



**GONIOPHOTOMETER TEST REPORT**  
**IES LM79-08 Section 9.3**  
**TÜV SÜD America**

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

Report Prepared for:

**Michael Prainito**  
CFO / CTO

**Global Tech LED LLC**  
3810 Tamiami Trail East  
Naples, FL 34112  
United States

Telephone: (877) 748-5533

**Sample Tested:** GTSOL112-HO-GR-360S  
**Sample Description:** LED Module  
**Manufacturer:** Global Tech LED, LLC

**Technical Report Number:** 72112305-15-GONI  
**Report Issue Date:** January 18<sup>th</sup> 2016  
**Total Number of Pages:** 6 (including this page)

Report Prepared by:

**Stan Mushyakov**  
TÜV SÜD Project Handler

Report Reviewed by:

**Bryan Cubitt**  
TÜV SÜD Operations Manager



# GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

Report# 72112305-15-GONI

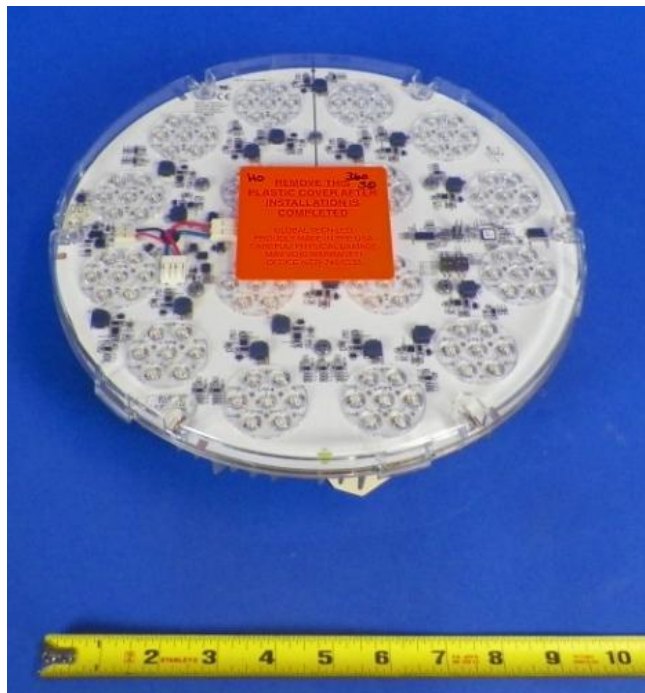
January 18, 2016

## Summary of Key Test Results

Model# **GTSOL112-HO-GR-360S**  
Manufacturer Global Tech LED, LLC  
TÜV Sample# 2176-15 (Test Plan#15)  
Date of Test January 18<sup>th</sup> 2016

Notes: Tested in intended orientation  
“Aperture Down, Cover Removed”.  
(cover shown attached in image)

Driver: **HATCH LV192-24N-UNV-NN (x2)**  
LED Chip: **Lumileds Luxeon Zes**



Parameter	Measured Result
Luminous Flux	<b>31,276 Lumens</b>
Input Power	<b>357.91 Watts</b>
Efficacy	<b>87.35 Lumens/Watt</b>
Beam Angle	<b>15.0° (V) / 29.5° (H)</b>
Stabilization Time	<b>44 minutes</b>

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





# GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

Report# 72112305-15-GONI

January 18, 2016

## TABLE OF CONTENTS

Test Results .....4

Zonal Lumen Summary .....4

Illuminance Plots.....5

Candela Plots .....5

Photometric Testing Information .....6

Equipment List: .....6





# GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

Report# 72112305-15-GONI

January 18, 2016

### 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	GTSOL112-HO-GR-360S
	Goniophotometer (120V)
Total Luminous Flux (Lumens)	31,276
Luminous Efficacy (Lumens/Watt)	87.39

Electrical Results	GTSOL112-HO-GR-360S
	Goniophotometer (120V)
Input Power (Watts)	357.91
Input Voltage (Volts AC)	120.24
Input Current (Amps)	2.980
Power Factor	0.997
Input Frequency (Hertz)	60.0
A-THD (Current %)	3.92%

Additional Parameters	GTSOL112-HO-GR-360S
	Goniophotometer (120V)
Stabilization Time (Light and Power)	44 minutes
Test Geometry Configuration	Type C
Ambient Temperature	24.8°C

### Zonal Lumen Summary

Zone	Lumens	% Lamp / Luminaire
0 - 60	15,021.4	48.0%
60 - 90	16,254.6	52.0%
0 - 90	31,275.9	100.0%
90 - 180	0.0	0.0%
0 - 180	31,275.9	100.0%





