



# IESNA LM79-2008 Test Report

TÜV SÜD America

## Photometric Testing and Evaluation in Accordance with LM79-2008

Report Prepared for:

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**Sample Tested: 10CPUALED27**  
**Sample Description: 10W COMPACT LED PUCK NON-DIM 2700K**  
**Manufacturer: Maxlite, Inc.**

**Technical Report Number: 72110869-05-LM79**  
**Report Issue Date: October 28, 2015**  
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**Summary of Key Test Results**

Model# **10CPUALLED27**  
 Manufacturer **Maxlite, Inc.**  
 TÜV Sample# **2127-5**  
 Date of Test **October 22, 2015**

Notes:  
 Tested in Lamp Base Up orientation  
 Alternate model number: 10CPUAGULED27



<b>Parameter</b>	<b>Measured Result</b>
Luminous Flux	<b>948.2 Lumens</b>
Input Power	<b>9.98 Watts</b>
Efficacy	<b>95.06 Lumens/Watt</b>
C.C.T.	<b>2775 K</b>
C.R.I. (R <sub>a</sub> )	<b>81.3</b>
Beam Angle	<b>120.1° (V) / 120.2° (H)</b>
Stabilization Time	<b>60 minutes</b>

The above results are recorded / derived from measurements in accordance with LM79-08



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### Test Results

The following results were obtained after stabilization of the sample in accordance with the requirements set forth in section 5.0 of IES LM79-2008. Stability is achieved when the variation of 3 readings of light output and electrical power over a period of 30 minutes, taken 15 minutes apart, is less than 0.5%.

Photometric Results	10CPUALED27	
	Integrating Sphere	
Luminous Flux (Lumens)	948.2	
Efficacy (Lumens/Watt)	95.06	
Color Temperature (CCT K)	2775	
Color Rendering Index (CRI)	81.3	
R <sub>9</sub> Value	4.7	
Radiant Flux (W/nm)	2.9	
Chroma x / Chroma y	0.4498	0.4019
Chroma u / Chroma v	0.2599	0.3483
Chroma u' / Chroma v'	0.2599	0.5224
Duv	-0.00241	

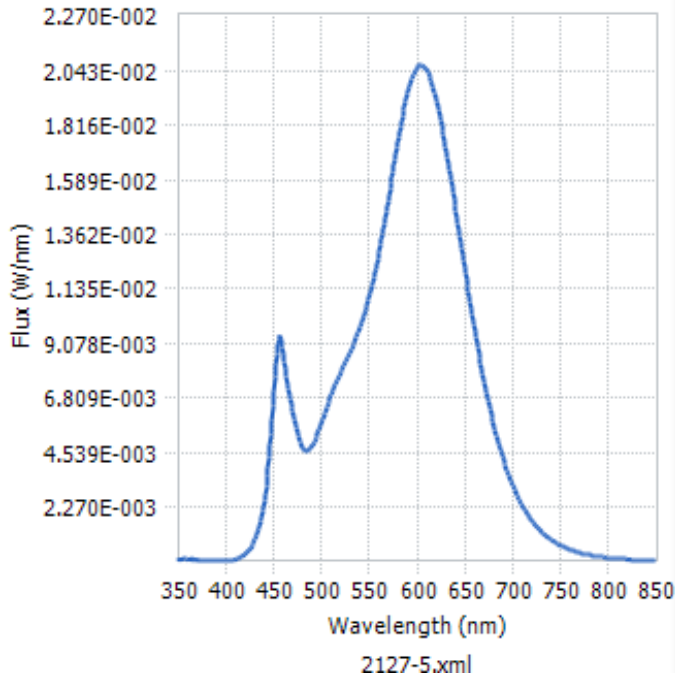
Electrical Results	10CPUALED27	
	Integrating Sphere	
Input Power (Watts)	9.98	
Input Voltage (Volts)	119.95	
Input Current (Amps)	0.089	
Power Factor	0.939	
THD-A%	33.07	
Input Frequency (Hz)	60.0	

Additional Parameters	10CPUALED27	
	Integrating Sphere	Goniophotometer
Stabilization Time (Light and Power)	60 minutes	60 minutes
Test Geometry Configuration	4π	Type C
Spectroradiometer	Labsphere CDS1100	Gigahertz Optik P9801
Ambient Temperature	24.1°C	24.4°C



