



# IESNA LM79-2008 Test Report

TÜV SÜD America

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

Report Prepared for:

**David Delgado**  
Applications Engineer

**Maxlite Inc.**  
12 York Ave.  
West Caldwell, NJ 07006  
United States

Telephone: (800) 555-5629

**Sample Tested:** 9A19DLED30  
**Sample Description:** LED Replacement Lamp  
**Manufacturer:** Maxlite, Inc.

**Technical Report Number:** 72104871-02-LM79  
**Report Issue Date:** April 14<sup>th</sup>, 2015  
**Total Number of Pages:** 8 (including this page)

Report Prepared by:

**Ben Ferrell**

TÜV SÜD Program Manager

Report Reviewed by:

**Bryan Cubitt**

TÜV SÜD Program Manager



# IESNA LM79-2008 TEST REPORT

Report# 72104871-02-LM79

April 14<sup>th</sup>, 2015

## Summary of Key Test Results

Model# **9A19DLED30**  
 Manufacturer **Maxlite, Inc.**  
 TÜV Sample# 1784-2  
 Date of Test April 6<sup>th</sup> 2015  
 Notes: Tested in intended orientation  
 (LBU – Lamp Base Up)



<b>Parameter</b>	<b>Measured Result</b>
Luminous Flux	<b>826.8 Lumens</b>
Input Power	<b>8.79 Watts</b>
Efficacy	<b>94.80 Lumens/Watt</b>
C.C.T.	<b>3144 K</b>
C.R.I. (R <sub>a</sub> )	<b>83.2</b>
Beam Angle	<b>N/A° (V) / N/A° (H)</b>
Stabilization Time	<b>60 minutes</b>
In-Situ Temp Test (ISTMT)**	<b>Not Tested</b>

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

\*\*ISTMT in accordance with “Energy Star Program Requirements for Luminaires – Version 1.2”.





# IESNA LM79-2008 TEST REPORT

Report# 72104871-02-LM79

April 14<sup>th</sup>, 2015

## TABLE OF CONTENTS

Test Results .....4

Spectral Flux and Chromaticity Diagram .....5

Zonal Lumen Summary .....5

Illuminance Plots.....6

Candela Plots .....6

Photometric Testing Information .....7

Equipment List: .....8





# IESNA LM79-2008 TEST REPORT

April 14<sup>th</sup>, 2015

**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	Maxlite : 9A19DLED30	
	Integrating Sphere	
Total Luminous Flux (Lumens)	826.8	
Luminous Efficacy (Lumens/Watt)	94.08	
Correlated Color Temperature (CCT)	3144	
Color Rendering Index (CRI – R <sub>a</sub> )	83.2	
R <sub>9</sub> Value	11.4	
Total Radiant Flux (Watts)	2.6	
Chromaticity (Chroma x / Chroma y)	0.4228	0.3912
Chromaticity (Chroma u / Chroma v)	0.2469	0.3427
Chromaticity (Chroma u' / Chroma v')	0.2469	0.5141
D <sub>uv</sub> Value	-0.00313	

Electrical Results	Maxlite : 9A19DLED30	
	Integrating Sphere (120V)	
Input Power (Watts)	8.79	
Input Voltage (Volts AC)	120.06	
Input Current (Amps)	0.079	
Power Factor	0.923	
A-THD (Current %)	32.97	
Input Frequency (Hertz)	60.0	

Additional Parameters	Maxlite : 9A19DLED30	
	Integrating Sphere	Goniophotometer
Stabilization Time (Light and Power)	60 minutes	65 minutes
Test Geometry Configuration	4π	Type C
Spectroradiometer	Labsphere CDS1100	Gigahertz Optik P9801
Ambient Temperature	24.1°C	24.5°C
ISTMT (In-Situ Temperature Measurement)	Not Tested	
Spacing Criteria	N/A (0° – 180°) / N/A (90° – 270°)	





