



GONIOPHOTOMETER TEST REPORT

IES LM79-08 Section 9.3

TÜV SÜD America

Photometric Testing and Evaluation in Accordance with LM79-2008

Report Prepared for:

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Sample Tested: GTSOL112-HO-GR-10D
Sample Description: LED Module
Manufacturer: Global Tech LED, LLC

Technical Report Number: 72112305-05-GONI
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Report# 72112305-05-GONI

January 18, 2016

Summary of Key Test Results

Model# **GTSOL112-HO-GR-10D**

Manufacturer Global Tech LED, LLC

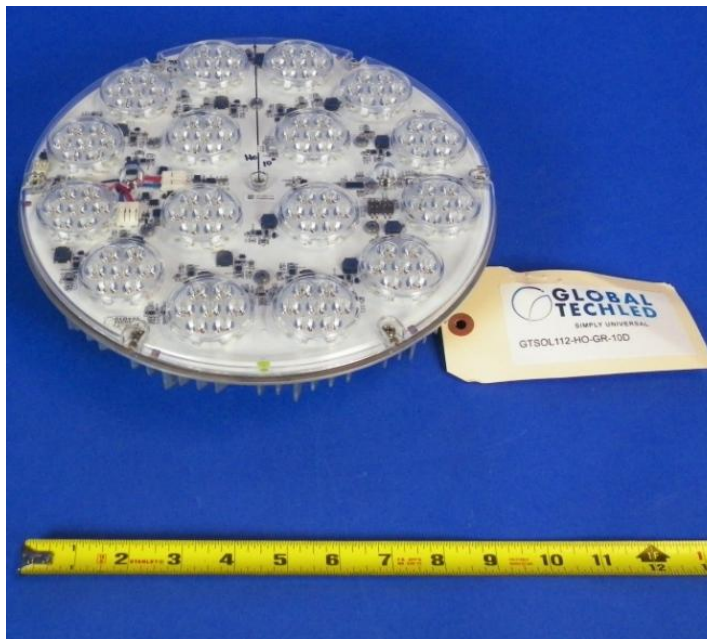
TÜV Sample# 2176-5 (Test Plan#5)

Date of Test January 13th 2016

Notes: Tested in intended orientation
“Aperture Down”.

Driver: **HATCH LV192-24N-UNV-NN (x2)**

LED Chip: **Lumileds Luxeon Zes**



| Parameter | Measured Result |
|--------------------|------------------------------|
| Luminous Flux | 28,076 Lumens |
| Input Power | 360.46 Watts |
| Efficacy | 77.89 Lumens/Watt |
| Beam Angle | 11.9° (V) / 11.8° (H) |
| Stabilization Time | 47 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 | GTSOL112-HO-GR-10D |
|---------------------------------|------------------------|
| | Goniophotometer (120V) |
| Total Luminous Flux (Lumens) | 28,076 |
| Luminous Efficacy (Lumens/Watt) | 77.89 |

| Electrical Results | GTSOL112-HO-GR-10D |
|--------------------------|------------------------|
| | Goniophotometer (120V) |
| Input Power (Watts) | 360.46 |
| Input Voltage (Volts AC) | 120.17 |
| Input Current (Amps) | 3.010 |
| Power Factor | 0.998 |
| Input Frequency (Hertz) | 60.0 |
| A-THD (Current %) | 3.74% |

| Additional Parameters | GTSOL112-HO-GR-10D |
|--------------------------------------|------------------------|
| | Goniophotometer (120V) |
| Stabilization Time (Light and Power) | 48 minutes |
| Test Geometry Configuration | Type C |
| Ambient Temperature | 24.7°C |

Zonal Lumen Summary

| Zone | Lumens | % Lamp / Luminaire |
|----------|----------|--------------------|
| 0 - 60 | 25,583.0 | 91.1% |
| 60 - 90 | 2,493.4 | 8.9% |
| 0 - 90 | 28,076.4 | 100.0% |
| 90 - 180 | 0.0 | 0.0% |
| 0 - 180 | 28,076.4 | 100.0% |





