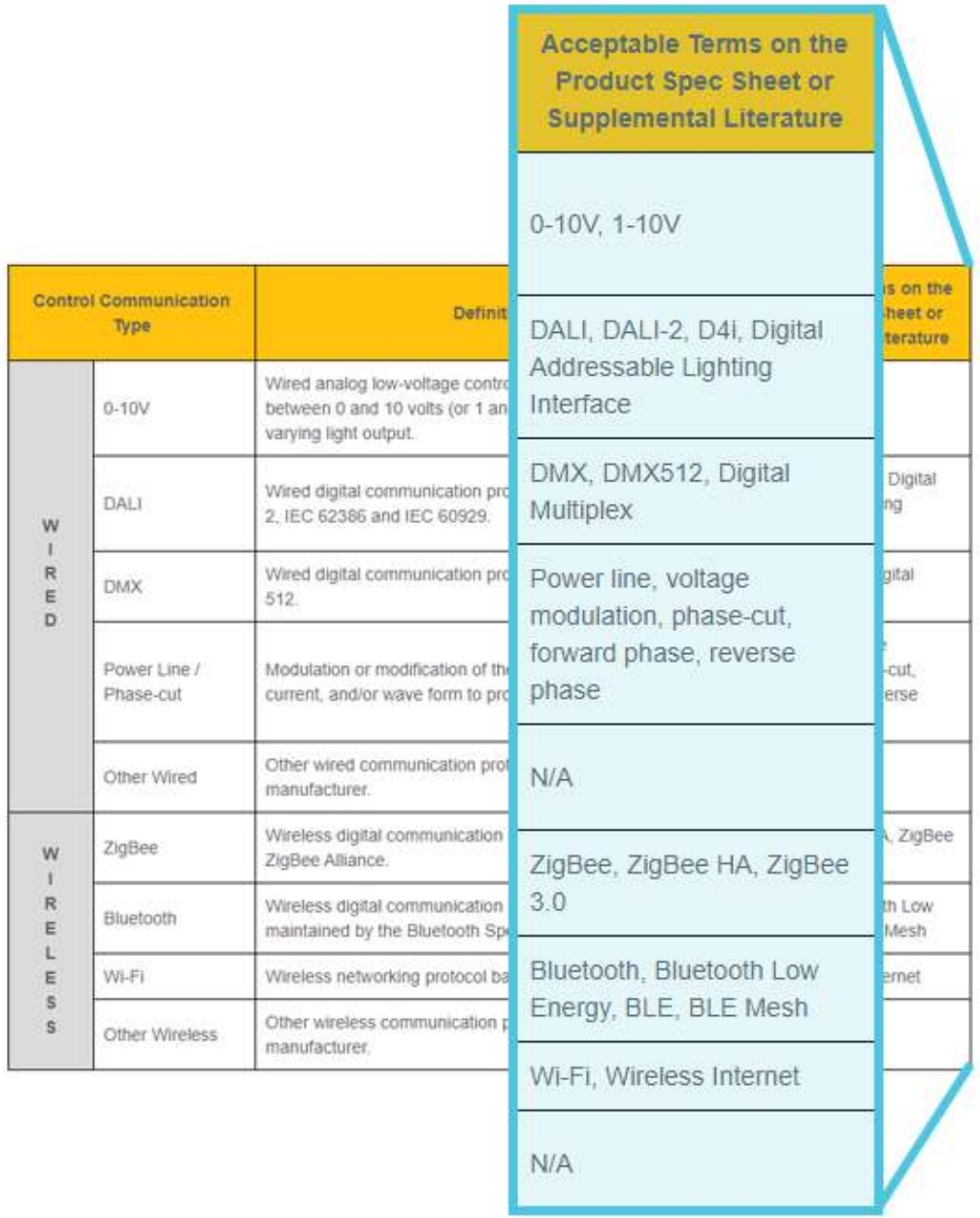


Metric	V.1 Requirements	QPL Listing	Method of Evaluation[4]
Dimming	*Indoor luminaires and retrofit kits (excluding case lighting and Specialty primary uses intended for hazardous location):* **Continuous dimming capability required**	1. Dimming capability *(continuous, stepped, none)* 2. Range of continuous dimming (if applicable) *(Above 10%, Less than or equal to 10%)*	Product specification sheet shall clearly identify dimming capability
	Outdoor luminaires, retrofit kits, and mogul screw-base replacement lamps for outdoor applications (excluding landscape accent/flood, specialty sports flood, specialty tunnel, and Specialty primary uses designated for hazardous locations): **Continuous or stepped dimming capability required**		
	Lamps, unless noted above: **Continuous dimming capability required**		
	All other products: **Required reporting of dimming capability**		
Integral Controls	All products are required to report on integral control sensors and capabilities	1. Integral control sensors * 2. Integral control capabilities ** 3. LLLC model name (if applicable)	Product specification sheet or supplemental literature shall clearly identify the types of integral controls available
Control Communication	All products listed as dimmable are required to report the available wired and/or wireless control communication protocol(s)	1. Wired Communication Protocols† 2. Wireless Communication Protocols††	Product specification sheet or supplemental literature shall clearly identify the communication type and dimming protocol (if applicable)

自载控制报告

- 规格书**必**须清楚说明可用的控制选项，并且**在型号/**订购代码中必须明确说明这些选项。
  - 需要与匹配申请表
- 规格表/文献**必**须明确且完全匹配政策中所述**的控件**，传感器和通信协议的可接**受的**语言。





