



Stakeholder MEETING

2017

V4.2 Category Nuances and Allowances

Presenter



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D+R International

Notes

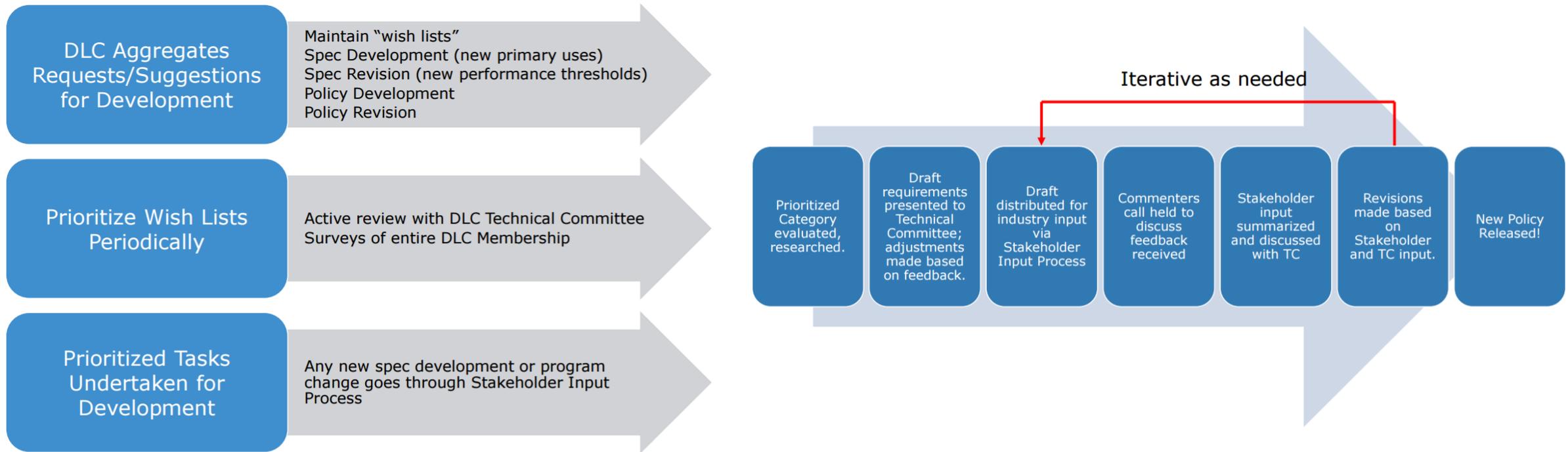
- Slides will be posted following the Stakeholders Meeting
- Send additional questions to info@designlights.org
- Purpose of this session: to discuss the V4.2 Technical Requirements
 - New categories/requirements
 - Allowances
 - Transition
- Limited: ability to change policies in short-term. Policy development and revision has a process.

Agenda

- Spec Development Overview
 - Prioritization and Stakeholder Input Process
- Final V4.2 Technical Requirements
 - T5, T5HO replacement lamps;
 - Hazardous Location lighting;
 - CRI and CCT Allowances;
 - Multiple LEDs policy clarification
 - (Transition)
 - (Allowance Implementation Examples)
- Questions

Policy Development Overview

General DLC Development Process



Linear Replacement Lamps

TLED Background

- Previous TLED General Applications were developed with T8 fluorescent replacements in mind
 - No explicit rules regarding form-factor of TLEDs seeking qualification
 - Implicit restrictions: testing requirements (reference troffer, reference ballast for “Type A”)
- “Loopholes” used to qualify TLED T5 and T5HOs
 - T5 versions of reference troffers
 - Claims of T5 replacements being tested on Instant-Start ballasts
- Technical requirements and incentive measure confusion
 - T5HOs necessitate different technical requirements than T8s
 - Utility incentive offerings are different for T8s, T5, and T5HOs

V4.2 TLED Replacements Summary

- In addition to T8, covers both T5 and T5HO, addressing each distinctly
 - Similar to T8, CFLEDs: General Approach, limited testing
- New Requirements for T5s:
 - Similar baseline to T8s, similar approach to T8s (i.e., test in troffers)
- New Requirements for T5HOs:
 - Similar approach to T8s (i.e., test in high bays), distinct baseline

