

Test Report

Report Number: L18077

Date: Sep 28, 2018

Issued by:

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

Test of one Linear

Unit manufacturer: Dialight Corporation
Unit model number: LKx4WC29xxxxN

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: September 14, 2018 through September 25, 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

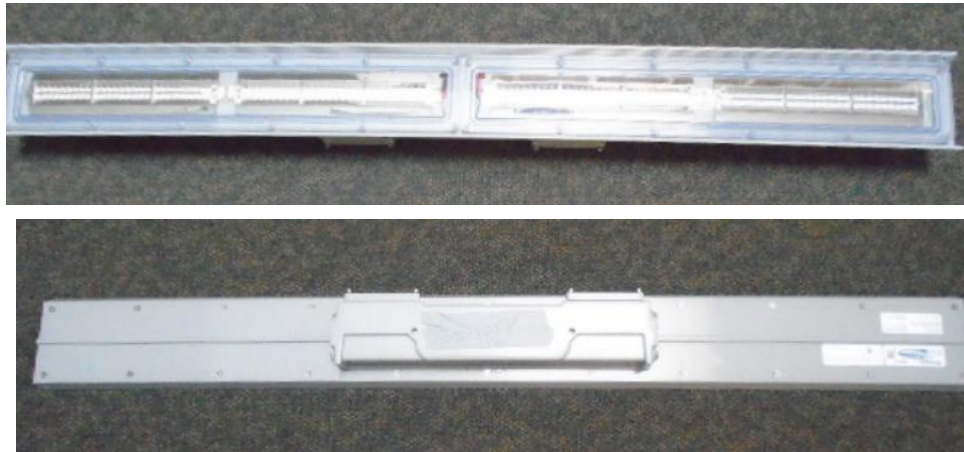
Description of sample:

Sample Number: L18077
Manufacturer: Dialight Corporation
Product Name: 4ft Low Profile Linear
Description: Linear
Model Number: LKx4WC29xxxxN

Report Summary

Sample number L18077
Dialight unit model number LKx4WC29xxxxxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	9776 (lumens)	9709 (lumens)
Electrical Power:	70.6 (W)	70.6 (W)
Luminous Efficacy:	138.5 (lumens/W)	137.4 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 70.6 (W)
Power Factor (120VAC): 0.995
Current ATHD % (120VAC): 6.229
Input Power (277VAC): 68.1 (W)
Power Factor (277VAC): 0.951
Current ATHD % (277VAC): 10.59

Color Measurements:

Correlated Color Temperature (CCT): 5048
Color Rendering Index (CRI): 85.5
Chromaticity Coordinate (x): 0.344
Chromaticity Coordinate (y): 0.353
Chromaticity Coordinate (u'): 0.21
Chromaticity Coordinate (v'): 0.323
DUV: 0.001

Temperature Measurements:

In Situ LED Source Temperature: 46.3 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18077.

Dialight unit model number LKx4WC29xxxxxN

Test Conditions:

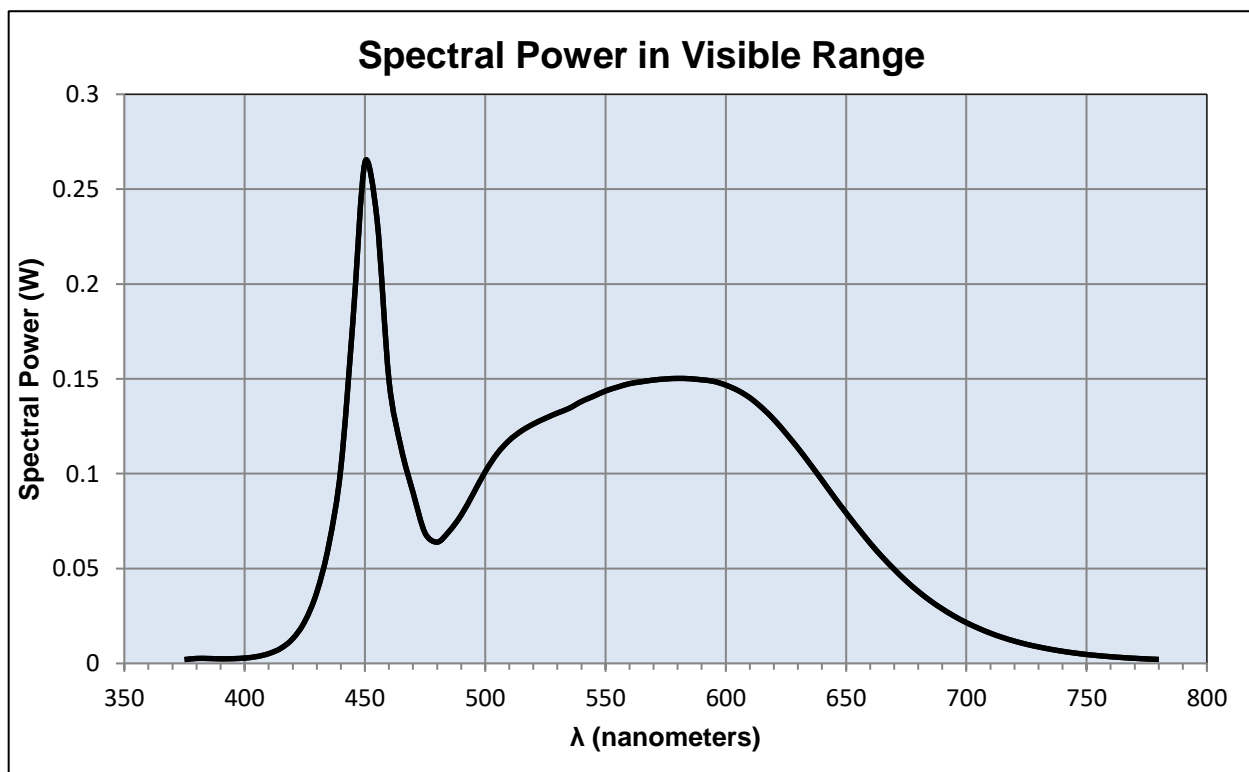
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
 Input Current: 0.591 (A)
 Input Power: 70.6 (W)
 Input Power Factor: 0.995
 Current ATHD: 6.229 (%)