Control Communication Type		Definit	Acceptable Terms on the Product Spec Sheet or Supplemental Literature
WIRED	0-10V	Wired analog low-voltage contro between 0 and 10 volts (or 1 an varying light output.	0-10V, 1-10V
	DALI	Wired digital communication pro 2, IEC 62386 and IEC 60929.	DALI, DALI-2, D4i, Digital Addressable Lighting Interface
	DMX	Wired digital communication pro 512.	DMX, DMX512, Digital Multiplex
	Power Line / Phase-cut	Modulation or modification of the current, and/or wave form to pro	Power line, voltage modulation, phase-cut, forward phase, reverse phase
	Other Wired	Other wired communication prot manufacturer.	N/A
WIRELESS	ZigBee	Wireless digital communication ZigBee Alliance.	ZigBee, ZigBee HA, ZigBee 3.0
	Bluetooth	Wireless digital communication maintained by the Bluetooth Sp	Bluetooth, Bluetooth Low Energy, BLE, BLE Mesh
	Wi-Fi	Wireless networking protocol ba	Wi-Fi, Wireless Internet
	Other Wireless	Other wireless communication p manufacturer.	N/A

控制协议报告

- 规格表必须具体描述控制通讯协议
- 规格表/**文献必**须明确且完全匹配**政策中所述的通信**协议的可接受条款

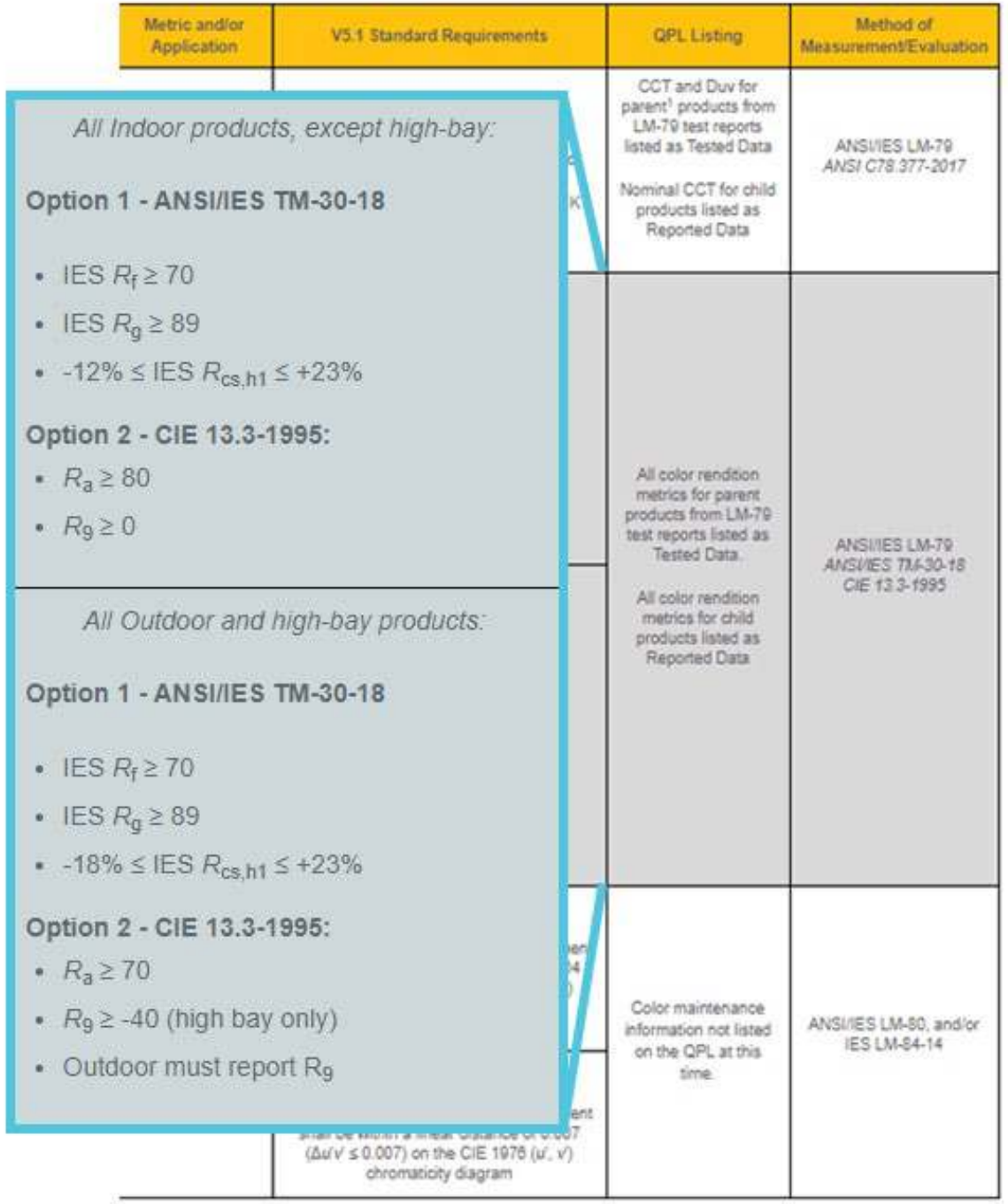
报告产品颜色数据

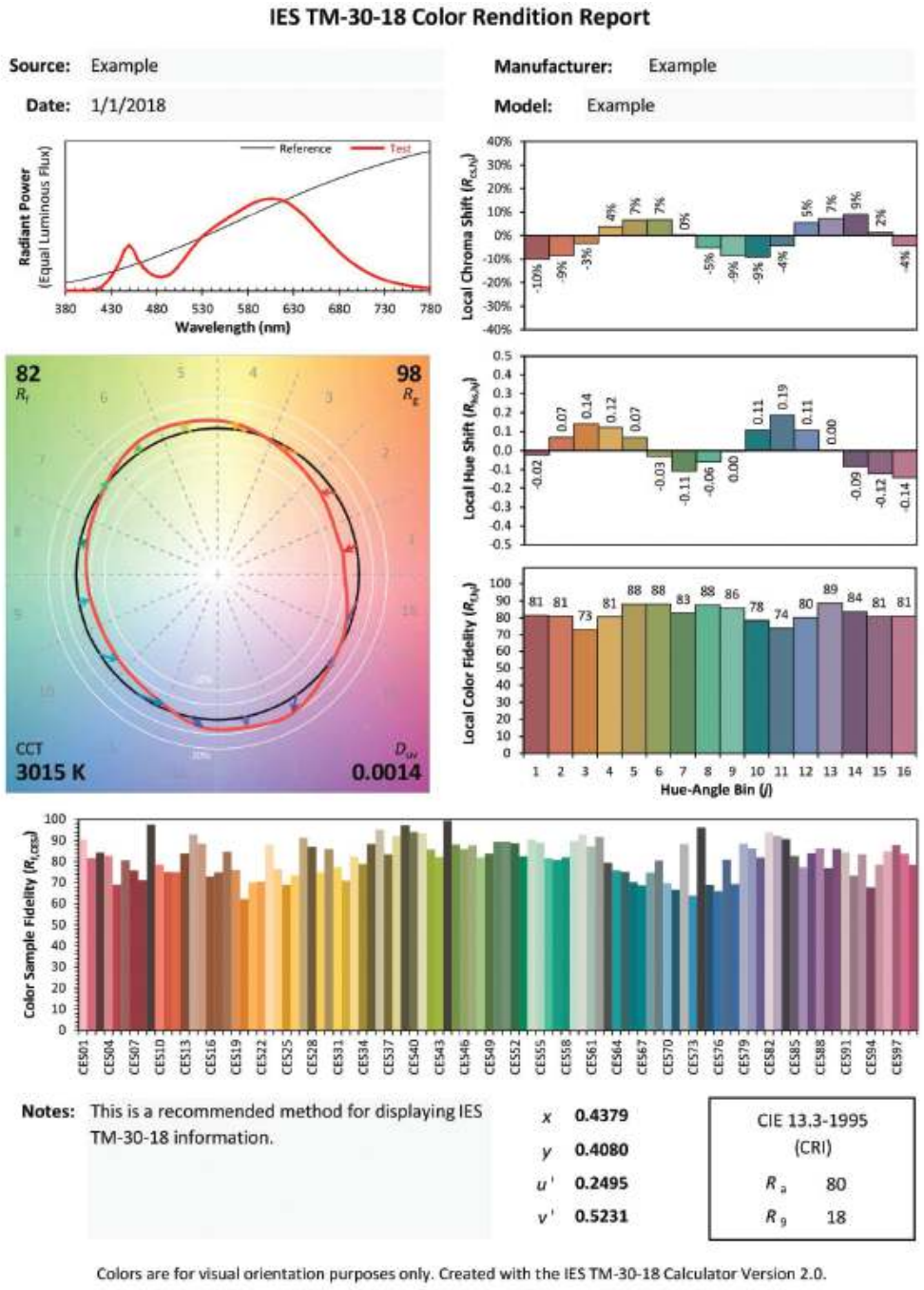
- 完整填写申请表
  - 特别是“报告数据”选项卡上的新的颜色信息列
  - 必须为每个申请填写所有颜色数据（列O-T）

O	P	Q	R	S	T
Reported CCT (K)	Reported CRI (Ra)	Reported R9	Reported Rf	Reported Rg	Reported Rcs,h1 (%)
6500	72	0	85	92	10
3500	85	5	75	90	0.2
2700	80	23	70	89	20
2200	99	99	99	99	0

产品显色要求

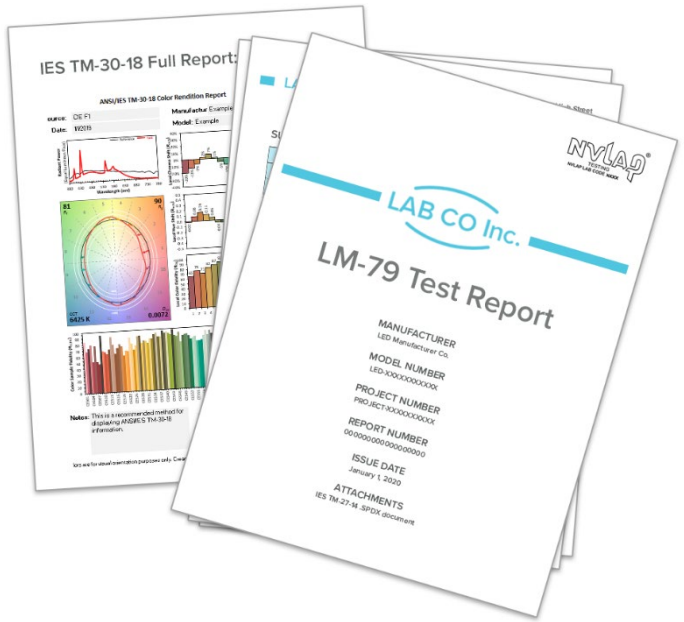
- 提供完整的数据报告(包含TM-30)
  - 特别是高CCT产品的测试报告
  - 即使只有一组通过，也必须同时提供TM-30和CIE显色指标





