



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: GTSOL50-PAR38-CW-NFL
Description: LED PAR38 Lamp Module
Manufacturer: Global Tech LED LLC

Technical Report Number: 72106528-12-LM79 June
Report Issue Date: 30th, 2015
Total Number of Pages: 8 (including this page)

Report Prepared by:

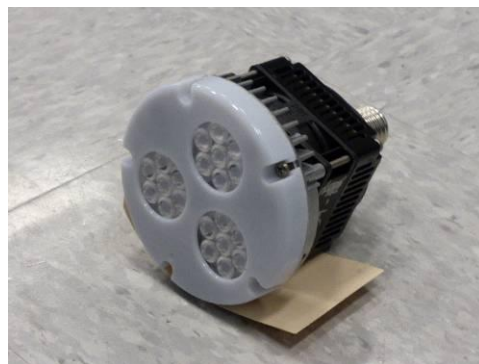
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TÜV SÜD Project Handler

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TÜV SÜD Program Manager

Summary of Key Test Results

Model# **GTSOL50-PAR38-CW-NFL**
 Manufacturer **Global Tech LED LLC**
 TÜV Sample# **1939-12**
 Date of Test **June 30, 2015**



Notes:

Tested in FBU orientation (Fixture Base Up)
 THIS IS A TEST OF THE NEW GTSOL50 AC DRIVEN LAMP W/25
 DEGREE LENS

Parameter	Measured Result
Luminous Flux	3,518 Lumens
Input Power	44.17 Watts
Efficacy	79.65 Lumens/Watt
C.C.T.	4029 K
C.R.I. (R _a)	72.6
Beam Angle	16.6° (V) / 16.7° (H)
Stabilization Time	32 minutes
In-Situ Temp Test (ISTMT) **	Not Tested

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#72106528-12-LM79

June 30, 2015

TABLE OF CONTENTS

Test Results4

Spectral Flux and Chromaticity Diagram5

Zonal Lumen Summary5

Illuminance Plots.....6

Candela Plots6

Photometric Testing Information7

Equipment List:8





IESNA LM79-2008 TEST REPORT

June 30, 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	GTSOL50-PAR38-CW-NFL	
	Integrating Sphere	
Total Luminous Flux (Lumens)	3,518.0	
Luminous Efficacy (Lumens/Watt)	79.65	
Correlated Color Temperature (CCT)	4029	
Color Rendering Index (CRI – R _a)	72.6	
R ₉ Value	-20.4	
Total Radiant Flux (Watts)	10.5	
Chromaticity (Chroma x / Chroma y)	0.3777	0.3708
Chromaticity (Chroma u / Chroma v)	0.2257	0.3323
Chromaticity (Chroma u' / Chroma v')	0.2257	0.4985
D _{uv} Value	-0.00202	

Electrical Results	GTSOL50-PAR38-CW-NFL	
	Integrating Sphere (120V / 277V)	
Input Power (Watts)	44.17	45.08
Input Voltage (Volts AC)	119.98	277.10
Input Current (Amps)	0.396	0.180
Power Factor	0.927	0.904
A-THD (Current %)	33.79	37.86
Input Frequency (Hertz)	60.0	60.0

Additional Parameters	GTSOL50-PAR38-CW-NFL	
	Integrating Sphere	Goniophotometer
Stabilization Time (Light and Power)	32 minutes	32 minutes
Test Geometry Configuration	4π	Type C
Ambient Temperature	25.0°C	24.4°C
ISTMT (In-Situ Temperature Measurement)	Not Tested	
Spacing Criteria	N/A	