Eligibility, Marketing, and Testing

T8

G13 Base
Nominal 48" length

Replacement lamps for G13
Base, 48" fluorescent lamps,
excluding UL Type A T12

Testing in reference troffer
0.88 BF Instant-Start ballast

T5

G5 Base
Nominal 46" length

Replacement lamps for T5
fluorescent lamps

Testing in reference troffer
Normal (1.0) BF Programmed-
Start Ballast

T5HO

G5 Base
Nominal 46" length

Replacement lamps for T5HO
fluorescent lamps

Testing in reference high bay
Normal (1.0) BF Programmed-
Start Ballast

Updated Technical Requirements Table

#	Category	General Application	Requirements				Distribution	
			Minimum Light Output (lm)	DLC Standard				Primary Use
				Minimum Efficacy (lm/W)	Minimum Warranty (years)	CCT / CRI / Lp		
17	Linear Replacement Lamp	T8 Four-Foot Linear Replacement Lamps	In luminaire: 2 lamps: 3,000 3 lamps: 4,500 4 lamps: 6,000 Bare lamp: 1,600	In luminaire: 100 Bare lamp: 110	5	≤5000 / ≥80 / ≥50,000	<ul style="list-style-type: none"> • Replacement Lamps ("Plug and Play") (UL Type A) • Internal Driver/Line Voltage Lamp-Style Retrofit Kits (UL Type B) • 2-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • 3-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • 4-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • Dual Mode Internal Driver (UL Type A or B) 	See Primary Use Zonal Lumen Density Requirements in Table 4, below
18		T5 Four-Foot Linear Replacement Lamps	In luminaire: 2 lamps: 3,000 3 lamps: 4,500 4 lamps: 6,000 Bare lamp: 1,600	In luminaire: 100 Bare lamp: 110	5	≤5000 / ≥80 / ≥50,000	<ul style="list-style-type: none"> • Replacement Lamps ("Plug and Play") (UL Type A) • Internal Driver/Line Voltage Lamp-Style Retrofit Kits (UL Type B) • 2-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • 3-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • 4-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • Dual Mode Internal Driver (UL Type A or B) 	
19		T5HO Four-Foot Linear Replacement Lamps	In luminaire: 3 lamps: 7,500 4 lamps: 10,000 6 lamps: 15,000 Bare lamp: 3,200	In luminaire: 105 Bare lamp: 110	5	≤5000 / ≥80 / ≥50,000	<ul style="list-style-type: none"> • Replacement Lamps ("Plug and Play") (UL Type A) • Internal Driver/Line Voltage Lamp-Style Retrofit Kits (UL Type B) • 3-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • 4-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • 6-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • Dual Mode Internal Driver (UL Type A or B) 	
20		T8 Two-Foot Linear Replacement Lamps	In luminaire: 2 lamps: 1,350 3 lamps: 2,000 4 lamps: 2,700 Bare lamp: 800	In luminaire: 100 Bare lamp: 110	5	≤5000 / ≥80 / ≥50,000	<ul style="list-style-type: none"> • Replacement Lamps ("Plug and Play") (UL Type A) • Internal Driver/Line Voltage Lamp-Style Retrofit Kits (UL Type B) • 2-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • 3-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • 4-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • Dual Mode Internal Driver (UL Type A or B) 	
21		U-Bend Replacement Lamps	In luminaire: 2 lamps: 2,500 3 lamps: 3,750 Bare lamp: 1,400	In luminaire: 100 Bare lamp: 110	5	≤5000 / ≥80 / ≥50,000	<ul style="list-style-type: none"> • Replacement Lamps ("Plug and Play") (UL Type A) • Internal Driver/Line Voltage Lamp-Style Retrofit Kits (UL Type B) • 2-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • 3-lamp External Driver Lamp-Style Retrofit Kits (UL Type C) • Dual Mode Internal Driver (UL Type A or B) 	