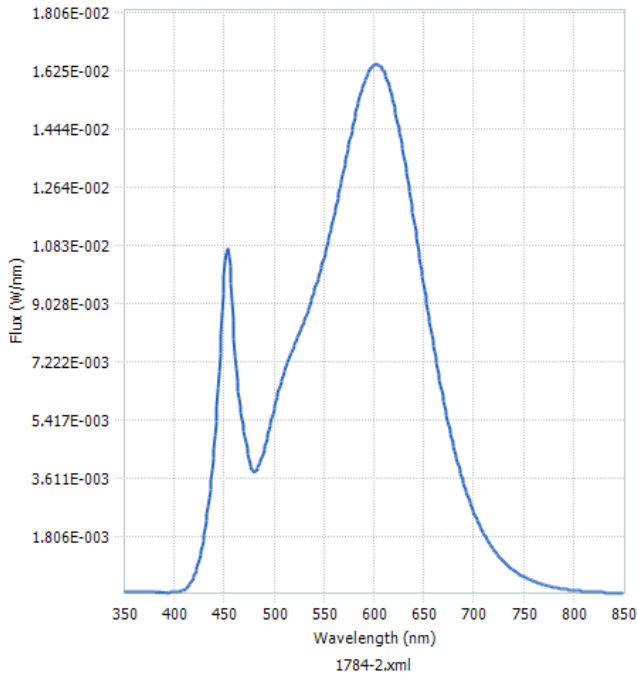
# IESNA LM79-2008 TEST REPORT

Report# 72104871-02-LM79

April 14<sup>th</sup>, 2015

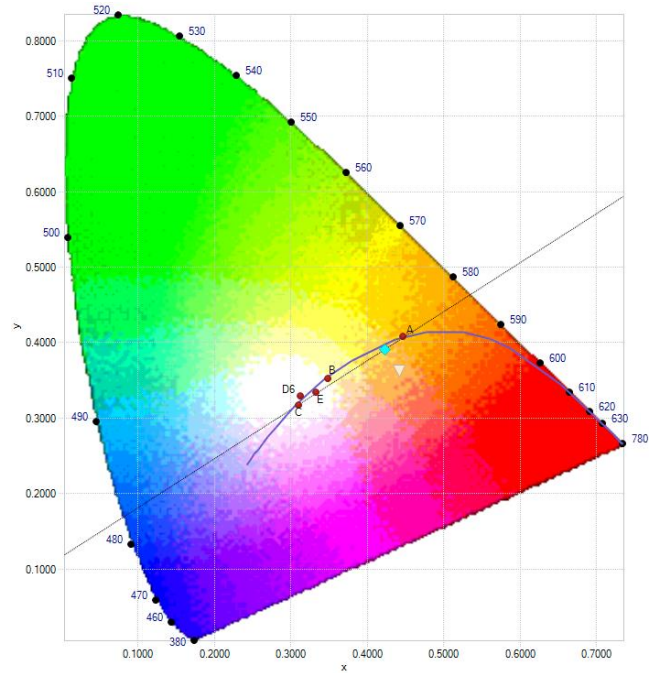
## Spectral Flux and Chromaticity Diagram

### Spectral Flux



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

### Chromaticity Diagram



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

**$x / y = 0.4228 / 0.3912$**

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

## Zonal Lumen Summary

Zone	Lumens	% Lamp / Luminaire
0 - 60	233.0	28.7%
60 - 90	248.2	30.6%
0 - 90	481.2	59.2%
90 - 180	331.2	40.8%
0 - 180	812.4	100.0%



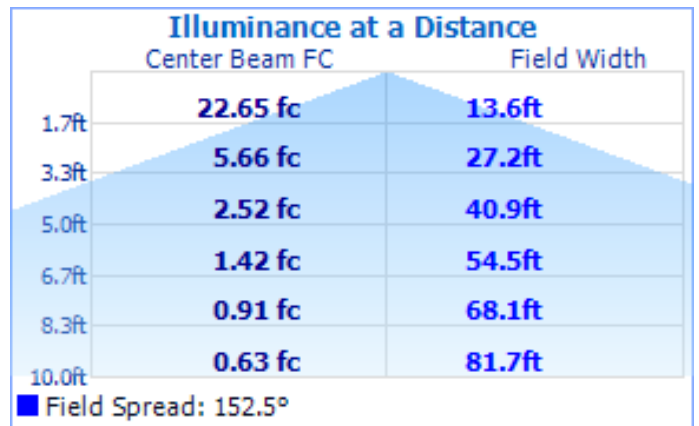
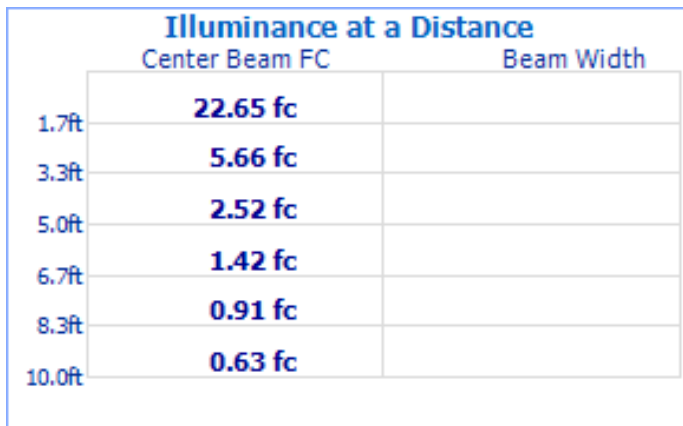


