

Test Report

Report Number: L18067

Date: Aug 21, 2018

Issued by:

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

Test of one Linear

Unit manufacturer: Dialight Corporation
Unit model number: LHx5WW29xxxxN

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: August 16, 2018 through August 20, 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

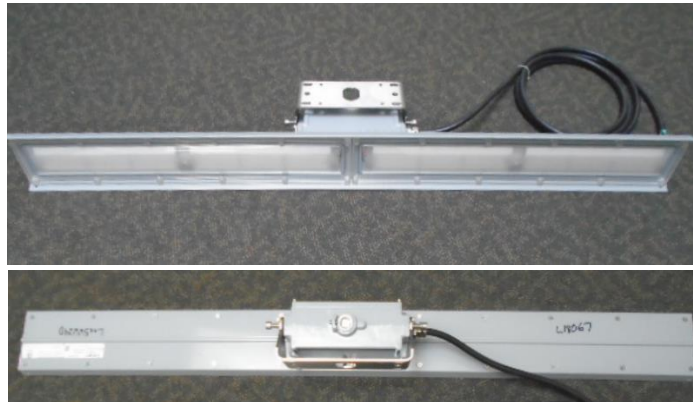
Description of sample:

Sample Number: L18067
Manufacturer: Dialight Corporation
Product Name: 4ft Top Conduit Linear
Description: Linear
Model Number: LHx5WW29xxxxN

Report Summary

Sample number L18067
Dialight unit model number LHx5WW29xxxxxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	8212 (lumens)	8201 (lumens)
Electrical Power:	70.8 (W)	71.0 (W)
Luminous Efficacy:	116 (lumens/W)	115.6 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 70.8 (W)
 Power Factor (120VAC): 0.995
 Current ATHD % (120VAC): 6.484
 Input Power (277VAC): 68.5 (W)
 Power Factor (277VAC): 0.95
 Current ATHD % (277VAC): 10.65

Color Measurements:

Correlated Color Temperature (CCT): 2631
 Color Rendering Index (CRI): 83.4
 Chromaticity Coordinate (x): 0.468
 Chromaticity Coordinate (y): 0.417
 Chromaticity Coordinate (u'): 0.265
 Chromaticity Coordinate (v'): 0.354
 DUV: 0.0015

Temperature Measurements:

In Situ LED Source Temperature: 51.2 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18067.

Dialight unit model number LHx5WW29xxxxxN

Test Conditions:

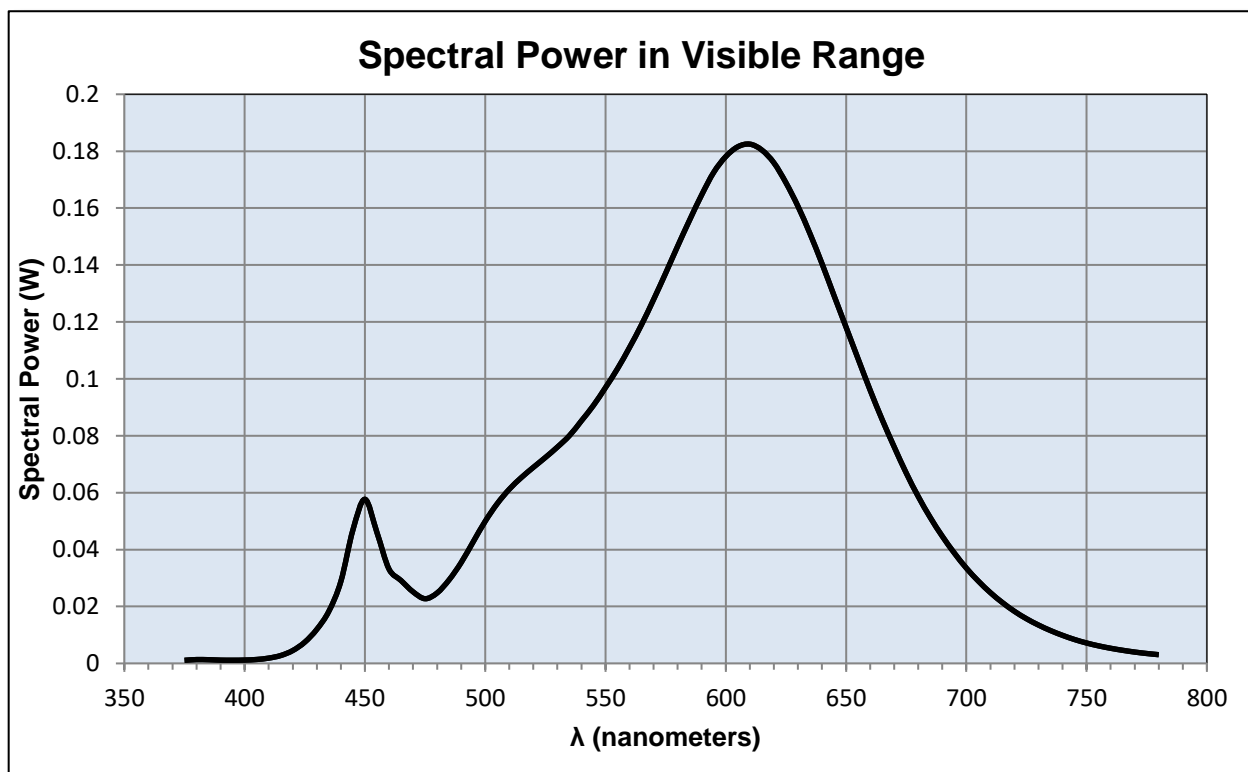
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
 Input Current: 0.592 (A)
 Input Power: 70.8 (W)
 Input Power Factor: 0.995
 Current ATHD: 6.484 (%)