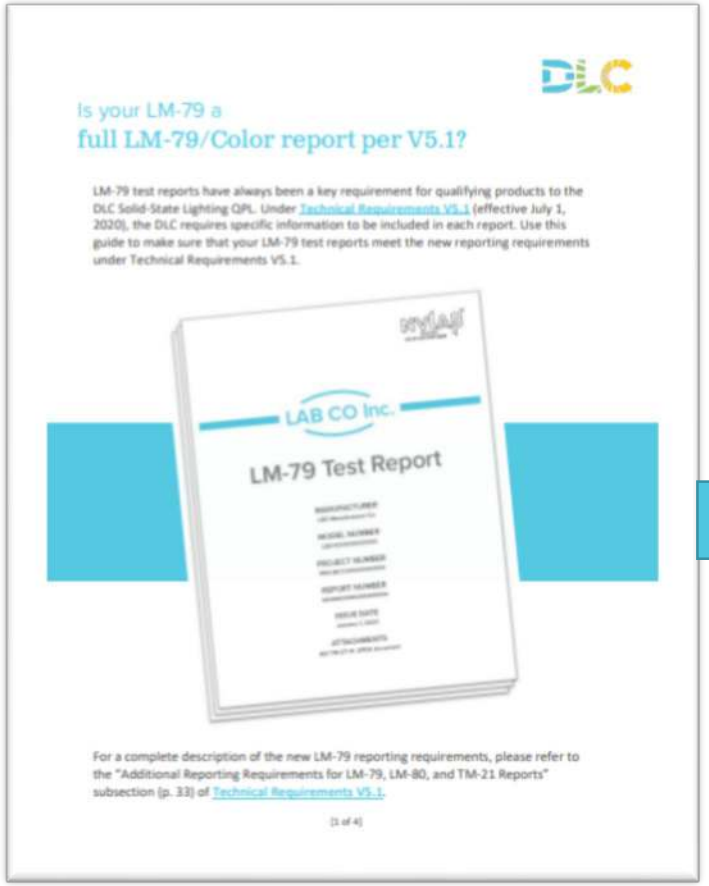
TM-30报告要求

- 所有完整的LM-79 /颜色报告必须包含ANSI / IES TM-30-18完整报告（根据附件D，图D-3）
  - IES网站上的模板是免费的
  - 必须包含在 LM79报告中



TM-30-18 image © Illuminating Engineering Society, *TM-30-18, IES Method for Evaluating Light Color Source Rendition*, New York: Illuminating Engineering Society, 2018. https://www.ies.org/product/ies-method-for-evaluating-light-source-color-rendition/

LM-79颜色报告中所需的数据



Is your LM-79 a
full LM-79/Color report per V5.1?

LM-79 test reports have always been a key requirement for qualifying products to the DLC Solid-State Lighting QPL. Under Technical Requirements V5.1 (effective July 1, 2020), the DLC requires specific information to be included in each report. Use this guide to make sure that your LM-79 test reports meet the new reporting requirements under Technical Requirements V5.1.

LAB CO Inc.

LM-79 Test Report

For a complete description of the new LM-79 reporting requirements, please refer to the "Additional Reporting Requirements for LM-79, LM-80, and TM-21 Reports" subsection (p. 33) of Technical Requirements V5.1.

An ideal electrical results summary table will include:

- **Input Voltage**
- **Current**
- **Wattage**
- **Power Factor**
- **Current THD**

LAB CO Inc.

10 High Street
Medford, MA 02155
(000) 000-0000
www.designlights.org

SUMMARY

MODEL NUMBER	LED-XXXXXXXXXXX
DESCRIPTION	Description of product
LED MODEL NUMBER(S)	LED-XXX; LED-YYY
DRIVER MODEL NUMBER(S)	DRIVER-XXX

ELECTRICAL CRITERIA	RESULTS
Input Power (W) @ 120 (VAC)	xxx
Input Power Factor @ 120 (VAC)	xxx
Input Current ATHD (%) @ 120 (VAC)	xxx
Input Power (W) @ 277 (VAC)	xxx
Input Power Factor @ 277 (VAC)	xxx
Input Current ATHD (%) @ 277 (VAC)	xxx

PHOTOMETRIC CRITERIA	RESULTS
Lumen Output (lm)	xxx
Lumen Efficacy (lm/W) @ 120 (VAC)	xxx
Correlated Color Temperature (K)	xxx
Color Rendering Index - Ra	xxx
Color Rendering – R9	xxx
D_{uv}	xxx
Chromaticity Coordinate (x)	xxx
Chromaticity Coordinate (y)	xxx
Chromaticity Coordinate (u')	xxx
Chromaticity Coordinate (v')	xxx

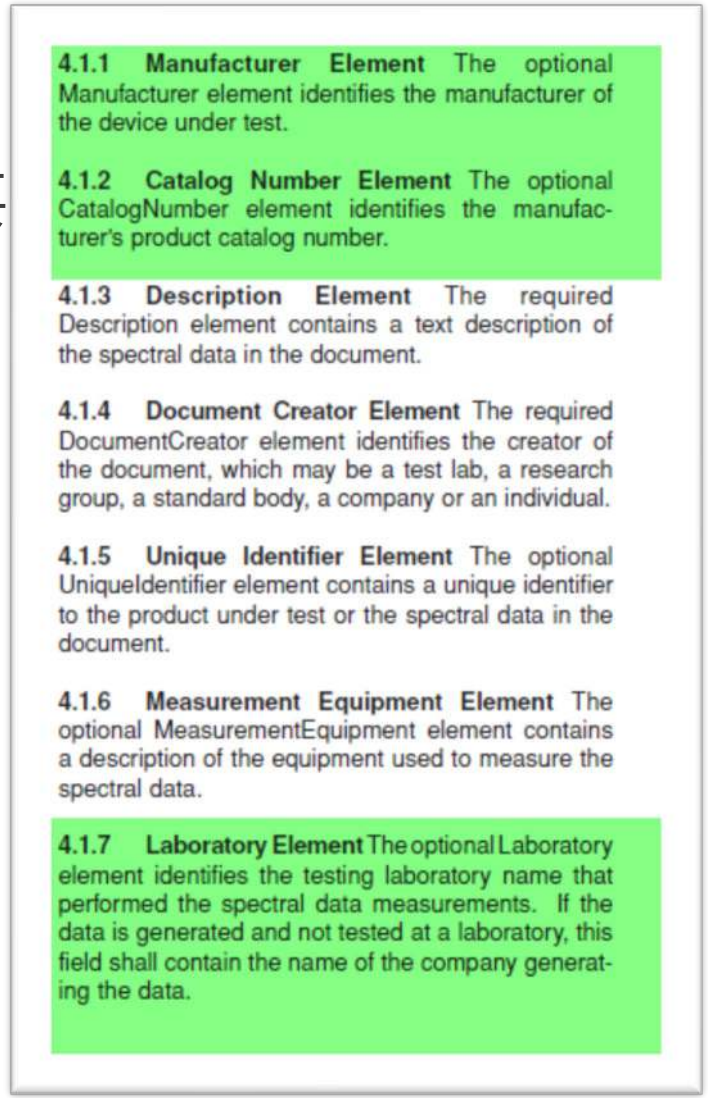
THERMAL CRITERIA	RESULTS
Max. Measured Source Temperature (°C)	xxx
Max. Measured Driver Temperature (°C)	xxx