Lamp-Level Criteria: T5/T5HO

Individual Lamp Criteria					
	Four-Foot Lamps, T8 replacements	Two-Foot Lamps, T8 replacements	U-bend Lamps, T8 replacements	Four-Foot Lamps, T5 replacements	Four-Foot Lamps, T5HO replacements
System Efficacy	≥ 110 lm/W	≥ 110 lm/W	≥ 110 lm/W	≥ 110 lm/W	≥ 110 lm/W
Initial Light Output	≥ 1,600 lm	≥ 800 lm	≥ 1,400 lm	≥ 1,600 lm	≥ 3,200 lm
Correlated Color Temp. (CCT)	≤ 5000K	≤ 5000K	≤ 5000K	≤ 5000K	≤ 5000K
Color Rendering Index (CRI)	≥ 80	≥ 80	≥ 80	≥ 80	≥ 80
Power Factor	≥ 0.90	≥ 0.90	≥ 0.90	≥ 0.90	≥ 0.90
Total Harmonic Distortion	≤ 20%	≤ 20%	≤ 20%	≤ 20%	≤ 20%
Warranty	≥ 5 Years	≥ 5 Years	≥ 5 Years	≥ 5 Years	≥ 5 Years

In-Situ Criteria: T5/T5HO

In-situ Lamp Criteria		
	Four-Foot Linear T8 and T5 Replacement Lamps	Four-Foot Linear T5HO Replacement Lamps
Luminaire Efficacy	≥ 100 lm/W	≥ 105 lm/W
Minimum Initial Luminaire Light Output	2 lamps installed = 3,000 lm* 3 lamps installed = 4,500 lm 4 lamps installed = 6,000 lm	3 lamps installed = 7,500 lm 4 lamps installed = 10,000 lm* 6 lamps installed = 15,000 lm
Spacing Criteria	<u>Spacing Criteria:</u> 0-180° = 1.0 - 2.0 90-270° = 1.0 - 2.0 <u>Zonal Lumen Distribution:</u> 0-60°: ≥ 75%	<u>Zonal Lumen Distribution:</u> 20-50°: ≥ 30%
Lumen Maintenance L₇₀	50,000 hours	50,000 hours

Spec Sheet and Marketing Claim Requirements

- Marketing material shall indicate the lamp type (i.e., T8, T5, T5HO, or other) and length (i.e., 46" or 48") the product is intended to replace
 - For example: Spec sheet: "Intended to replace T5 fluorescent lamps".
- Not eligible:
 - Products of other lengths and bases
 - UL Type A (or dual-mode) products intended to replace T12 fluorescent lamps
 - Products that can operate off magnetic ballasts
- Manufacturers of products that were previously qualified in the "four-foot" General Application that do not meet these new requirements will need to submit update applications to maintain their listings

Hazardous Location Lighting

Hazardous Location Lighting Background

- With development of “Specialty” Primary Use Designation, increased requests for “Hazardous” descriptors
 - Appears to be driven by product marketing, rather than performance
- Challenge:
 - Previously, no policies specific to whether products were appropriate for “Hazardous” locations
 - Concern about expectation that DLC is verifying that products are appropriate for hazardous location use
- DLC sought initial comment and proposals under V4.1 comment period
- Consensus around requiring safety listing to UL 844 standard
 - [UL 844](#): *Standard for Luminaires for Use in Hazardous (Classified) Locations*

Hazardous Location Lighting Policy Summary

- Products submitted under the Specialty Use Designation with the descriptor “Hazardous” must provide documentation to demonstrate the appropriateness of the product for Hazardous Locations
 - Certification of Compliance, Notice of Authorization to Mark, or directory listing from an applicable safety organization
 - Must explicitly state that the model numbers in question are certified to the UL 844, including the Class and Division to which the products are certified