Photometric measurements:

Luminous Flux: 9776 (lumens)
 Luminous Efficacy: 138.5 (lumens/W)
 Correlated Color Temperature (CCT): 5048 (K)
 CRI -Ra: 85.5
 CRI -R9: 21.6
 DUV: 0.001
 CIE Coordinate (x): 0.344
 CIE Coordinate (y): 0.353
 CIE Coordinate (u'): 0.21
 CIE Coordinate (v'): 0.323



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	0.002	515	0.122	655	0.071
380	0.003	520	0.126	660	0.063
385	0.003	525	0.129	665	0.056
390	0.002	530	0.132	670	0.050
395	0.003	535	0.135	675	0.043
400	0.003	540	0.138	680	0.038
405	0.004	545	0.141	685	0.033
410	0.005	550	0.144	690	0.029
415	0.008	555	0.146	695	0.025
420	0.013	560	0.147	700	0.022
425	0.022	565	0.148	705	0.019
430	0.038	570	0.149	710	0.016
435	0.063	575	0.150	715	0.014
440	0.103	580	0.150	720	0.012
445	0.180	585	0.150	725	0.010
450	0.264	590	0.149	730	0.009
455	0.234	595	0.149	735	0.007
460	0.149	600	0.147	740	0.006
465	0.114	605	0.144	745	0.005
470	0.090	610	0.140	750	0.005
475	0.069	615	0.135	755	0.004
480	0.064	620	0.129	760	0.004
485	0.070	625	0.121	765	0.003
490	0.078	630	0.114	770	0.003
495	0.089	635	0.105	775	0.002
500	0.101	640	0.097	780	0.002
505	0.111	645	0.088		
510	0.118	650	0.079		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18077.
Dialight unit model number LKx4WC29xxxxxN

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.595 (A)
Input Power: 70.6 (W)
Power Factor: 0.99

Photometric measurements:

Absolute Luminous Flux: 9709 (lumens)
Luminous Efficacy: 137.4 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	3292	3292	3292	3292	3292	
5	3300	3300	3300	3300	3300	123
15	3317	3317	3317	3317	3317	709
25	3149	3149	3149	3149	3149	1278
35	2887	2887	2887	2887	2887	1695
45	2633	2633	2633	2633	2633	1966
55	2379	2379	2379	2379	2379	2128
65	1029	1029	1029	1029	1029	1571
75	28	28	28	28	28	234
85	0	0	0	0	0	5
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

