



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: 7P20DLED50NF
Sample Description: 7W DIMMABLE PAR20 5000K NARROW FLOOD
Manufacturer: Maxlite, Inc.

Technical Report Number: Ji1407403-12-LM79
Report Issue Date: July 30th, 2014
Total Number of Pages: 8 (including this page)

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Lab Code: 500065-0

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Summary of Key Test Results

Model# **7P20DLED50NF**

Manufacturer **Maxlite, Inc.**

TÜV Sample# 1417-12

Date of Test June 22nd, 2014

Notes: Tested in below orientation
(LBU – Lamp Base Up)



Parameter	Measured Result
Luminous Flux	634.6 Lumens
Input Power	6.84 Watts
Efficacy	92.83 Lumens/Watt
C.C.T.	5130 K
C.R.I. (R _a)	83.6
Beam Spread	26.0° (V) / 26.4° (H)
Stabilization Time	45 minutes

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	Maxlite- 7P20DLED50NF	
	Integrating Sphere	
Total Luminous Flux (Lumens)	634.6	
Luminous Efficacy (Lumens/Watt)	92.83	
Total Radiant Flux (Watts)	2.0	
Correlated Color Temperature (CCT)	5130	
Color Rendering Index (CRI – R _a)	83.6	
R ₉ Value	11.3	
Chromaticity (Chroma x / Chroma y)	0.3420 / 0.3563	
Chromaticity (Chroma u / Chroma v)	0.2075 / 0.3243	
Chromaticity (Chroma u' / Chroma v')	0.2075 / 0.4865	
D _{uv} Value	0.00364	

Electrical Results (120V AC Input)	Maxlite- 7P20DLED50NF	
	Integrating Sphere	
Input Power (Watts)	6.84	
Input Voltage (Volts AC)	120.06	
Input Current (Amps AC)	0.062	
Power Factor	0.922	
Input Frequency (Hertz)	60.0	
A-THD (Current %)	32.69%	

Additional Parameters	Maxlite- 7P20DLED50NF	
	Integrating Sphere	Goniophotometer
Stabilization Time (Light and Power)	45 minutes	45 minutes
Test Geometry Configuration	4π	Type C
Ambient Temperature	24.1°C	25.6°C
Spacing Criteria	N/A	



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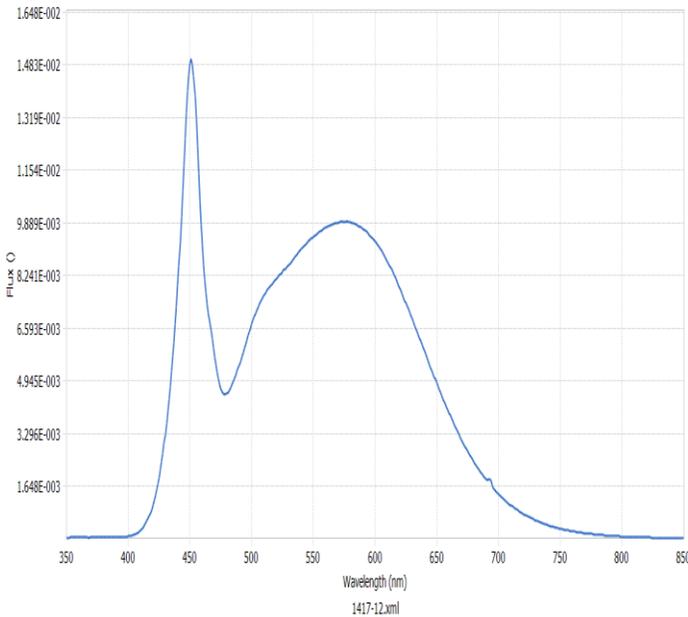
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Spectral Flux and Chromaticity Diagram

Spectral Flux

▼ SPECTRAL FLUX GRAPH:

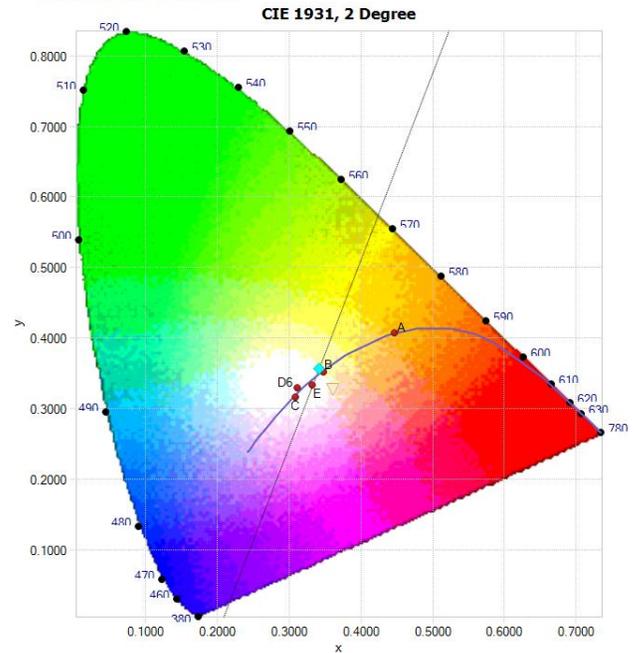


Spectral response of the Radiant Flux

(350nm to 850nm)

Chromaticity Diagram

▼ CHROMATICITY DIAGRAM:



