NVLAP LAB CODE 200960-0

LM-79-08 Test Report

for

DONGGUAN THAILIGHT SEMICONDCTOR LIGHTING CO., LTD

Sanhui Ind. Area, Cunwei, Hengli, Dongguan, China.

LED WALLPACKS LIGHT

Model: TLWMI506YYZZ

YY=Mounting Option(WM=Wall Mount)
ZZ=Housing Color(use 2 digits to indicate all of color)

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

No.1805, DongLiu road, BinJiang District, Hangzhou, China
Tel: +86-571-56680806
www.ledtestlab.com

Report No.: HZ16030029d

The laboratory that conducted the testing detailed in this report has been accredited for SSL by NVLAP.

Review by: April Zou

Engineer: April Zou
Mar. 31, 2016

Approved by: Jim Zhang

Manager: Jim Zhang
Mar. 31, 2016

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Test Summary

Sample Tested: **TLWMI506YYZZ**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
107.2	5042.7	47.03	0.9768

CCT (K)	CRI	Stabilization Time (Light & Power)
5732	84.0	60

Table 1: Executive Data Summary

Test specifications:

Date of Receipt : Mar. 11, 2016

Date of Test : Mar. 31, 2016

Test item : Total Luminous Flux, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters

Reference Standard : IESNA LM-79-2008 Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products

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Sample Photos

Figure 1- Overview of the sample

Equipment Under Test (EUT)	
Name	: LED WALLPACKS LIGHT
Model	: TLWMI506YYZZ
Electrical Ratings	: 120~277VAC, 50/60Hz
Product Description	: 5700K, Clear Light Cover Manufacturer of light source: Philips Lumileds Model of light source: Lumileds 3030-2D
Manufacturer	: DONGGUAN THAILIGHT SEMICONDCTOR LIGHTING CO., LTD
Address	: Sanhui Ind. Area, Cunwei, Hengli, Dongguan, China.

TEST RESULTS

Test ambient temperature was 24.1℃.

Test orientation was Light down. Test was conducted without a dimmer in the circuit.

The stabilization time of the sample was 60 minutes, and the total operating time including stabilization was 65 minutes.

Parameter	Result	
Test Voltage (V)	120.0	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.401	0.192
Power Factor	0.9768	0.9015
Test Power (W)	47.03	47.93
THD A%	19.89	18.38
Luminous Efficacy (lm/W)	107.2	
Total Luminous Flux (lm)	5042.7	
Color Rendering Index (CRI)	84.0	
R9	12.4	
Correlated Color Temperature (CCT)(K)	5732	
Chromaticity Chroma x	0.3273	
Chromaticity Chroma y	0.3415	
Chromaticity Chroma u	0.2032	
Chromaticity Chroma v	0.3180	
Duv	0.0026	
Chromaticity Chroma u ’	0.2032	
Chromaticity Chroma v’	0.4770	

Special Color Rendering Indices	
R1	82.8
R2	90.4
R3	93.3
R4	81.9
R5	82.2
R6	84.2
R7	87.7
R8	69.5
R9	12.4
R10	75.4
R11	80.8
R12	57.5
R13	85.5
R14	96.7

Table 2: Test data per Goniophotometer Method

Note: According to CIE 1976 (u’,v’) diagram, u’ = u = 4x/(-2x+12y+3), v’ = 3v/2 = 9y/(-2x+12y+3).

