

# Test Report

Report Number: L18091

Date: Jan 29, 2019

Issued by:

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

Test of one Linear

Unit manufacturer: Dialight Corporation  
Unit model number: Lxx4WC27xxxxN

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:** January 24, 2019 through January 29, 2019

**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

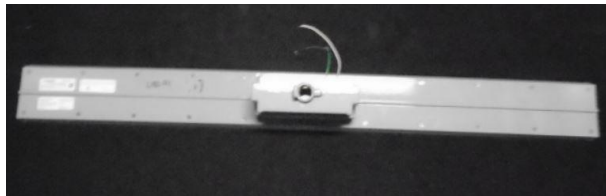
**Description of sample:**

Sample Number: L18091  
Manufacturer: Dialight Corporation  
Product Name: 4ft Linear  
Description: Linear  
Model Number: Lxx4WC27xxxxN

## Report Summary

Sample number L18091  
Dialight unit model number Lxx4WC27xxxxxN

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	7388 (lumens)	7368 (lumens)
Electrical Power:	52.0 (W)	52.2 (W)
Luminous Efficacy:	142.1 (lumens/W)	141.3 (lumens/W)

#### Electrical Measurements:

Input Power (120VAC): 52.0 (W)  
Power Factor (120VAC): 0.994  
Current ATHD % (120VAC): 6.237  
Input Power (277VAC): 50.7 (W)  
Power Factor (277VAC): 0.918  
Current ATHD % (277VAC): 15.42

#### Color Measurements:

Correlated Color Temperature (CCT): 5021  
Color Rendering Index (CRI): 85.6  
Chromaticity Coordinate (x): 0.345  
Chromaticity Coordinate (y): 0.354  
Chromaticity Coordinate (u'): 0.21  
Chromaticity Coordinate (v'): 0.324  
DUV: 0.0012

#### Temperature Measurements:

In Situ LED Source Temperature: 49.0 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18091.

Dialight unit model number Lxx4WC27xxxxxN

### Test Conditions:

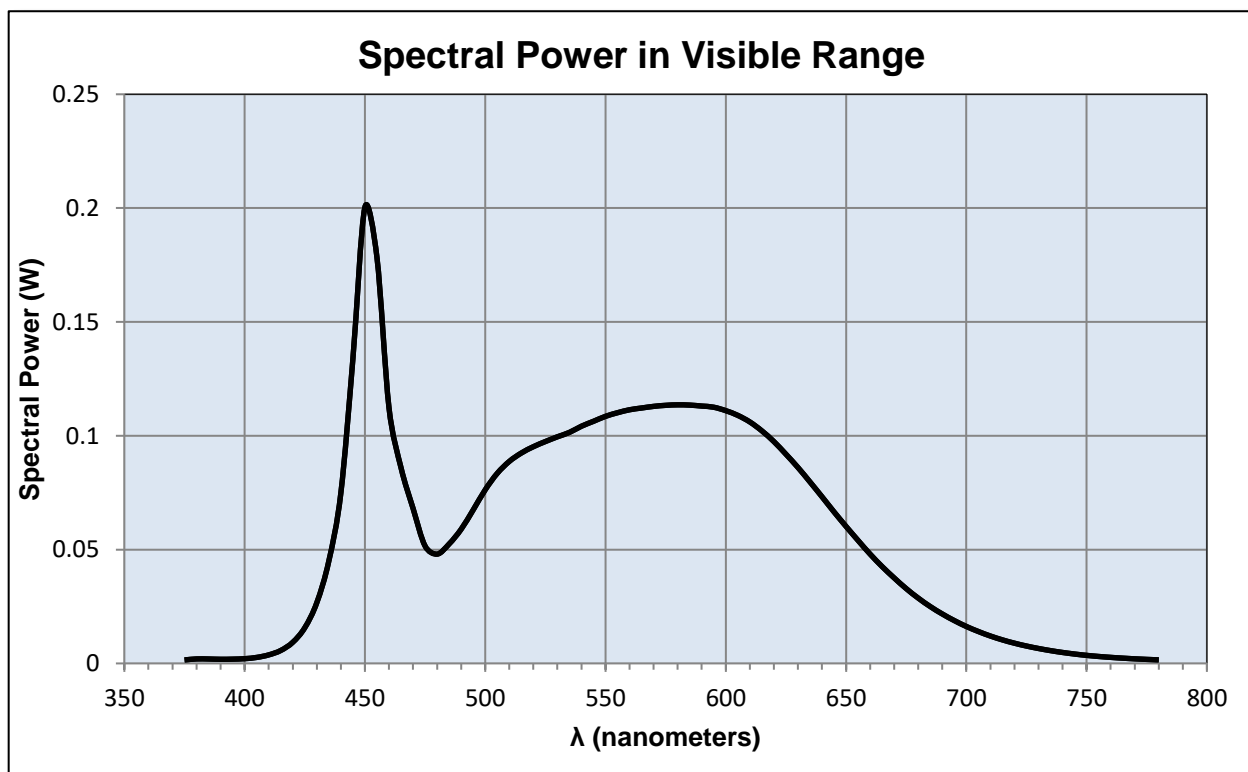
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
 Input Current: 0.437 (A)  
 Input Power: 52.0 (W)  
 Input Power Factor: 0.994  
 Current ATHD: 6.237 (%)