An ideal photometric results summary table will include:

- **Total Luminous Flux**
- **Luminous Efficacy**
- **Chromaticity Coordinates**
- **CCT & Duv**
- **IES Rf, Rg, and Rcs,h1**
- **CRI (Ra) and R9**

TM-27/.SPDX files

- TM-27/SPDX 文件中至少需要包含的材
  - Manufacturer (生产厂商)
  - Catalog/Model Number （产品型号）
  - Laboratory （实验室名称）
  - Report Number （报告号）
  - Report Date （报告日期）
  - Spectral Power Distribution Data from 380-780 nm in ≤5nm increments （光谱分布数据）



4.1.1 Manufacturer Element The optional Manufacturer element identifies the manufacturer of the device under test.

4.1.2 Catalog Number Element The optional CatalogNumber element identifies the manufacturer's product catalog number.

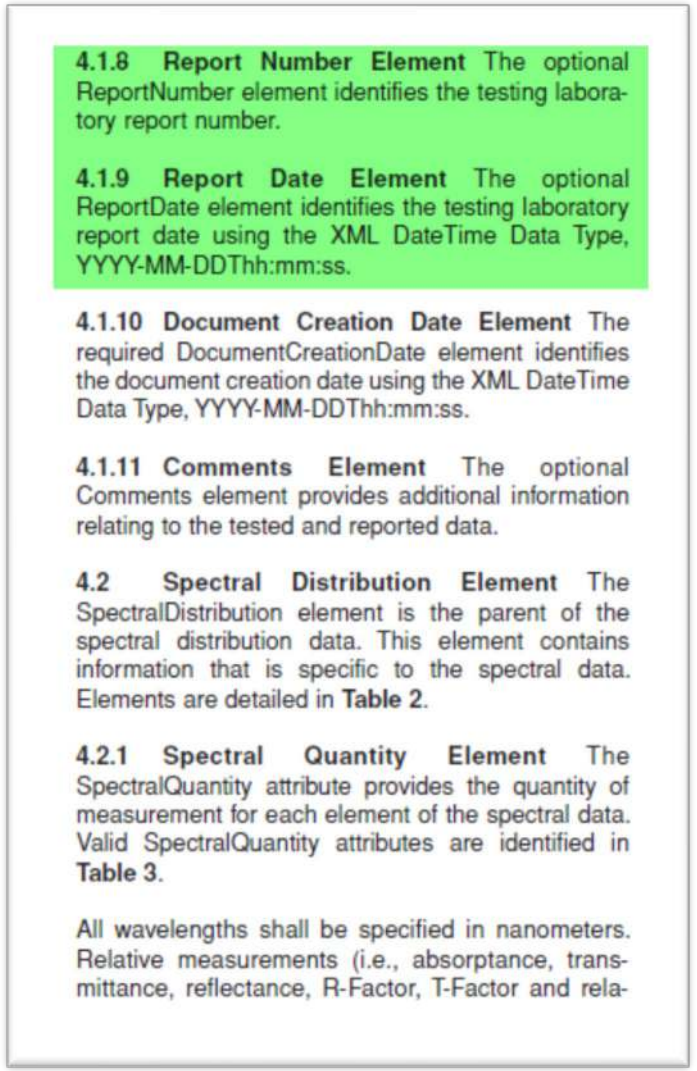
4.1.3 Description Element The required Description element contains a text description of the spectral data in the document.

4.1.4 Document Creator Element The required DocumentCreator element identifies the creator of the document, which may be a test lab, a research group, a standard body, a company or an individual.

4.1.5 Unique Identifier Element The optional UniqueIdentifier element contains a unique identifier to the product under test or the spectral data in the document.

4.1.6 Measurement Equipment Element The optional MeasurementEquipment element contains a description of the equipment used to measure the spectral data.

4.1.7 Laboratory Element The optional Laboratory element identifies the testing laboratory name that performed the spectral data measurements. If the data is generated and not tested at a laboratory, this field shall contain the name of the company generating the data.



4.1.8 Report Number Element The optional ReportNumber element identifies the testing laboratory report number.

4.1.9 Report Date Element The optional ReportDate element identifies the testing laboratory report date using the XML DateTime Data Type, YYYY-MM-DDThh:mm:ss.

4.1.10 Document Creation Date Element The required DocumentCreationDate element identifies the document creation date using the XML DateTime Data Type, YYYY-MM-DDThh:mm:ss.

4.1.11 Comments Element The optional Comments element provides additional information relating to the tested and reported data.

4.2 Spectral Distribution Element The SpectralDistribution element is the parent of the spectral distribution data. This element contains information that is specific to the spectral data. Elements are detailed in **Table 2**.