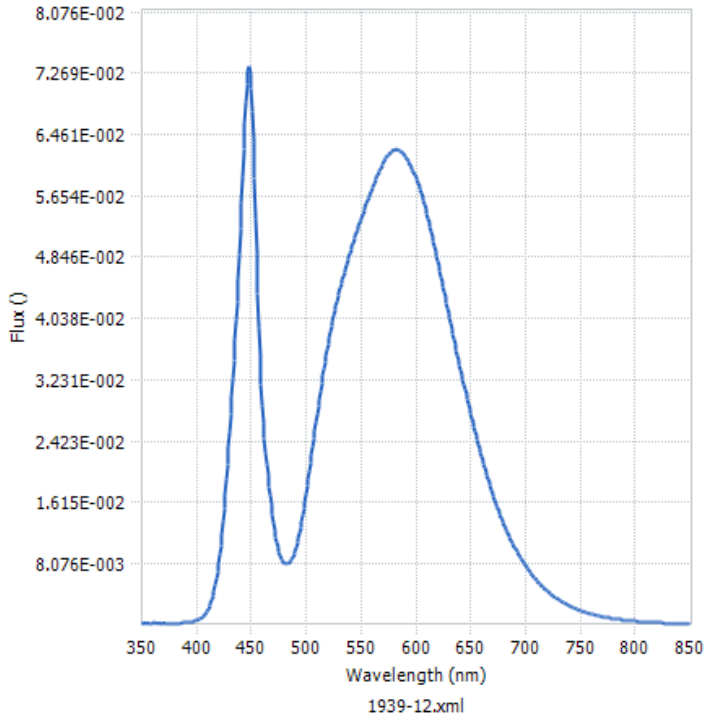


IESNA LM79-2008 TEST REPORT

June 30, 2015

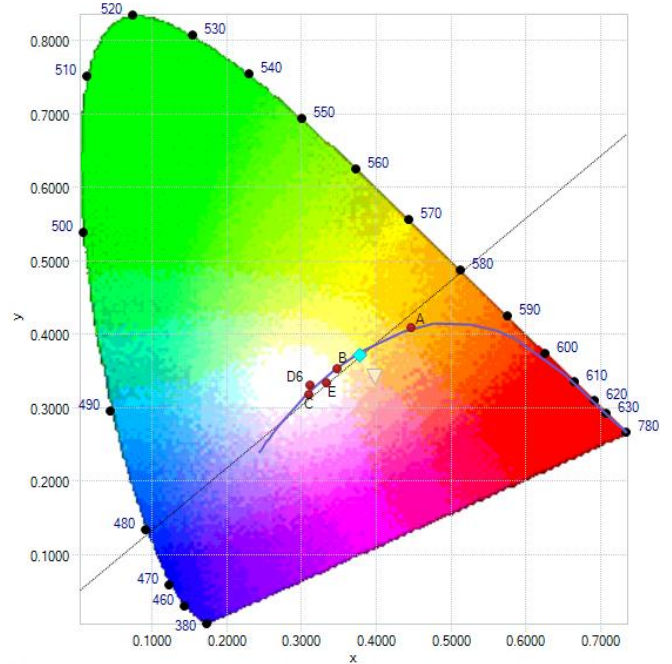
Spectral Flux and Chromaticity Diagram

Spectral Flux



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

Chromaticity Diagram



Tristimulus values (from page 4):

$x / y = 0.3777 / 0.3708$

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

Zonal Lumen Summary

Zone	Lumens	% Lamp / Luminaire
0-40	3,200.00	92.50%
0-60	3,390.90	98.10%
60-90	66.9	1.90%
0-90	3,457.80	100%

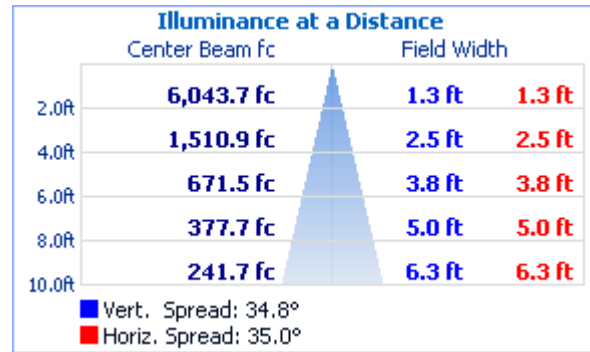
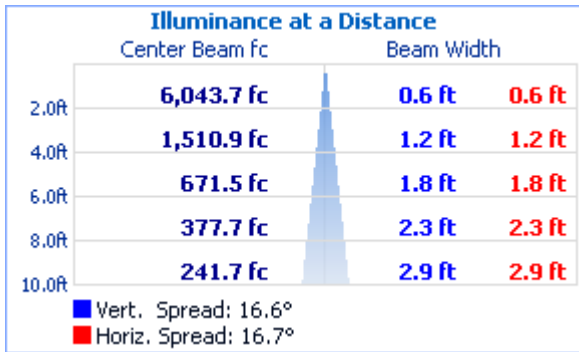


IESNA LM79-2008 TEST REPORT

June 30, 2015

Test Results – Illuminance Plots

The following images depict the illuminance characteristics of the luminaire.