### Photometric measurements:

Luminous Flux: 7388 (lumens)  
 Luminous Efficacy: 142.1 (lumens/W)  
 Correlated Color Temperature (CCT): 5021 (K)  
 CRI -Ra: 85.6  
 CRI -R9: 22.2  
 DUV: 0.0012  
 CIE Coordinate (x): 0.345  
 CIE Coordinate (y): 0.354  
 CIE Coordinate (u'): 0.21  
 CIE Coordinate (v'): 0.324



## Test Results: Integrating Sphere

Results continued from previous page.

### Tabulated Spectral Power in Visible Range:

$\lambda$ (nm)	(W/nm)	$\lambda$ (nm)	(W/nm)	$\lambda$ (nm)	(W/nm)
375	0.002	515	0.092	655	0.054
380	0.002	520	0.095	660	0.048
385	0.002	525	0.097	665	0.043
390	0.002	530	0.100	670	0.038
395	0.002	535	0.101	675	0.033
400	0.002	540	0.104	680	0.029
405	0.003	545	0.106	685	0.025
410	0.004	550	0.109	690	0.022
415	0.006	555	0.110	695	0.019
420	0.009	560	0.111	700	0.016
425	0.016	565	0.112	705	0.014
430	0.027	570	0.113	710	0.012
435	0.045	575	0.113	715	0.010
440	0.075	580	0.114	720	0.009
445	0.134	585	0.113	725	0.008
450	0.200	590	0.113	730	0.007
455	0.178	595	0.113	735	0.006
460	0.112	600	0.111	740	0.005
465	0.086	605	0.109	745	0.004
470	0.068	610	0.106	750	0.004
475	0.052	615	0.102	755	0.003
480	0.048	620	0.097	760	0.003
485	0.052	625	0.092	765	0.002
490	0.059	630	0.086	770	0.002
495	0.067	635	0.080	775	0.002
500	0.076	640	0.073	780	0.002
505	0.083	645	0.067		
510	0.089	650	0.060		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18091.  
Dialight unit model number Lxx4WC27xxxxN

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 0.443 (A)  
Input Power: 52.2 (W)  
Power Factor: 0.983

### Photometric measurements:

Absolute Luminous Flux: 7368 (lumens)  
Luminous Efficacy: 141.3 (lumens/W)

### Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	2505	2505	2505	2505	2505	
5	2505	2505	2505	2505	2505	93
15	2516	2516	2516	2516	2516	537
25	2387	2387	2387	2387	2387	970
35	2187	2187	2187	2187	2187	1283
45	1990	1990	1990	1990	1990	1487
55	1797	1797	1797	1797	1797	1604
65	789	789	789	789	789	1192
75	30	30	30	30	30	191
85	4	4	4	4	4	10
95	0	0	0	0	0	0
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

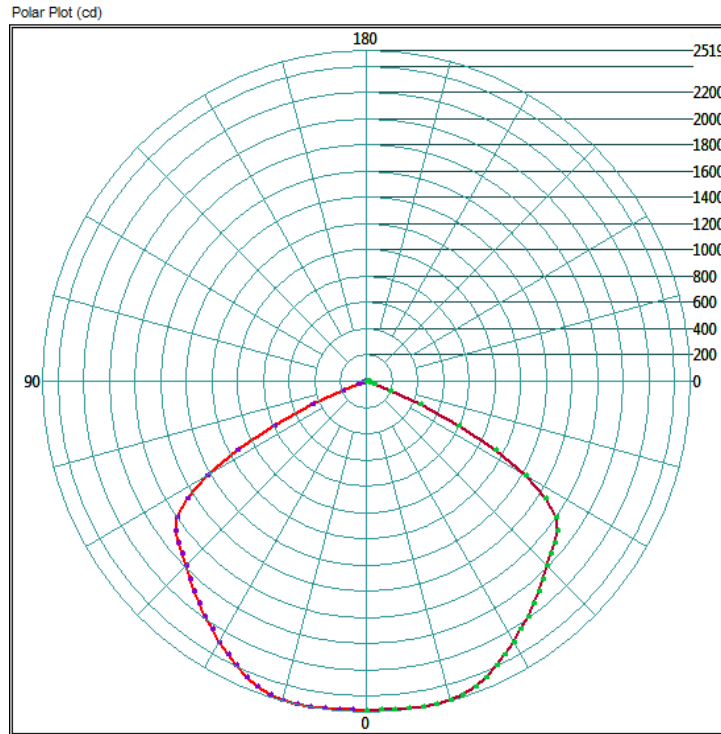
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	2210.08	30.0%
0-40	3607.36	49.0%
0-60	6695.2	90.9%
60-90	1011.68	13.7%
0-90	7368.16	100.0%
90-180	0	0.0%
0-180	7368.16	100.0%