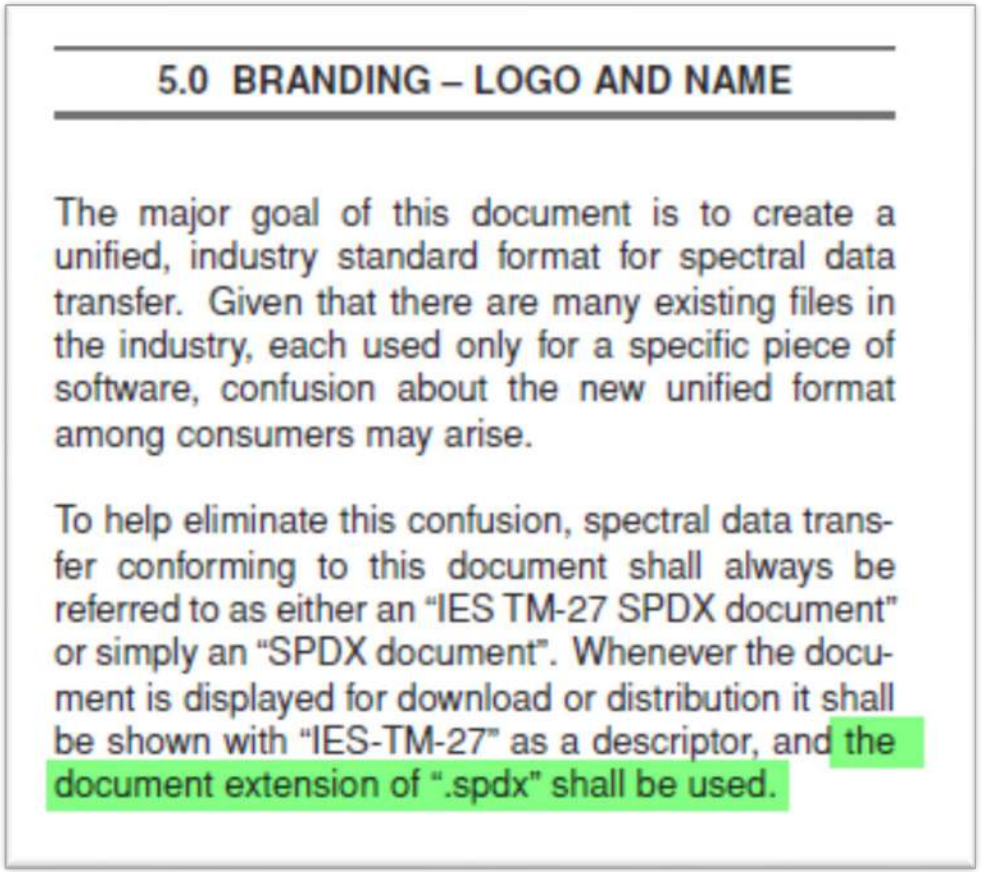
4.2.1 Spectral Quantity Element The SpectralQuantity attribute provides the quantity of measurement for each element of the spectral data. Valid SpectralQuantity attributes are identified in **Table 3**.

All wavelengths shall be specified in nanometers. Relative measurements (i.e., absorptance, transmittance, reflectance, R-Factor, T-Factor and rela-

Image © Illuminating Engineering Society. ANSI/IES TM-27-20,Technical Memorandum: IES Standard Format for the Electronic Transfer of Spectral Data. New York: IES, 2020 https://www.ies.org/product/ies-standard-format-for-the-electronic-transfer-of-spectral-data/

TM-27/.SPDX files

- 每个LM-79 /颜色测试**都必**须提**供**
- IES计算器（Excel）**不能替代**
- 这些必须是.spdx**文件，而不**仅仅是.xml**文件**



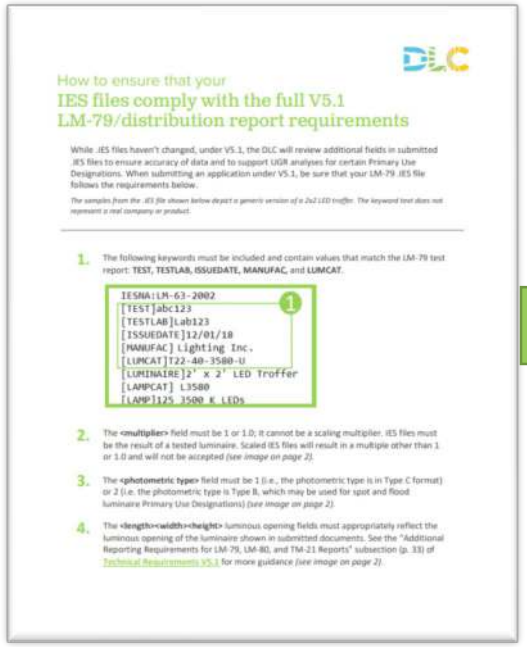
5.0 BRANDING – LOGO AND NAME

The major goal of this document is to create a unified, industry standard format for spectral data transfer. Given that there are many existing files in the industry, each used only for a specific piece of software, confusion about the new unified format among consumers may arise.

To help eliminate this confusion, spectral data transfer conforming to this document shall always be referred to as either an "IES TM-27 SPDX document" or simply an "SPDX document". Whenever the document is displayed for download or distribution it shall be shown with "IES-TM-27" as a descriptor, and the document extension of ".spdx" shall be used.

Image © Illuminating Engineering Society. ANSI/IES TM-27-20,Technical Memorandum: IES Standard Format for the Electronic Transfer of Spectral Data. New York: IES, 2020 https://www.ies.org/product/ies-standard-format-for-the-electronic-transfer-of-spectral-data/

Data Required in LM-79/Distribution Reports



How to ensure that your
IES files comply with the full V5.1
LM-79/distribution report requirements

While .IES files haven't changed, under V5.1, the DLC will review additional fields in submitted .IES files to ensure accuracy of data and to support UGR analyses for certain Primary Use Designations. When submitting an application under V5.1, be sure that your LM-79 .IES file follows the requirements below.

The samples from the .IES file shown below depict a generic version of a 2x2 LED troffer. The keyword text does not represent a real company or product.