Tristimulus values (from page 4):

$$x / y = 0.3420 / 0.3563$$

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

Zonal Lumen Summary

Zone	Lumens	% Lamp / Luminaire
0 - 60	601.7	99.6 %
60 - 90	2.1	0.4 %
0 - 90	603.8	100.0 %
90 - 180	0.0	0.0 %
0 - 180	603.8	100 %

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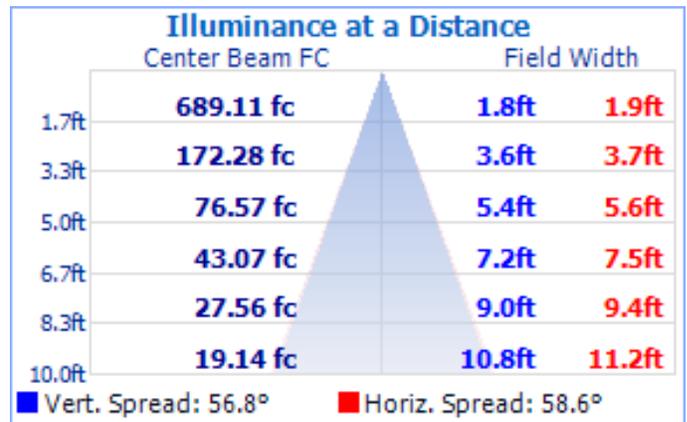
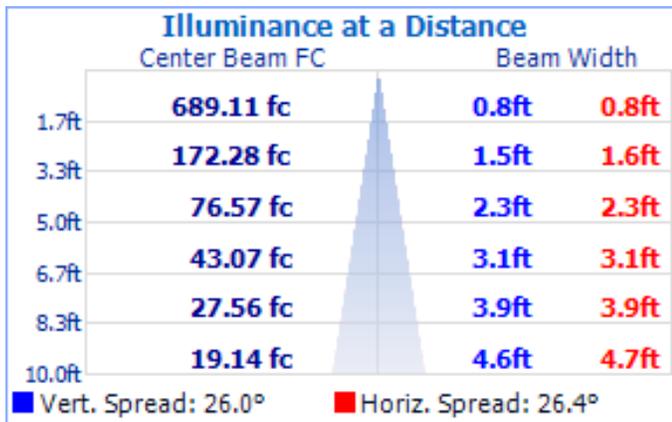


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Test Results – Illuminance Plots

The following images depict the illuminance characteristics of the luminaire.

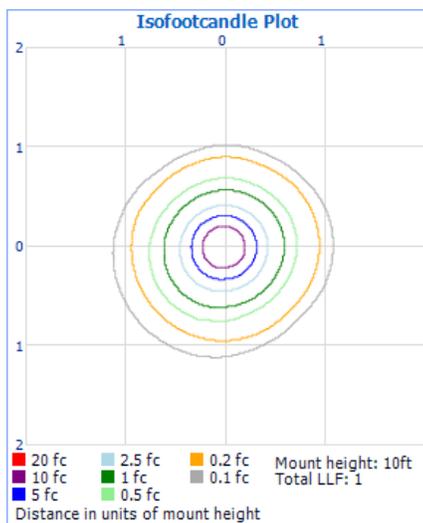


Beam Angle = 26.0° (V) / 26.4° (H)

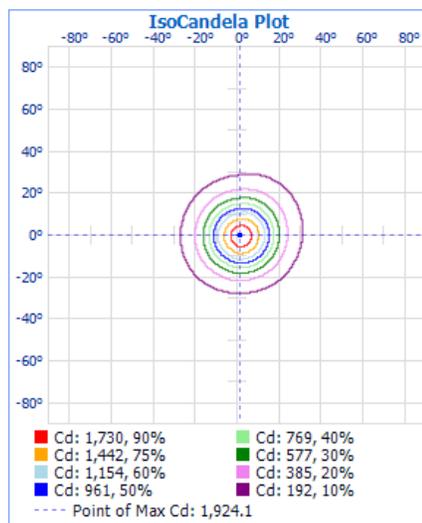
Field Angle = 56.8°

Test Results – Candela Plots

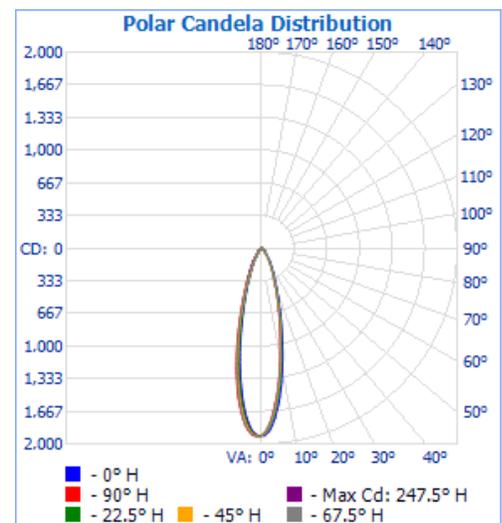
The following images depict the luminous intensity distribution characteristics of the luminaire:



Isofootcandle Plot



Isocandela Plot



Polar Candela

Maximum Candela = 1,924.1 at Horizontal: 247.5°, Vertical: 1.0°



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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 “ 4π 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 3rd 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 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	ATLE0049	9/7/2014
Power Analyzer	Yokogawa WT210	ATLE0031	11/12/2014
Power Source	Chroma 61602	AC003	N/A
Thermometer	Fluke 52-II	ATLE0118	1/16/2015
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	11/21/2014
Power Source	Chroma 61603	AC007	N/A

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