## Test Results: Goniometer

Results continued from previous page.

### Polar Plot:

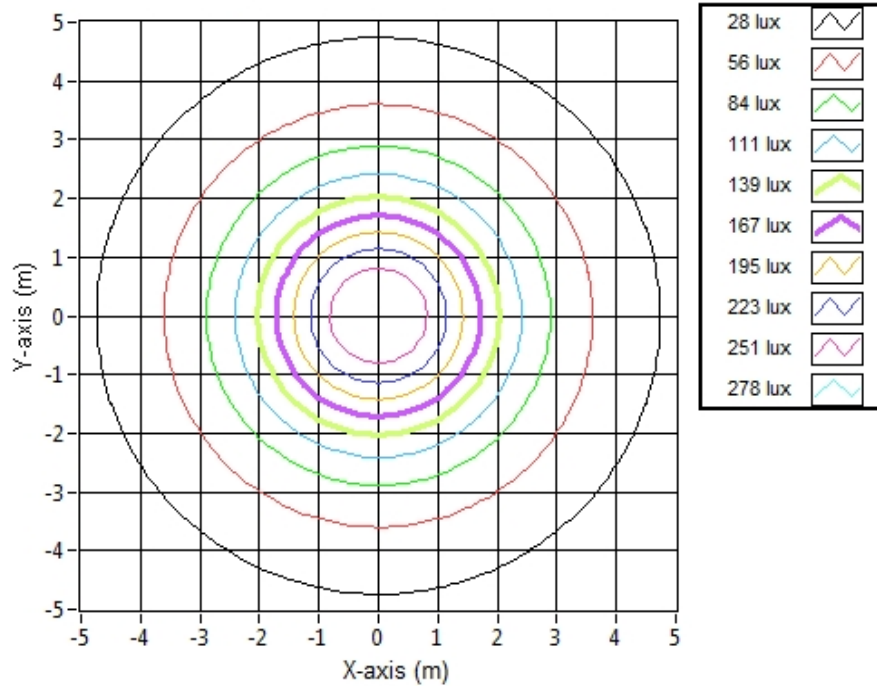


## Test Results: Goniometer

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	11.22	11.22	269.7
6.096	22.43	22.43	67.4
9.144	33.65	33.65	30.0
12.192	44.86	44.86	16.9
15.24	56.08	56.08	10.8
18.288	67.29	67.29	7.5
21.336	78.51	78.51	5.5
24.384	89.72	89.72	4.2
27.432	100.94	100.94	3.3
30.48	112.15	112.15	2.7

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18091.  
Dialight unit model number Lxx4WC27xxxxxN

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:

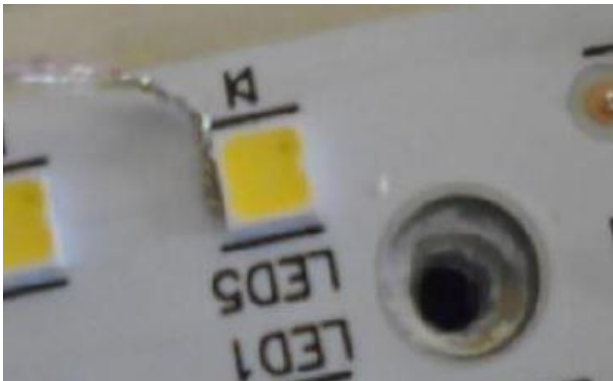
Maximum Power at Indicated Current: 0.24 (W)  
Maximum Source Temperature: 120.9 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25 \pm 5$  (°C)  
Ambient temperature at time of measurement: 24.2 (°C)  
Relative humidity at time of measurement: 22%

### Results:

**Measured LED source temperature: 49 (°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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Approved Signatory