

# Test Report

Report Number: L18036

Date: May 30, 2018

Issued by:

Dialight Optics Laboratory  
1501 Route 34 South, Farmingdale, NJ 07727

Test of one 2ft Top Conduit  
Unit manufacturer: Dialight Corporation  
Unit model number: LGx5WW23xxxxN

Issued to:

Dialight Corporation  
1501 Route 34 South, Farmingdale, NJ 07727

**Tests performed:** Photometric characterization and temperature measurement per the described standards.

**Dates of test:** May 7, 2018 through May 21, 2018

**Standards used:** All tests are performed in accordance with procedures and guidelines prescribed by the American National Standards Institute (ANSI) or Illuminating Engineering Society of North America (IES):

- IES LM-79:2008: Electrical and Photometric Measurements of Solid-State Lighting Products
- ANSI/UL 1598:2008: Underwriters Laboratories Inc. Standard for Safety: Luminaires
- ENERGY STAR Manufacturer's Guide for Qualifying Solid State Lighting Luminaires Version 2.1

**Description of sample:**

Sample Number: L18036  
Manufacturer: Dialight Corporation  
Product Name: 2ft Top Conduit  
Description: 2ft Top Conduit  
Model Number: LGx5WW23xxxxN

## Report Summary

Sample number L18036  
Dialight unit model number LGx5WW23xxxxxN

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	2429 (lumens)	2404 (lumens)
Electrical Power:	22.8 (W)	22.8 (W)
Luminous Efficacy:	106.8 (lumens/W)	105.6 (lumens/W)

### Electrical Measurements:

Input Power (120VAC): 22.8 (W)  
Power Factor (120VAC): 0.989  
Current ATHD % (120VAC): 6.287  
Input Power (277VAC): 22.7 (W)  
Power Factor (277VAC): 0.901  
Current ATHD % (277VAC): 16.24

### Color Measurements:

Correlated Color Temperature (CCT): 2719  
Color Rendering Index (CRI): 86.6  
Chromaticity Coordinate (x): 0.453  
Chromaticity Coordinate (y): 0.401  
Chromaticity Coordinate (u'): 0.263  
Chromaticity Coordinate (v'): 0.348  
DUV: 0.0032

### Temperature Measurements:

In Situ LED Source Temperature: 43.5 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18036.

Dialight unit model number LGx5WW23xxxxN

### Test Conditions:

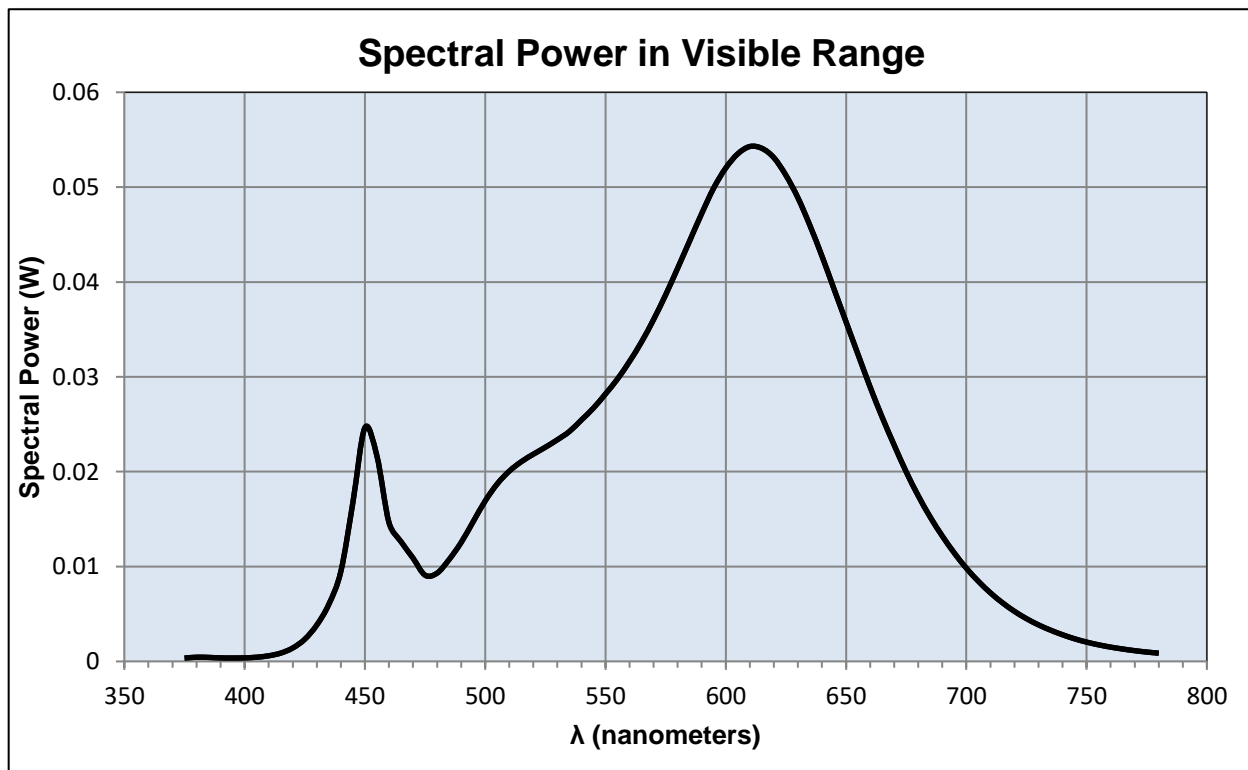
Ambient Temperature: 25 ± 1 (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
 Input Current: 0.191 (A)  
 Input Power: 22.8 (W)  
 Input Power Factor: 0.989  
 Current ATHD: 6.287 (%)