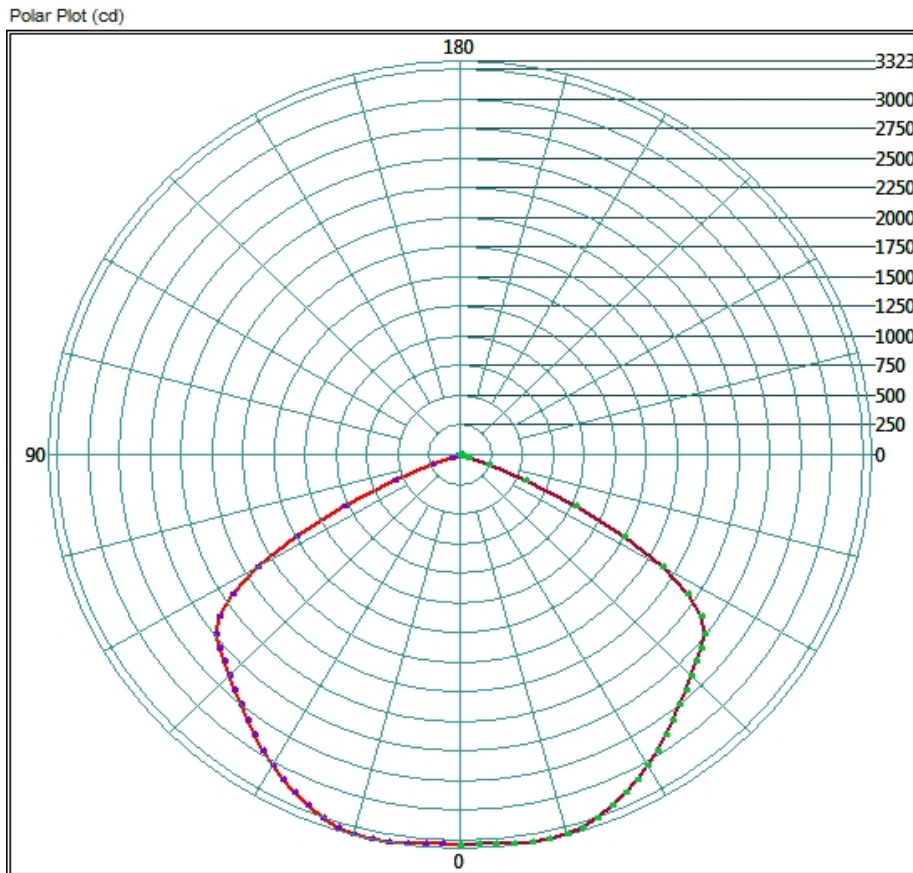
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	2916	30.0%
0-40	4761.76	49.0%
0-60	8852.8	91.2%
60-90	1304.16	13.4%
0-90	9709.12	100.0%
90-180	0	0.0%
0-180	9709.12	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

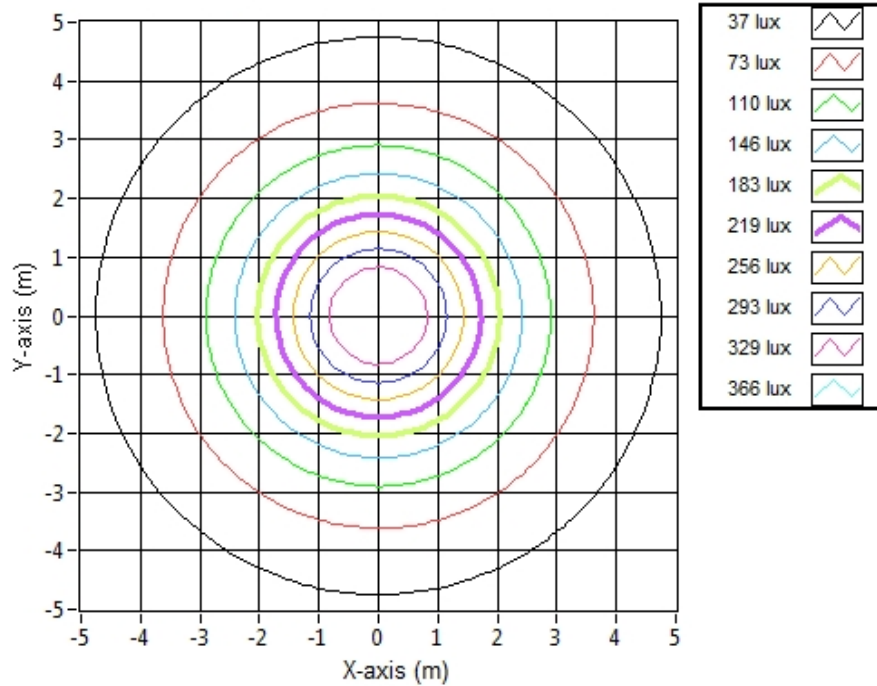


Test Results: Goniometer

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	11.23	11.23	354.4
6.096	22.47	22.47	88.6
9.144	33.70	33.70	39.4
12.192	44.93	44.93	22.1
15.24	56.17	56.17	14.2
18.288	67.40	67.40	9.8
21.336	78.64	78.64	7.2
24.384	89.87	89.87	5.5
27.432	101.10	101.10	4.4
30.48	112.34	112.34	3.5

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18077.
Dialight unit model number LKx4WC29xxxxxN

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 ± 5 (°C)
Ambient temperature at time of measurement: 23.9 (°C)
Relative humidity at time of measurement: 35%

Results:

Measured LED source temperature: 46.3 (°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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