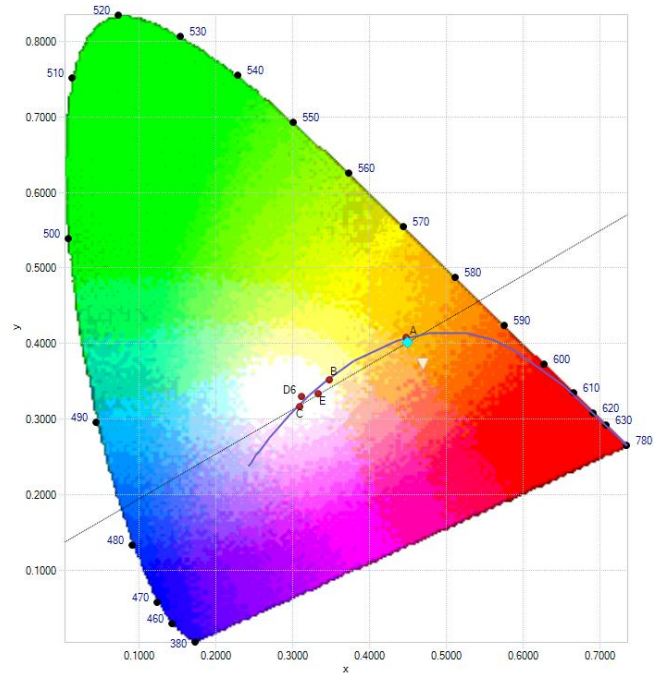
## Spectral Flux and Chromaticity Diagram

### Spectral Flux



**Spectral response of the Radiant Flux  
(350nm to 850nm)**

### Chromaticity Diagram



**Tristimulus values (from page 4):**

$$x / y = 0.4498 / 0.4019$$

The locations on the diagram of the CCT coordinates are indicated by the blue diamond.

## Zonal Lumen Summary

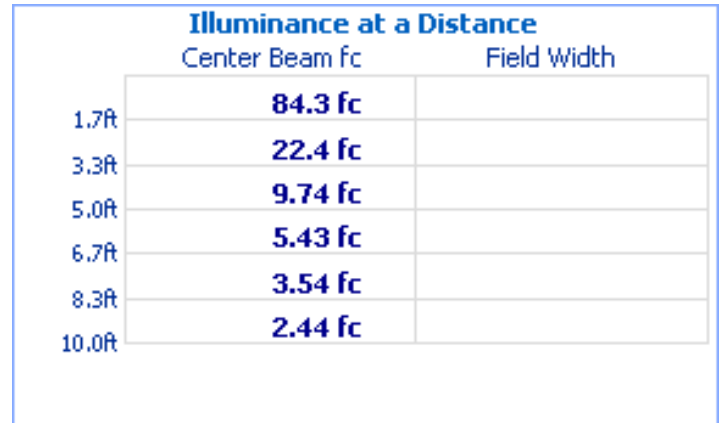
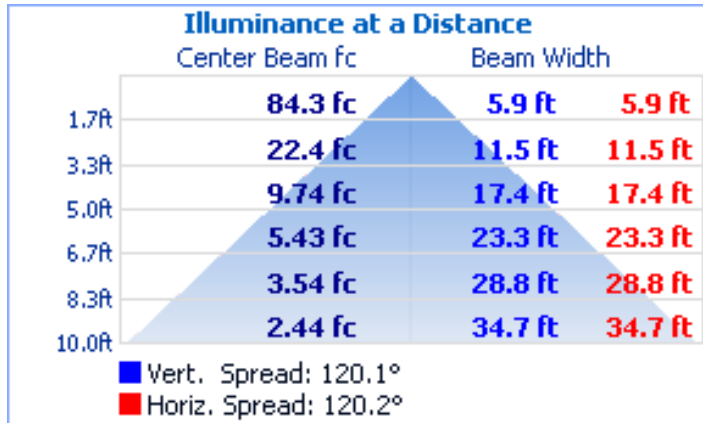
Zone	Lumens	% Lamp
0 - 60	571.4	61.5%
60 - 90	222.6	24.0%
0 - 90	794.0	85.4%
90 - 180	135.4	14.6%
0 - 180	929.4	100.0%

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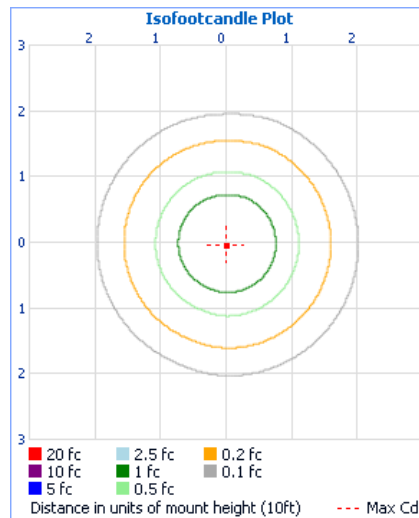
## Test Results – Illuminance Plots

The following images depict the illuminance characteristics of the luminaire.