1. The following keywords must be included and contain values that match the LM-79 test report: **TEST, TESTLAB, ISSUEDATE, MANUFAC,** and **LUMCAT**.

```
IESNA:LM-63-2002
[TEST]abc123
[TESTLAB]Lab123
[ISSUEDATE]12/01/18
[MANUFAC] Lighting Inc.
[LUMCAT]T22-40-3580-U
[LUMINAIRE]2' x 2' LED Troffer
[LAMPCAT] L3580
[LAMP]125 3500 K LEDs
```

2. The **<multiplier>** field must be 1 or 1.0; it cannot be a scaling multiplier. IES files must be the result of a tested luminaire. Scaled IES files will result in a multiple other than 1 or 1.0 and will not be accepted *(see image on page 2)*.

3. The **<photometric type>** field must be 1 (i.e., the photometric type is in Type C format) or 2 (i.e. the photometric type is Type B, which may be used for spot and flood luminaire Primary Use Designations) *(see image on page 2)*.

4. The **<length><width><height>** luminous opening fields must appropriately reflect the luminous opening of the luminaire shown in submitted documents. See the "Additional Reporting Requirements for LM-79, LM-80, and TM-21 Reports" subsection (p. 33) of Technical Requirements V5.1 for more guidance *(see image on page 2)*.

1. The following keywords must be included and contain values that match the LM-79 test report: **TEST, TESTLAB, ISSUEDATE, MANUFAC,** and **LUMCAT**.

```
IESNA:LM-63-2002
[TEST]abc123
[TESTLAB]Lab123
[ISSUEDATE]12/01/18
[MANUFAC] Lighting Inc.
[LUMCAT]T22-40-3580-U
[LUMINAIRE]2' x 2' LED Troffer
[LAMPCAT] L3580
[LAMP]125 3500 K LEDs
```

2. The **<multiplier>** field must be 1 or 1.0; it cannot be a s
be the result of a tested luminaire. Scaled IES files will
or 1.0 and will not be accepted *(see image on page 2)*.

3. The **<photometric type>** field must be 1 (i.e., the photo
or 2 (i.e. the photometric type is Type B, which may be
luminaire Primary Use Designations) *(see image on pag*

4. The **<length><width><height>** luminous opening fields
luminous opening of the luminaire shown in submitted
Reporting Requirements for LM-79, LM-80, and TM-21
Technical Requirements V5.1 for more guidance *(see i*

5. The **<input watts>** field must match the total input power specified in the LM-79 report *(see image below)*.

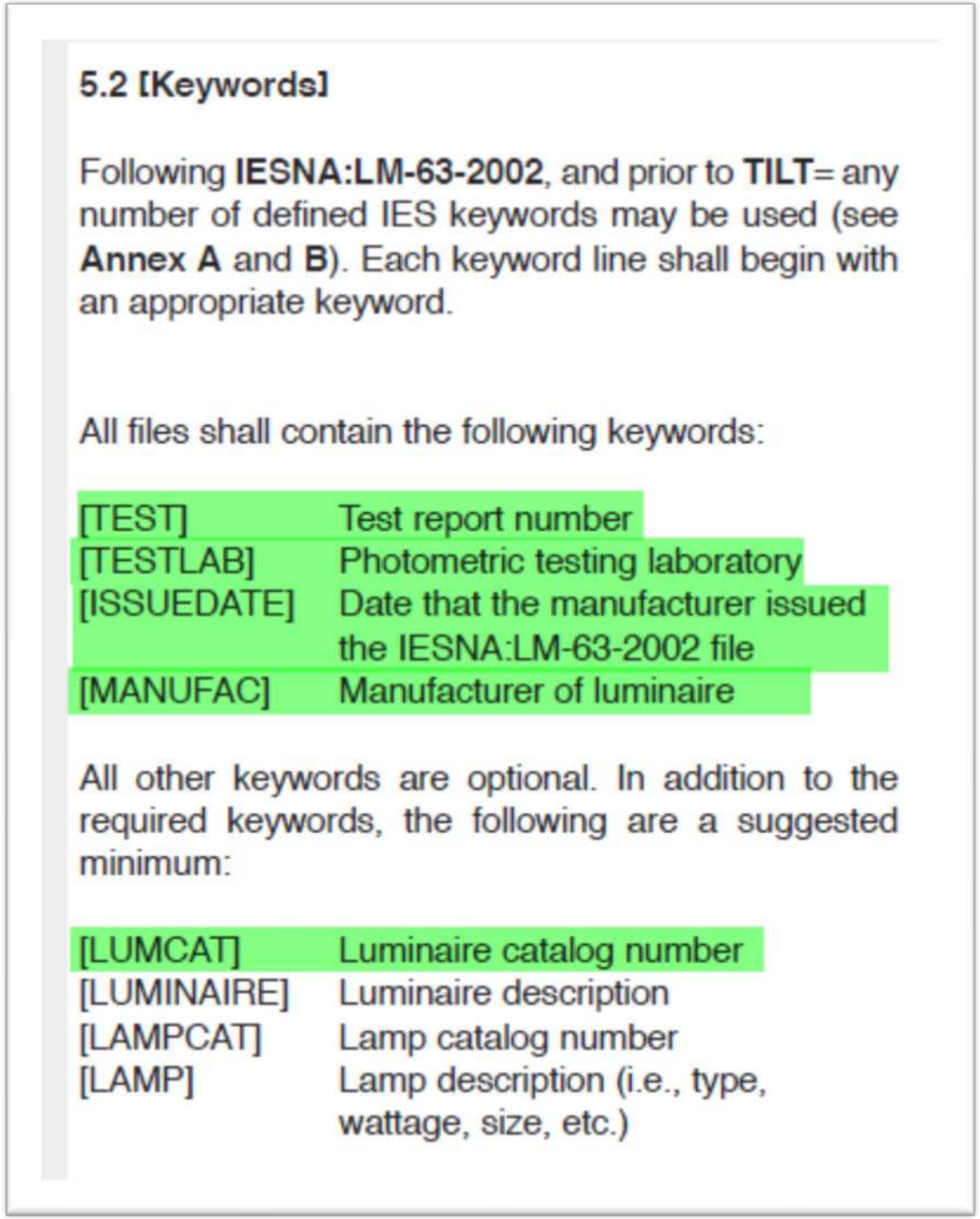
6. The angular resolution for the **<vertical angles>** field must be at most 5 degrees. In this example it is 2.5 degrees *(see image below)*.