### Photometric measurements:

Luminous Flux: 2429 (lumens)  
 Luminous Efficacy: 106.8 (lumens/W)  
 Correlated Color Temperature (CCT): 2719 (K)  
 CRI -Ra: 86.6  
 CRI -R9: 25.2  
 DUV: 0.0032  
 CIE Coordinate (x): 0.453  
 CIE Coordinate (y): 0.401  
 CIE Coordinate (u'): 0.263  
 CIE Coordinate (v'): 0.348



## Test Results: Integrating Sphere

Results continued from previous page.

### Tabulated Spectral Power in Visible Range:

$\lambda(\text{nm})$	(W/nm)	$\lambda(\text{nm})$	(W/nm)	$\lambda(\text{nm})$	(W/nm)
375	0.000	515	0.021	655	0.032
380	0.000	520	0.022	660	0.029
385	0.000	525	0.023	665	0.026
390	0.000	530	0.023	670	0.023
395	0.000	535	0.024	675	0.020
400	0.000	540	0.025	680	0.017
405	0.000	545	0.027	685	0.015
410	0.001	550	0.028	690	0.013
415	0.001	555	0.030	695	0.011
420	0.001	560	0.032	700	0.010
425	0.002	565	0.034	705	0.008
430	0.004	570	0.036	710	0.007
435	0.006	575	0.039	715	0.006
440	0.009	580	0.041	720	0.005
445	0.017	585	0.044	725	0.005
450	0.025	590	0.047	730	0.004
455	0.022	595	0.050	735	0.003
460	0.015	600	0.052	740	0.003
465	0.013	605	0.054	745	0.002
470	0.011	610	0.054	750	0.002
475	0.009	615	0.054	755	0.002
480	0.009	620	0.053	760	0.002
485	0.011	625	0.051	765	0.001
490	0.013	630	0.049	770	0.001
495	0.015	635	0.046	775	0.001
500	0.017	640	0.043	780	0.001
505	0.019	645	0.039		
510	0.020	650	0.036		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18036.  
Dialight unit model number LGx5WW23xxxxxN

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 0.191 (A)  
Input Power: 22.8 (W)  
Power Factor: 0.989

### Photometric measurements:

Absolute Luminous Flux: 2404 (lumens)  
Luminous Efficacy: 105.6 (lumens/W)

### Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	1168	1168	1168	1168	1168	
5	1161	1161	1161	1161	1161	43
15	1106	1106	1106	1106	1106	241
25	981	981	981	981	981	409
35	758	758	758	758	758	479
45	509	509	509	509	509	430
55	337	337	337	337	337	336
65	224	224	224	224	224	252
75	117	117	117	117	117	164
85	9	9	9	9	9	50
95	0	0	0	0	0	1
105	0	0	0	0	0	0
115	0	0	0	0	0	0
125	0	0	0	0	0	0
135	0	0	0	0	0	0
145	0	0	0	0	0	0
155	0	0	0	0	0	0
165	0	0	0	0	0	0
175	0	0	0	0	0	0
180	0	0	0	0	0	0