Timeline and Transition Policies

V4.2 Implementation Timeline

April 28

V4.2 Released

Submissions under
V4.2 accepted

Submissions under
V4.1 accepted

May 19

Submission Grace
Period Ends

All new
submissions must
meet V4.2

July 28

Update Grace
Period Ends

All listed products
must meet V4.2

V4.2 Transition Requirements

- All T5, T5HO, and Hazardous Location products listed in Specialty Designations must update to V4.2 **by 7/28**, or they will be delisted
 - Normal review timelines apply! Please get your submissions in ASAP!
 - **Original submissions must be updated before private labels can be updated**
- Individualized lists of affected products sent to manufacturers on 5/17 and 6/21
 - If you believe your products are mischaracterized, please let us know immediately!
- Hazardous Location products need only supply the safety documentation showing UL 844 listing.
 - No update application fee
- T5 and T5HO products must provide complete new testing
 - Normal application fees

Submitting Update Applications

1. Download from the QPL the list of products you'd like to update
2. Create a new application under the [NEW application portal](#)
3. Identify the application being submitted as an "Update" application in the application type and the description sections
4. Upload the necessary documents
 - Hazardous: safety doc
 - T5, T5HO: complete application documents
5. Click submit!

Allowances

Allowances: Background and Motivation

- Effort grew out of conversations and following V4.0 steep efficacy increase
 - Efficacy levels set at General Application, mismatched effects on Primary Uses due to unique considerations
 - e.g., optical/distribution needs
- Technical Challenges in meeting proposed levels for specific types of products
 - “Architectural” Indoor products,
 - “Historical/Decorative” Outdoor Products,
 - High CRI/Low CCT products
 - Products with particular Optical Qualities (glare mitigation/diffusing lenses)

Efficacy: Special Cases

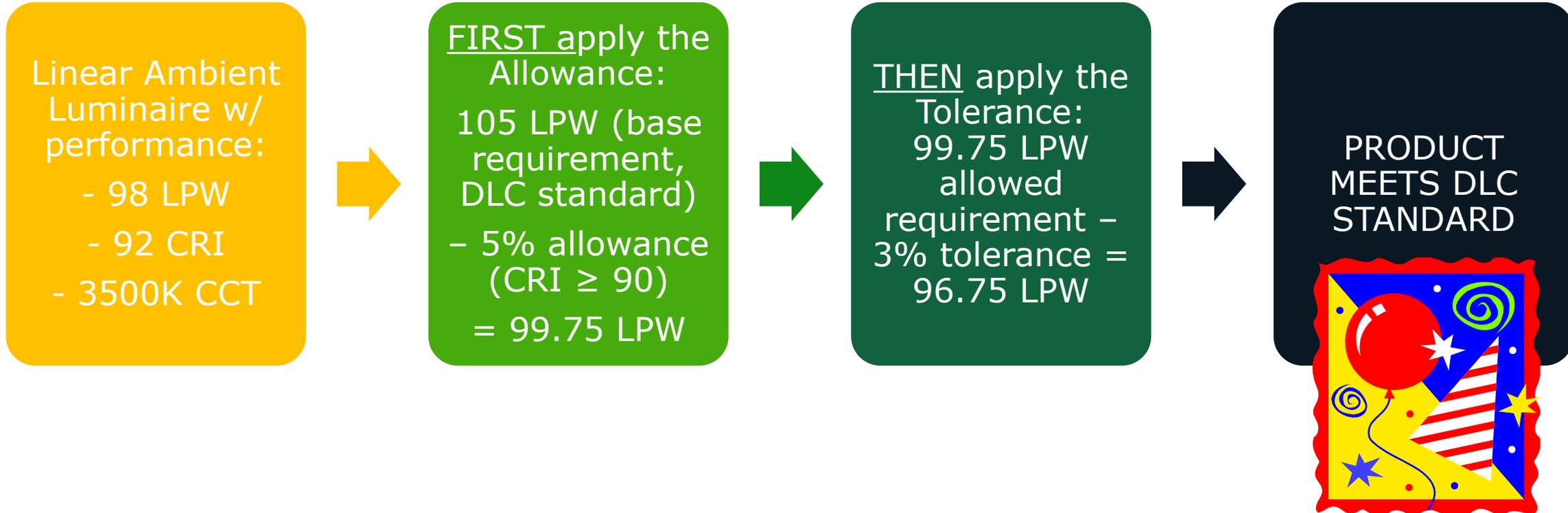
- Sensitive to feedback about impact on specific product types
 - No desire to exclude high-quality products from QPL
 - Don't want to drive poor optics, high CCTs, or other effects
- Challenge: difficult to define "quality" parameters
- Challenge: lowering requirements for a whole category to accommodate specific product types allows more products to qualify that don't have the features we are trying to accommodate
 - How do we isolate just those products we need to accommodate?
- Challenge: creating additional categories is administratively burdensome
 - Any approach requires rigor to isolate specific products/features (as above)