Photometric measurements:

Luminous Flux: 8212 (lumens)
 Luminous Efficacy: 116.0 (lumens/W)
 Correlated Color Temperature (CCT): 2631 (K)
 CRI -Ra: 83.4
 CRI -R9: 11.6
 DUV: 0.0015
 CIE Coordinate (x): 0.468
 CIE Coordinate (y): 0.417
 CIE Coordinate (u'): 0.265
 CIE Coordinate (v'): 0.354



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	0.001	515	0.065	655	0.107
380	0.001	520	0.069	660	0.096
385	0.001	525	0.072	665	0.086
390	0.001	530	0.076	670	0.076
395	0.001	535	0.080	675	0.067
400	0.001	540	0.085	680	0.059
405	0.001	545	0.091	685	0.051
410	0.002	550	0.097	690	0.045
415	0.003	555	0.104	695	0.039
420	0.005	560	0.111	700	0.034
425	0.007	565	0.119	705	0.029
430	0.012	570	0.128	710	0.025
435	0.018	575	0.137	715	0.021
440	0.029	580	0.147	720	0.018
445	0.047	585	0.156	725	0.016
450	0.058	590	0.165	730	0.013
455	0.046	595	0.173	735	0.012
460	0.033	600	0.178	740	0.010
465	0.029	605	0.182	745	0.008
470	0.025	610	0.182	750	0.007
475	0.023	615	0.180	755	0.006
480	0.025	620	0.176	760	0.005
485	0.029	625	0.169	765	0.005
490	0.035	630	0.161	770	0.004
495	0.043	635	0.151	775	0.003
500	0.050	640	0.141	780	0.003
505	0.056	645	0.129		
510	0.061	650	0.118		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18067.
Dialight unit model number LHx5WW29xxxxxN

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.597 (A)
Input Power: 71.0 (W)
Power Factor: 0.99

Photometric measurements:

Absolute Luminous Flux: 8201 (lumens)
Luminous Efficacy: 115.6 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	3782	3782	3782	3782	3782	
5	3761	3761	3761	3761	3761	141
15	3597	3597	3597	3597	3597	782
25	3222	3222	3222	3222	3222	1337
35	2548	2548	2548	2548	2548	1596
45	1756	1756	1756	1756	1756	1468
55	1192	1192	1192	1192	1192	1175
65	814	814	814	814	814	910
75	431	431	431	431	431	598
85	41	41	41	41	41	192
95	0	0	0	0	0	3
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

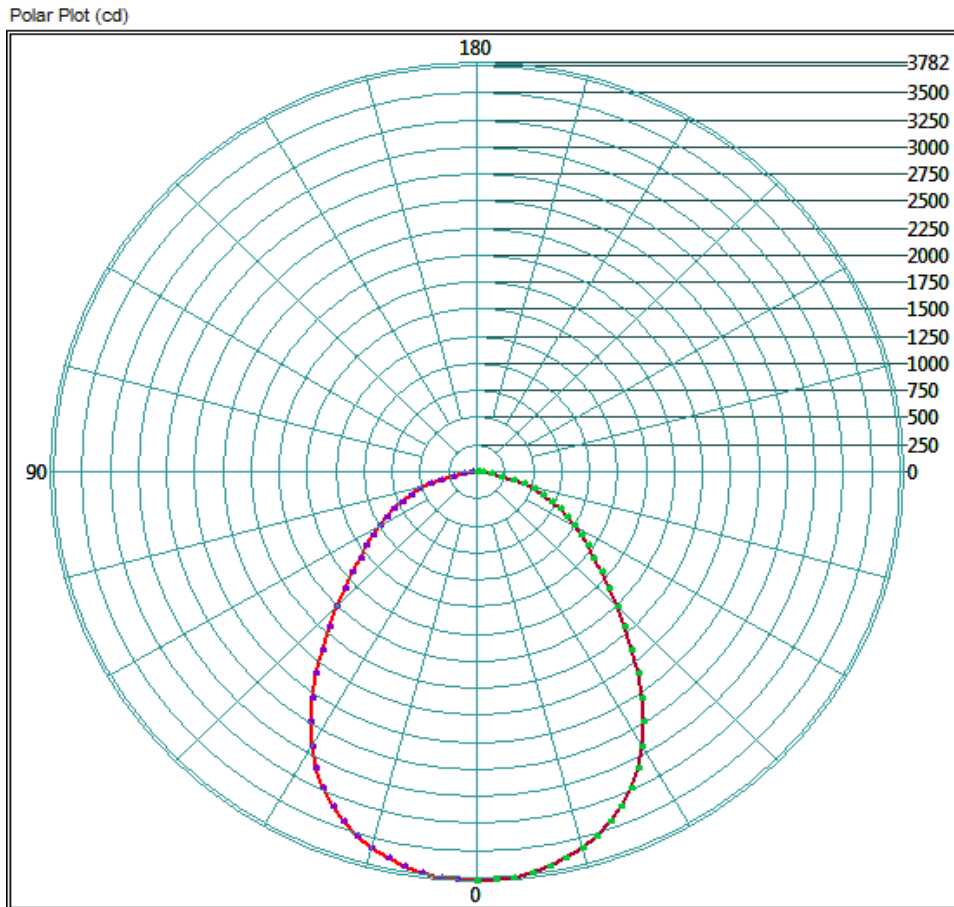
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	3050.72	37.2%
0-40	4623.52	56.4%
0-60	6986.24	85.2%
60-90	1451.2	17.7%
0-90	8201.44	100.0%
90-180	0	0.0%
0-180	8201.44	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