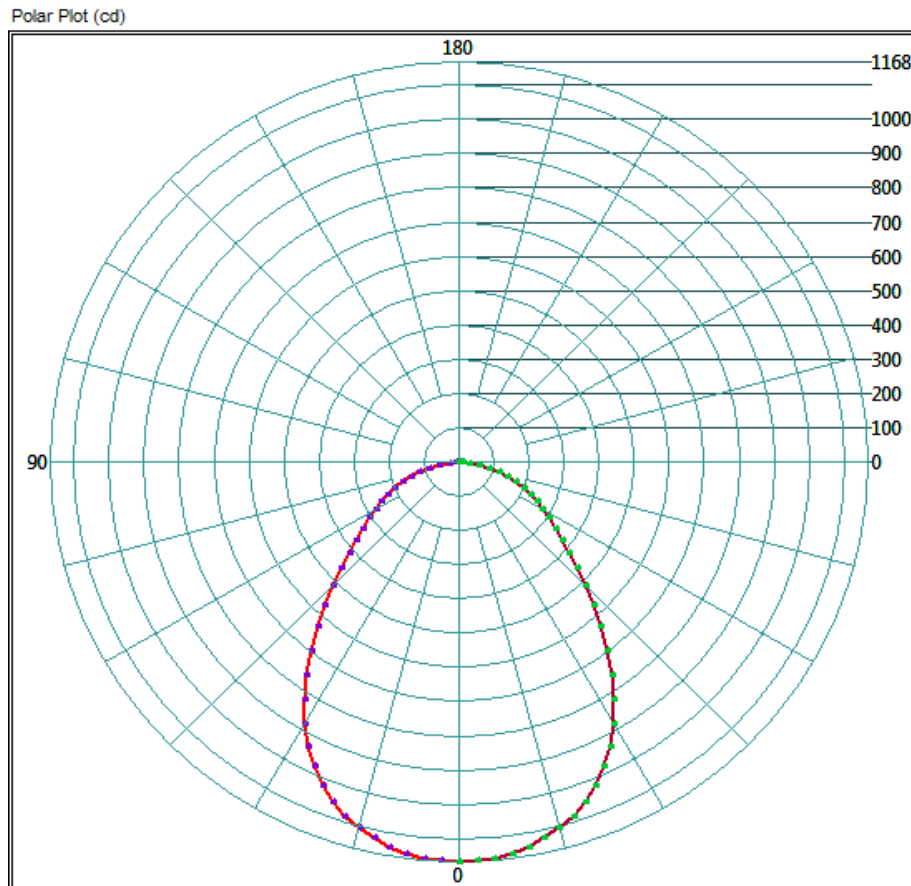
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	932.16	38.8%
0-40	1398.4	58.2%
0-60	2073.6	86.2%
60-90	396.32	16.5%
0-90	2404.32	100.0%
90-180	0	0.0%
0-180	2404.32	100.0%

## Test Results: Goniometer

Results continued from previous page.