Adopted Allowances V4.2

Feature or Performance Metric	Allowance to Efficacy Requirement
CCT: $\leq 3000\text{K}$, $> 2700\text{K}$	-3%
CCT: $\leq 2700\text{K}$	-5%
CRI*: $R_a \geq 90$ (*must also conduct TM-30 testing and report results per the TM-30 policies)	-5%

- Allowances are not cumulative.
 - Product that has CCT of 2700K AND 90 CRI will only receive 5% allowance
- Allowances were applied retroactively to products on the QPL prior to 4/1/2017 (prior to the V4.0 de-listing)
 - Automatic relisting on 4/28 if met requirement with V4.2 allowance

Allowance Example #1



Allowance Example #2

- PRODUCTS MUST ALWAYS BE BRACKET BY PASSING TEST DATA
- 2x4 Troffers: 3000K, 4000K (80 CRI)
 - 96, 99 LPW, respectively
- 3000K product must be tested, meets via allowance + tolerance
 - 100 LPW standard efficacy requirement – 3% ($\leq 3000\text{K CCT}$ allowance) – 3% (tolerance) => functional minimum efficacy of 94.09 LPW
 - However, test result of 96 LPW for 3000K product DOES NOT BRACKET 4000K product.
- 4000K product must ALSO be tested
 - 100 LPW – 3% (tolerance) => functional minimum efficacy of 97 LPW
 - 96 LPW OF 3000K PRODUCT DOES NOT MEET THIS REQUIREMENT
- (Reminder: pre-allowances, 3000K product would not pass at all)

Allowances Display on QPL

Search - Default x

designlights.ten24dev.com/search/

Apps DLC on Confluence DLC on Box

Search Results:

1

P9HJ1Z2D

If you would like to save or export a QPL search please log in.

Login Compare Selections

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Filter Results

Clear All Filters

Listing Status

+ Add Listing Status Filter

Technical Requirements Version Number

+ Add Technical Requirements Version Filter

Classification

+ Add Classification Filter

Manufacturer

+ Add Manufacturer

Model # CL120-3-AA

Manufacturer: LED Industries, Inc.
Brand: LED Lights
Technical Requirements Version: 4.2
Date Qualified: 11/18/2016
Product ID: P9HJ1Z2D

Categorization

Main: Outdoor Luminaires
General Application: High Output
Primary Use: Fuel Pump Canopy Luminaires

Classification: Standard
Is Parent Product: Yes
DLC Family Code: FFFHJZ
Dimming Status: NotDimmable
Listing Status: Listed

View Notes

Tested Data Reported Data Zonal Lumens Version History Allowances Family Data

CCT 3% Allowance: True

Showing 1 to 1 of 1 results

Multiple LED Policy

Multiple LED Policy Update

- The DLC Multiple LEDs policy has been updated, removing the reference to white-light LEDs:
- Prior to V4.2:

“Products employing multiple types of white-light LEDs are eligible under the following conditions: 1) the types and quantities of the LED packages/modules/arrays are known, and 2) the LEDs are not dynamically controlled, other than for dimming purposes.”
- V4.2:

“Products employing multiple types of LEDs are eligible under the following conditions: 1) the types and quantities of the LED packages/modules/arrays are known, and 2) the LEDs are not dynamically controlled, other than for dimming purposes.”

Additional Efforts Under Development

Additional Efforts Under Development

- Color Tunable Products
- DC/PoE Luminaires
- Flicker
- Replacement Lamps (various)
- Field Adjustable Performance
- Additional Allowances

Questions!

Thank you!

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For questions regarding new requirements, please email:
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