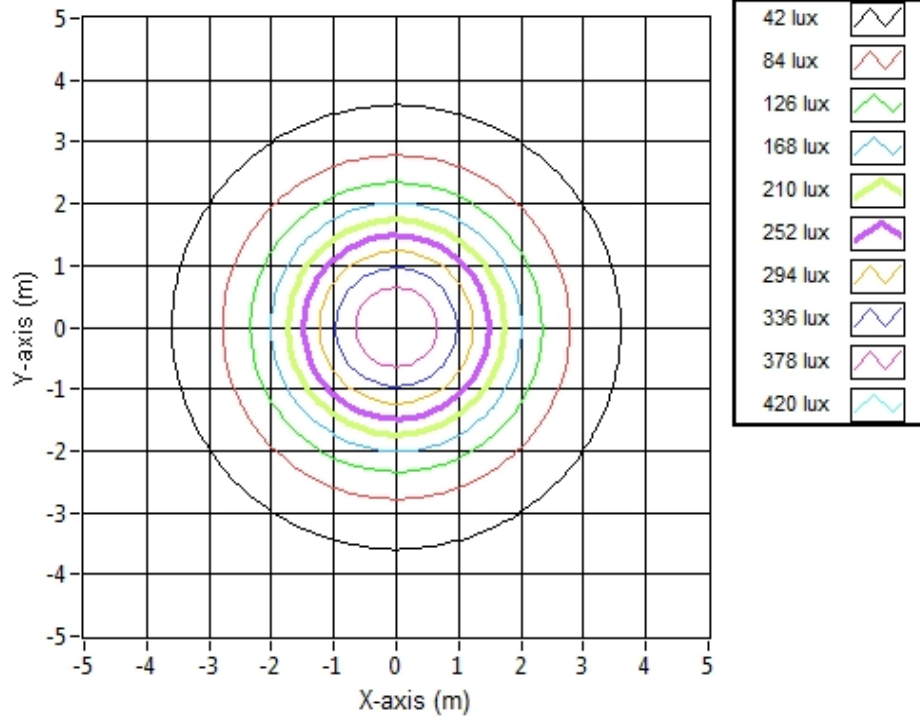


Test Results: Goniometer

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	5.72	5.72	407.1
6.096	11.44	11.44	101.8
9.144	17.16	17.16	45.2
12.192	22.88	22.88	25.4
15.24	28.59	28.59	16.3
18.288	34.31	34.31	11.3
21.336	40.03	40.03	8.3
24.384	45.75	45.75	6.4
27.432	51.47	51.47	5.0
30.48	57.19	57.19	4.1

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18067.

Dialight unit model number LHx5WW29xxxxxN

LED identified as Seoul part number SAW8C22B.

LED drive current (as indicated by customer): 52 (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:

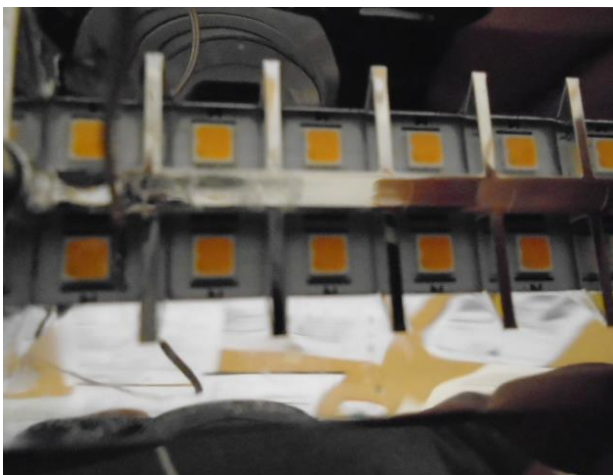
Maximum Power at Indicated Current: 0.312 (W)
Maximum Source Temperature: 119.7 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 5^{\circ}$ (°C)
Ambient temperature at time of measurement: 23.7 (°C)
Relative humidity at time of measurement: 48%

Results:

Measured LED source temperature: 51.2 (°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
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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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 Optical Engineer
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