### Polar Plot:

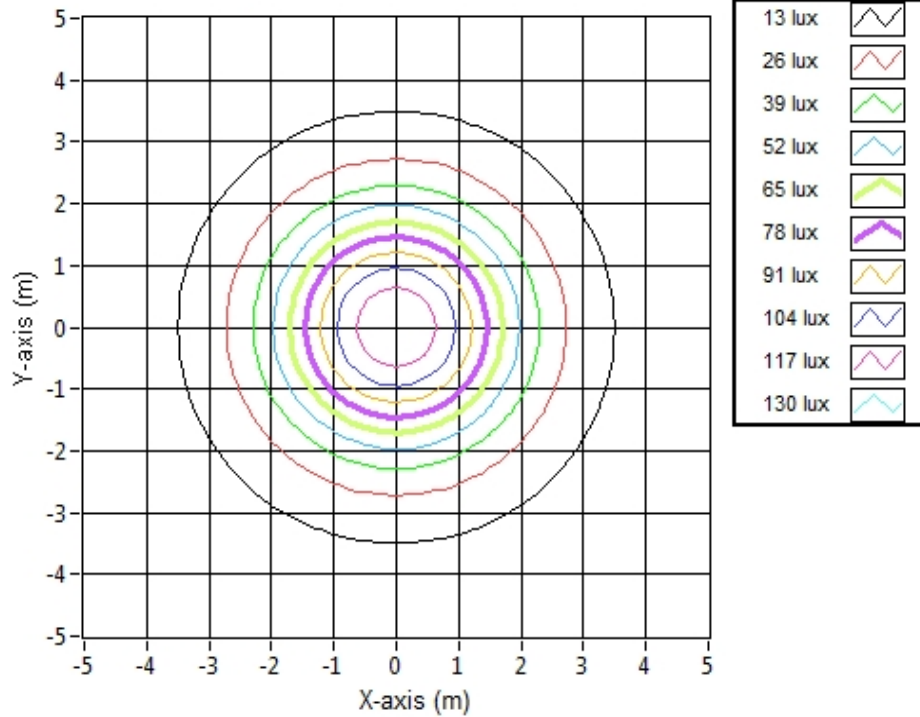


## Test Results: Goniometer

Results continued from previous page.

### Illuminance Plot:

Illuminance Contour Graph



### Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone Width (m)	Projected Illuminance (lux)
3.048	5.44	5.44	125.7
6.096	10.89	10.89	31.4
9.144	16.33	16.33	14.0
12.192	21.78	21.78	7.9
15.24	27.22	27.22	5.0
18.288	32.67	32.67	3.5
21.336	38.11	38.11	2.6
24.384	43.55	43.55	2.0
27.432	49.00	49.00	1.6
30.48	54.44	54.44	1.3

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18036.

Dialight unit model number LGx5WW23xxxxxN

LED identified as Seoul part number SAW8C22B.

LED drive current (as indicated by customer): 40 (mA)

### LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If): 250 (mA)  
Maximum Rated Power Dissipation: 1.5 (W)  
Maximum Junction Temp. (Tj): 125 (°C)  
Thermal Resistance (Rth): 17 (°C/W)

Derived Specifications:

Maximum Power at Indicated Current: 0.24 (W)  
Maximum Source Temperature: 120.9 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below

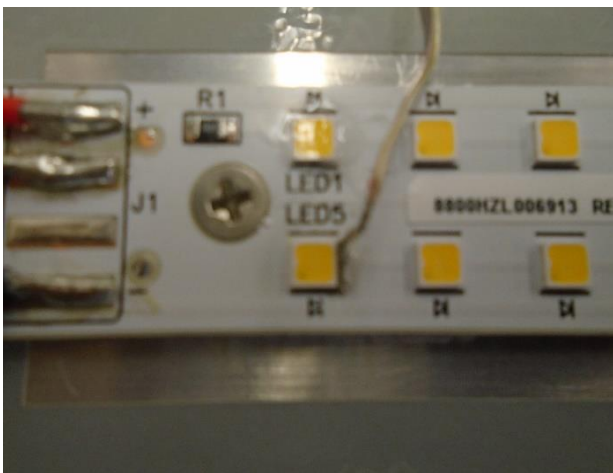
Ambient Temperature:  $25^{\circ} \pm 5^{\circ}$  (°C)

Ambient temperature at time of measurement: 24 (°C)

Relative humidity at time of measurement: 19%

### Results:

**Measured LED source temperature: 43.5 (°C)**





**Equipment Used:**

Equipment Name	Model Number
Omega TC	Dpi8
Fluke 8808A Digit Multimeter	8808A
YOKOGAWA Digital Power Meter	11/26/3981
LSI High Speed Mirror Goniometer	6240T
Instrument System Spectrometer	CAS140B-151
Instrument System 1.5 Meter Sphere	ISP1500
Delta Elektronika DC Power Supply	SM.300-5
Instek AC Power Supply	APS-9501
Sorensen DC Power Supply	XHR150-7
TPI Digital Thermometer	TPI 343
Fluke 52II Thermometer	068158
Fluke 971 Humidity Meter	971
Volttech Power Analyzer	PM1000+
Volttech Universal Breakout Box	PM1000+
BK Precision	1715A
Step-Up Transformer	
Omega TC	Dpi8-C24
Agilent True RMS OLED Multimeter	U1273A
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
Adaptive Power Systems AC Power Supply	FC-210
Xitron Power Analyzer	XT2640
GwINSTEK DC Power Supply	GEP172679
Osram Sylvania Calibration Lamp for Sphere	STD-20WF-3

**Additional Notes:**

Samples are received and tested in new and undamaged condition, unless otherwise noted. The results shown in this report are representative only of the test samples submitted. This data has been issued to the assignee for further evaluation. This report shall not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. This report shall not be reproduced, except in full, without the express written permission of Dialight Optics Laboratory.

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