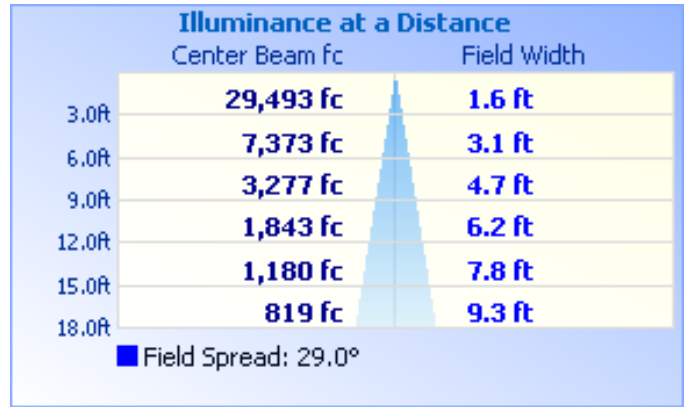
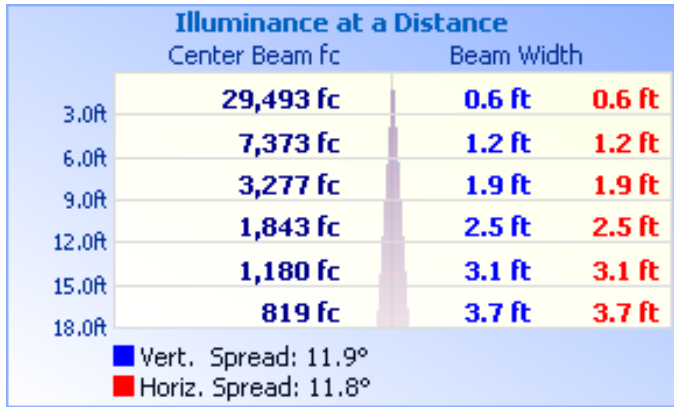
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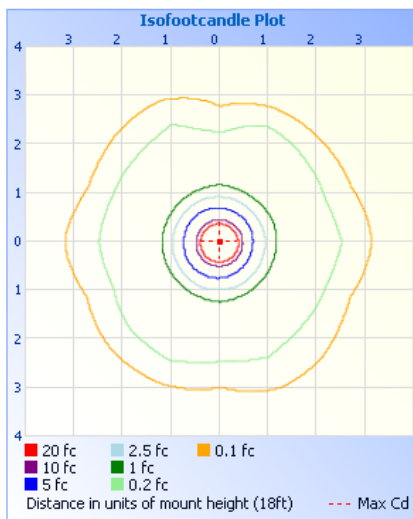
Test Results – Illuminance Plots

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

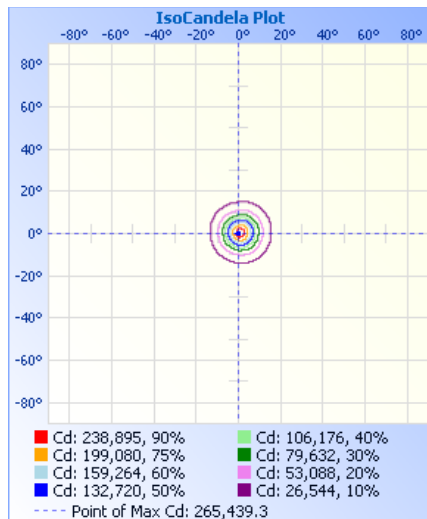


Test Results – Candela Plots

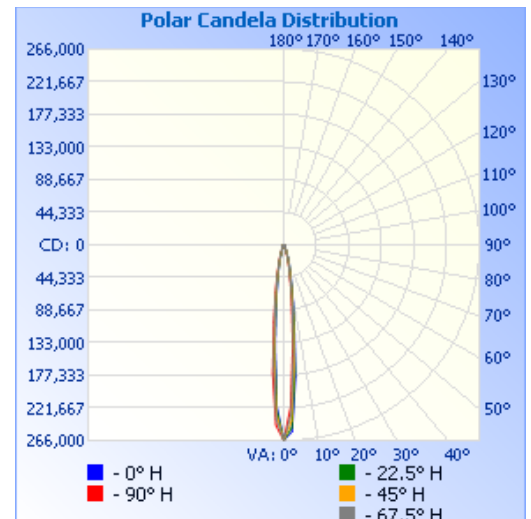
The following images depict the luminous intensity distribution characteristics of the luminaire:



Isofootcandle Plot



Isocandela Plot



Polar Candela

Maximum Candela = **265,439.3** at Horizontal: 0.0°, Vertical: 0.0°

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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 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 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.

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 |

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