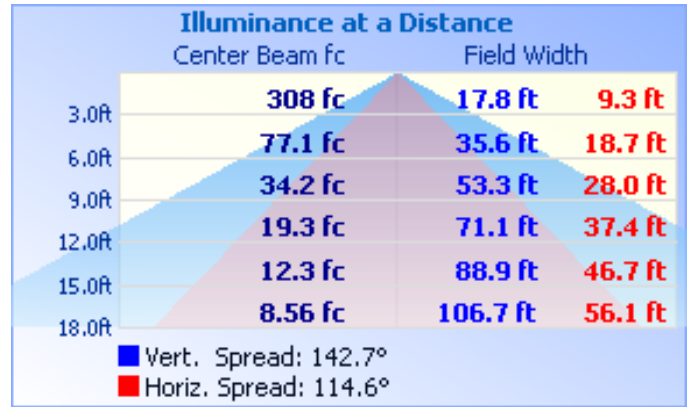
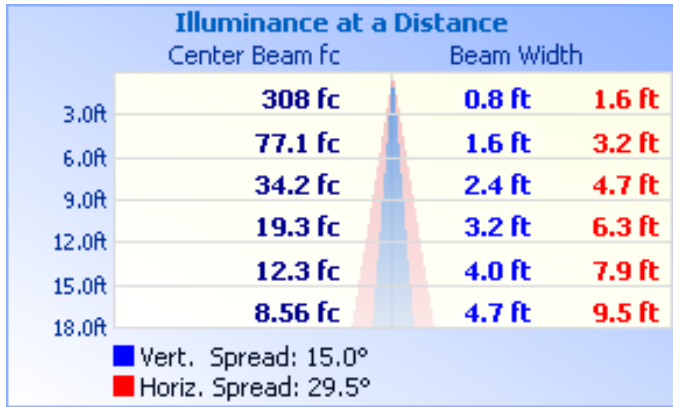
# GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

Report# 72112305-15-GONI

January 18, 2016

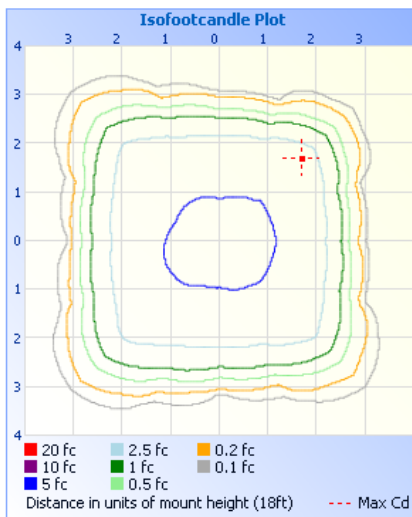
## Test Results – Illuminance Plots

The following images depict the illuminance characteristics of the Luminaire at a mount height of 18ft.

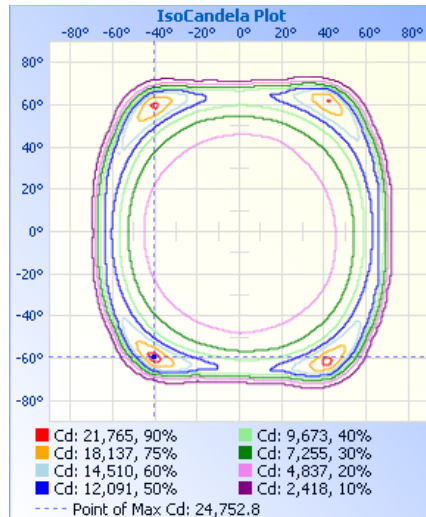


## Test Results – Candela Plots

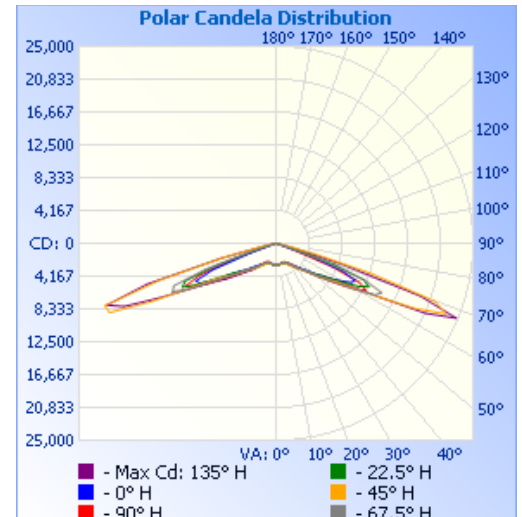
The following images depict the luminous intensity distribution characteristics of the luminaire:



Isofootcandle Plot



Isocandela Plot



Polar Candela

Maximum Candela = **24,752.8** at Horizontal: 135.0°, Vertical: 67.5°

TÜV SÜD America, Inc.  
5945 Cabot Parkway, Suite 100,  
Alpharetta GA 30005

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

Page 5

NRG\_F\_10.04

Confidential Report



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





# GONIOPHOTOMETRIC TEST REPORT IES LM79-2008

Report# 72112305-15-GONI

January 18, 2016

## 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 a goniophotometer, located in an accredited, temperature and humidity-controlled, draft free photometric laboratory.

### Sample Stabilization

The sample (UUT) is placed on a goniophotometer 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.

### 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 Mirror Goniophotometer System – contains the following:			
Goniophotometer	M.E. GONC02	GON002	Weekly
Spectroradiometer	Gigahertz Optik P9801	GIG002	Weekly
Power Analyzer	Yokogawa WT210	ATLE0073	5/15/2016
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 6

NRG\_F\_10.04

**Confidential Report**



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