# IESNA LM79-2008 TEST REPORT

April 14<sup>th</sup>, 2015

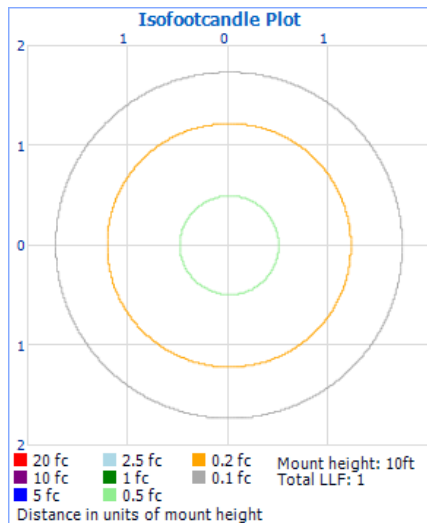
## Test Results – Illuminance Plots

The following images depict the illuminance characteristics of the luminaire.

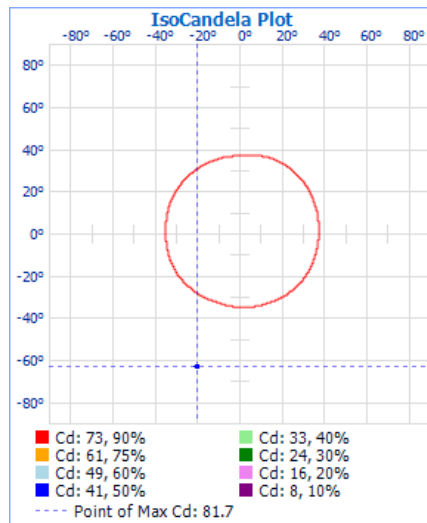


## Test Results – Candela Plots

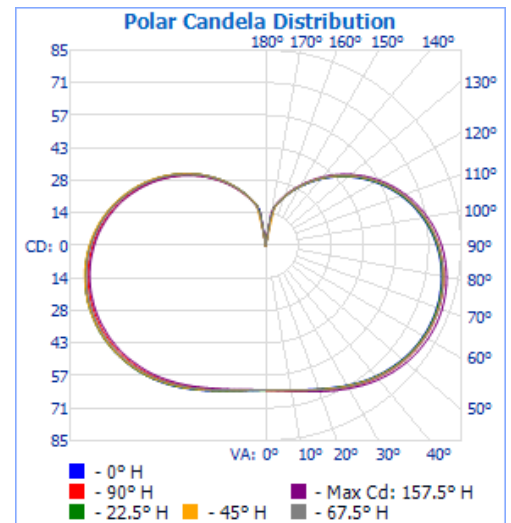
The following images depict the luminous intensity distribution characteristics of the luminaire:



Isofootcandle Plot



Isocandela Plot



Polar Candela

Maximum Candela = **81.7** at Horizontal: 157.5°, Vertical: 65°



# IESNA LM79-2008 TEST REPORT

April 14<sup>th</sup>, 2015

## 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.....

**TÜV SÜD America, Inc.**

5945 Cabot Parkway, Suite 100,  
Alpharetta GA 30005

Telephone: 678-341-5900 www.tuvamerica.com

Page 7

NRG\_F\_10.04

**Confidential Report**



TÜV SÜD America is  
accredited under the  
ISO/IEC 17025:2005  
program



# IESNA LM79-2008 TEST REPORT

Report# 72104871-02-LM79

April 14<sup>th</sup>, 2015

## TÜV SÜD Photometric Testing Information (continued)

### Goniophotometer

The Goniophotometer is a Mirror based 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: 112-A
- Voltage: 16.52 Volts DC
- Wattage: 150.0 Watts
- Calibration Current: 4.816 Amperes
- Luminous Intensity: 151.5 Candelas
- Calibration Date: 02-13-2011 (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
Spectroradiometer	Labsphere CDS1100	ATLE0048	9/7/2015
Power Analyzer	Yokogawa WT210	ATLE0058	3/7/2016
Power Source	Chroma 61602	AC003	N/A
Thermometer	Fluke 52-II	ATLE0008	11/17/2015
TÜV SÜD Mirror Goniophotometer System – contains the following:			
Goniophotometer	M.E. GONC02	GON002	Weekly
Spectroradiometer	Gigahertz Optik P9801	GIG002	Weekly
Power Analyzer	Yokogawa WT210	ATLE0031	11/16/2015
Power Source	Chroma 61603	AC007	N/A

*This technical report may only be quoted in full. Any use for advertising purposes must be granted in writing. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production.*

*This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the Federal Government*

**TÜV SÜD America, Inc.**  
 5945 Cabot Parkway, Suite 100,  
 Alpharetta GA 30005  
 Telephone: 678-341-5900 www.tuvamerica.com

Page 8  
 NRG\_F\_10.04  
**Confidential Report**



TÜV SÜD America is  
 accredited under the  
 ISO/IEC 17025:2005  
 program