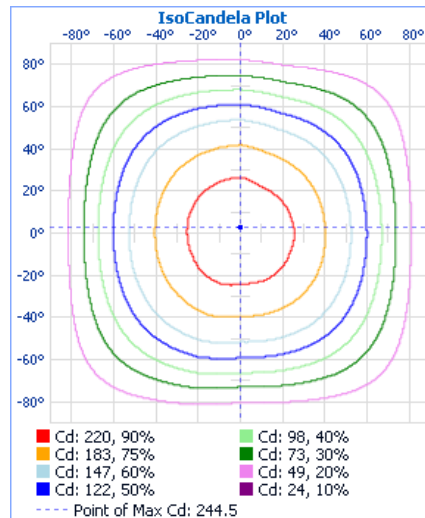


## Test Results – Candela Plots

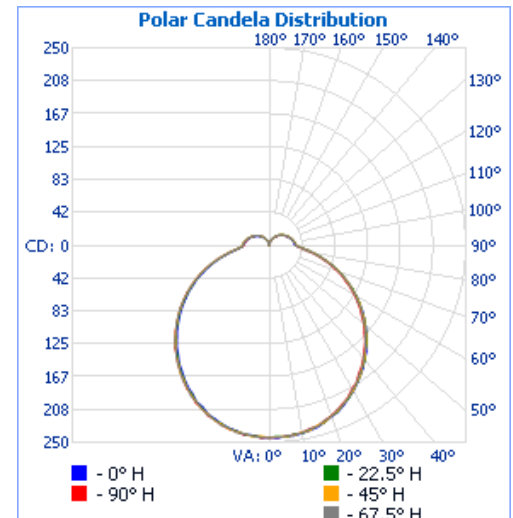
The following images depict the luminous intensity distribution characteristics of the luminaire:



Isofootcandle Plot



Isocandela Plot



Polar Candela

Maximum Candela = **244.5** at Horizontal: 0°, Vertical: 2.5°



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## TÜV SÜD Photometric Testing Information

Testing is performed in accordance with the procedures outlined in IESNA LM79-2008. The sample is evaluated for photometric and electrical characteristics using an integrating sphere and a goniophotometer, located in an accredited, temperature and humidity-controlled, draft free photometric laboratory.

### ***Sphere Geometry***

The integrating spheres used for measurement utilize a “ $4\pi$  geometry” configuration in accordance with section 9 of IES LM-79-2008 and is applicable for all types of SSL products (directional and non-directional light projections). The spectroradiometer is an array-type detector manufactured and calibrated by Labsphere (Model# CDS1100).

### ***Self-Absorption Correction***

The integrating sphere uses self-absorption correction to eliminate errors due to mismatches between the standard reference lamp and the test samples being measured. This auxiliary correction lamp is a halogen type lamp powered by a calibrated Lamp Power Supply manufactured and calibrated by Labsphere (model LPS150). Ambient temperature is measured using a thermocouple located inside the integrating sphere at the same height as the sample under test (UUT) and not more than 1 meter in horizontal distance away from the sample (section 2.2 of LM79-2008). The thermocouple is located behind a baffle in order to eliminate any direct optical radiation from the sample under test.

### ***Sample Stabilization***

The sample (UUT) is placed inside the integrating sphere and powered by a regulated and conditioned alternating or direct current supply. The stabilization times shown on the results pages of this report denote the time of the 3<sup>rd</sup> measurement (of the 3 consecutive readings) since this is the minimum time that the sample is assumed to have taken to reach stabilization in accordance with section 5.0 of LM79-2008.

### ***Sphere Calibration***

The integrating sphere is calibrated using a quartzline halogen lamp with the following specifications:

Manufacturer: EYE Lighting International

Model# J94/JD28V75W

Voltage = 28.0 Volts DC

Wattage = 75.0 Watts

Calibration Current = 2.679 Amperes

Luminous Flux = 1685 Lumens

Calibration Date = 2-17-2011 (calibrated by Labsphere – NIST traceable).

Continued.....

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## TÜV SÜD Photometric Testing Information (continued)

### Goniophotometer

The Goniophotometer is a Type C optical measurement system in accordance with section 9.3.1 of IESNA LM79-2008.

### Goniophotometer Calibration

The Goniophotometer is calibrated using a frosted tungsten filament FDS/DZE lamp with the following specifications:

- Manufacturer: General Electric
- Part Number: CSB-110
- Lamp Number: 105-A
- Voltage: 16.71 Volts DC
- Wattage: 150.0 Watts
- Calibration Current: 4.847 Amperes
- Luminous Intensity: 166.3 Candelas
- Calibration Date: 11-07-2011 (NIST traceable)

## TÜV SÜD Test Equipment List:

TÜV SÜD Sphere System – contains the following:			
Description	Manufacturer / Model#	TÜV SÜD Ref#	Calibration Due Date
Integrating Sphere	Labsphere LM760	SPH003	weekly
Power Analyzer	Yokogawa WT210	ATLE0076	6/19/2016
Power Source	Chroma 61602	AC003	N/A
Thermometer	Fluke 52-II	ATLE0119	2/27/2016
TÜV SÜD Goniophotometer System – contains the following:			
Goniophotometer	M.E. GONC01	GON001	weekly
Spectroradiometer	Gigahertz Optik P9801	GIG001	weekly
Power Analyzer	Yokogawa WT210	ATLE0059	3/26/2016
Power Source	Chroma 61602	AC006	N/A

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