7. The angular resolution for the **<horizontal angles>** field must be at most 22.5 degrees *(see image below)*.

```
[LAMPCAT] L3580
[LAMP]125 3   K
[BALLASTCAT]  23
[BALLAST]
TILT=NONE
1 -1 1 37 5 1 1 2 2 0
1 1 32
0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 25 27.5 30 32.5 35
47.5 50 52.5 55 57.5 60 62.5 65 67.5 70 72.5 75 77.5 80
0 22.5 45 67.5 90
```

LM-63/.IES files

- LM-63/.IES 文件至少需要包含的信息
  - Manufacturer （生产厂商）
  - Catalog/Model Number （产品型号）
  - Laboratory （实验室）
  - Report Number （报告号）
  - Report Date （报告日期）
  - Wattage and Input Voltage （电参数）
  - Multiplier may only be 1.0 （数据调整参数）
  - Luminous Dimensions （产品发光边界）
  - Candela Array （光源参数矩阵）



5.2 [Keywords]

Following **IESNA:LM-63-2002**, and prior to **TILT**= any number of defined IES keywords may be used (see **Annex A** and **B**). Each keyword line shall begin with an appropriate keyword.

All files shall contain the following keywords:

[TEST]	Test report number
[TESTLAB]	Photometric testing laboratory
[ISSUEDATE]	Date that the manufacturer issued the IESNA:LM-63-2002 file
[MANUFAC]	Manufacturer of luminaire

All other keywords are optional. In addition to the required keywords, the following are a suggested minimum:

[LUMCAT]	Luminaire catalog number
[LUMINAIRE]	Luminaire description
[LAMPCAT]	Lamp catalog number
[LAMP]	Lamp description (i.e., type, wattage, size, etc.)

Image © Illuminating Engineering Society. ANSI/IES LM-63-19, IES Standard File Format for the Electronic Transfer of Photometric Data and Related Information. New York: IES, 2020 https://www.ies.org/product/approved-method-ies-standard-file-format-for-the-electronic-transfer-of-photometric-data-and-related-information/

LM-63/.IES files

- 输入电压可以通过以下形式表达：
  - IES 文件中使用 [OTHER] 栏
  - IES文件中使用自定义关键词，例如 [_VOLTAGE]
  - 在测角光度计测试的随附PDF报告中

Miscellaneous:

•	[ISSUEDATE]	Date that the manufacturer issued the IESNA LM-63-2002 file
	[OTHER]	Other information about this file
	[SEARCH]	User created search string
	[MORE]	More information tied to previous keyword

Annex A - General rules for keywords

The keyword:

- Shall be the first non-blank character in a new line.
- Shall be in upper case.
- Shall occur prior to **TILT=**.
- Shall not contain any characters (including spaces and/or non-printing characters) that are not specifically listed as part of the keyword.
- Shall be contained in square brackets.
- Shall occur only once except for the keywords [MORE] and [OTHER].
- Shall be 20 characters or less counting the brackets.
- User defined keywords may be included. User defined keywords shall have an underscore character immediately following the first bracket and preceding the actual keyword (e.g., [_USERKEYWORD]). The underscore character distinguishes user-defined keywords from those defined in **Annex B**.
- Shall be read as descriptive text if not listed in **Annex B**.

Image © Illuminating Engineering Society. ANSI/IES LM-63-19, IES Standard File Format for the Electronic Transfer of Photometric Data and Related Information. New York: IES, 2020 https://www.ies.org/product/approved-method-ies-standard-file-format-for-the-electronic-transfer-of-photometric-data-and-related-information/

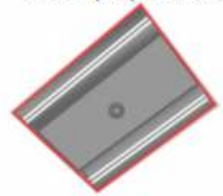
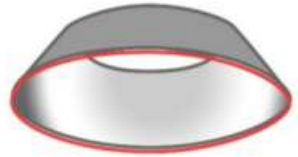
UGR 强光指南

- IES中注明的发光区域必须代表照明器的发光区域
- 必须为完全涵盖产品发光面的最小几何形状
- LM-63文件中对发光面积描述的可在DLC网站上找到

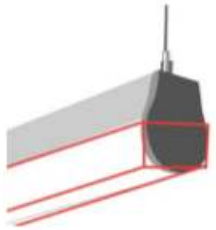
Guidance for Modeling Luminous Area

The following examples are given as guidance for modeling common types of luminaires, with luminous areas per IES LM-63. The red boundary line indicates the boundary of suggested luminous opening. Each .ies file can only have one luminous area, so the following conventions are recommended.[1]

High Bay/Low Bay Luminaires

Multiple LED configurations below heat sink	Luminous channels on edges with opaque center	Luminous disk in center with reflector/refractor
		
Model as a circular opening encompassing all LED configurations	Model as rectangle (enclosing opaque area in the center) encompassing both luminous channels	Model as circular opening or vertical cylinder with sides encompassing all luminous components

Linear Ambient Luminaires

Internal channel with luminous sides and horizontal plane	Cylinder with open top (uplight) and luminous panels on curved portion (downlight)	Cylinder with wraparound luminous panel
		

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Technical Requirement Guidance Resources

- https://www.designlights.org/solid-state-lighting/qualification-requirements/ssl-v5-1-resources/