Spectral Power Distribution

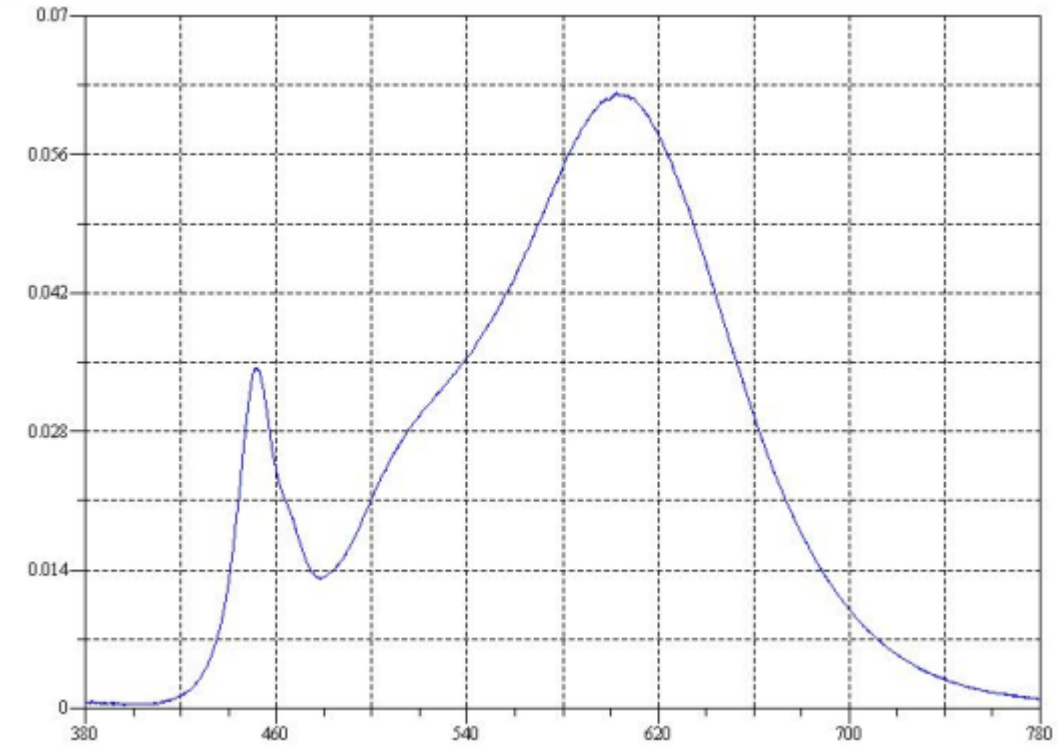


Chart 1: Spectral Power Distribution

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Jul. 17, 2015	Jul. 16, 2016
Digital Power Meter	PF2010A	HZTE028-01	Jul. 17, 2015	Jul. 16, 2016
AC Power Supply	PCR 500L	HZTE001-08	Jul. 17, 2015	Jul. 16, 2016
DC Power Supply	WY12010	HZTE004-03	Jul. 17, 2015	Jul. 16, 2016
Temperature Meter	TES1310	HZTE017-01	Jul. 17, 2015	Jul. 16, 2016
Standard source	D908	HZTE012-01	Jul. 23, 2015	Jul. 22, 2016
Standard source	SCL-1400	HZTE012-02	Oct. 21, 2015	Oct. 20, 2016

Table 3: Test Equipment List

TEST METHODS

Seasoning of SSL Product

For the purpose of rating new SSL products, SSL products shall be tested with no seasoning.
Therefore, no seasoning was performed.

Goniophotometer Method

Photometric and Electrical Measurements

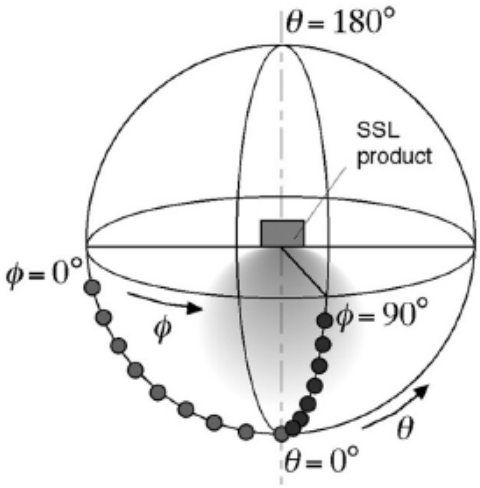
An EVERFINE Type C Model GO-R5000 Goniophotometer was used to measure the intensity at each angle of distribution for each sample. The photometric distance is 2.475m for near-field measurement or 30m for far-field measurement. Bandwidth of spectroradiometer is 380nm-780nm.
Ambient temperature was measured at the same height of the sample mounted on the Goniophotometer equipment. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation.
The stabilization time typically ranges from 30 min (small integrated LED lamps) to 2 or more hours for large SSL luminaires). It can be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 30 min, taken 15 minutes apart, is less than 0.5 %.
Electrical measurements including voltage, current, and power were measured using the Everfine Digital Power Meter.
Some graphics were created with Photometric Plus software.
The standard reference of the Goniophotometer system is halogen incandescent lamp, the intensity distribution type is omni-directional, and is traceable to the National Institute of Metrology P.R. China.
The uncertainty of goniophotometer system reported in this document is expended uncertainty is 1.94% with a coverage factor k=2.

Color Characteristics Measurements

The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as values that are spatially average, weighted to intensity, over the angular range where light is intentionally emitted from the SSL product. The color characteristics measurements are using gonio-spectroradiometer.

Color Spatial Uniformity

The characteristics of SSL products may be spatially non-uniform, the chromaticity coordinate shall be measured at two vertical planes (C=0°/180° and C=90°/270°) and at 10° or less intervals for vertical angle until the light output dropped to below 10% of the peak intensity. The averaged weighted chromaticity coordinate was calculated from these points. The data was then analyzed to check for delta color differences of the u', v' chromaticity coordinates. The spatial non-uniformity of chromaticity, Δu'v', is determined as the maximum deviation (distance on the CIE (u', v') diagram) among all measured points from the spatially averaged chromaticity coordinate.
The geometry for the chromaticity measurement using gonio-spectroradiometer is shown as following.



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