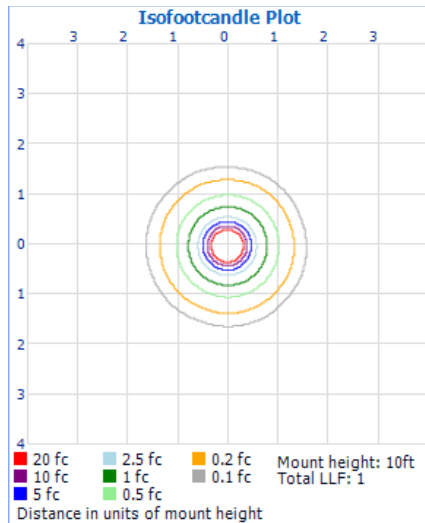


Beam Angle = 16.6° (V) / 16.7° (H)

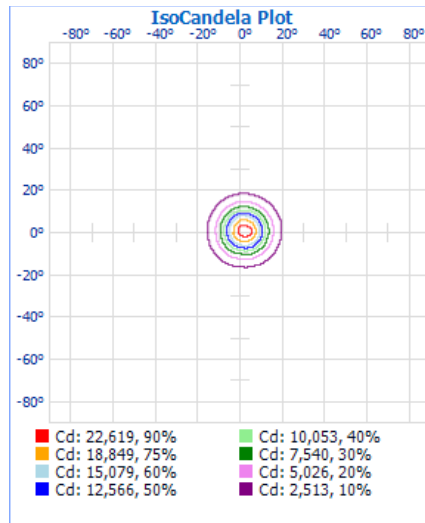
Field Angle = 34.8° (V) / 35.0° (H)

Test Results – Candela Plots

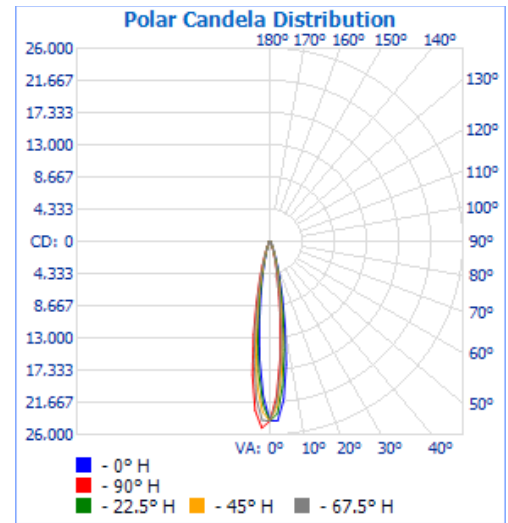
The following images depict the luminous intensity distribution characteristics of the luminaire:



Isofootcandle Plot



Isocandela Plot



Polar Candela

Maximum Candela = **25,442.8** at Horizontal: 292.5°, Vertical: 2.5°



IESNA LM79-2008 TEST REPORT

June 30, 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 “ 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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Page 7

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IESNA LM79-2008 TEST REPORT

June 30, 2015

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
Spectroradiometer	Labsphere CDS1100	ATLE0048	9/7/2015
Power Analyzer	Yokogawa WT210	ATLE0052	1/16/2016
Power Source	Chroma 61602	AC003	N/A
Thermometer	Fluke 52-II	ATLE0118	11/15/2015
TÜV SÜD Goniophotometer System – contains the following:			
Goniophotometer	M.E. GONC01	GON001	weekly
Spectroradiometer	Gigahertz Optik P9801	GIG001	weekly
Power Analyzer	Yokogawa WT210	ATLE0034	11/16/2015
Power Source	Chroma 61602	AC006	N/A

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