

Test Report

Report Number: L18095

Date: Jan 23, 2019

Issued by:

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

Test of one Linear

Unit manufacturer: Dialight Corporation
Unit model number: LKx5WC29xxxxxN

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 2, 2019 through January 16, 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: L18095
Manufacturer: Dialight Corporation
Product Name: 4ft Linear
Description: Linear
Model Number: LKx5WC29xxxxxN

Report Summary

Sample number L18095
Dialight unit model number LKx5WC29xxxxxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	8515 (lumens)	8412 (lumens)
Electrical Power:	71.0 (W)	70.6 (W)
Luminous Efficacy:	120 (lumens/W)	119.1 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 71.0 (W)
Power Factor (120VAC): 0.995
Current ATHD % (120VAC): 6.393
Input Power (277VAC): 68.2 (W)
Power Factor (277VAC): 0.95
Current ATHD % (277VAC): 11.75

Color Measurements:

Correlated Color Temperature (CCT): 5167
Color Rendering Index (CRI): 85.93
Chromaticity Coordinate (x): 0.341
Chromaticity Coordinate (y): 0.350
Chromaticity Coordinate (u'): 0.209
Chromaticity Coordinate (v'): 0.483
DUV: 0.0012

Temperature Measurements:

In Situ LED Source Temperature: 50.9 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18095.

Dialight unit model number LKx5WC29xxxxxN

Test Conditions:

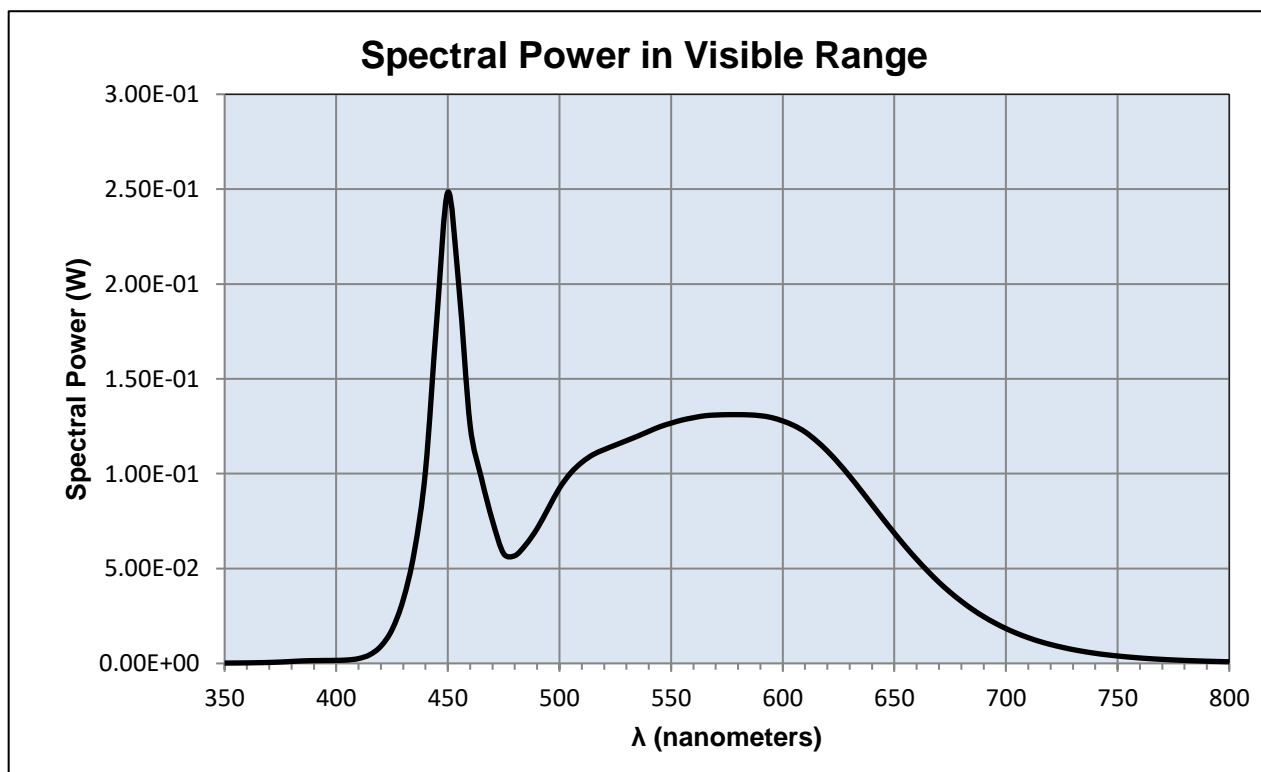
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 0.595 (A)
Input Power: 71.0 (W)
Input Power Factor: 0.995
Current ATHD: 6.393 (%)

Photometric measurements:

Luminous Flux: 8515 (lumens)
Luminous Efficacy: 120.0 (lumens/W)
Correlated Color Temperature (CCT): 5167 (K)
CRI -Ra: 85.93
CRI -R9: 24.19
DUV: 0.0012
CIE Coordinate (x): 0.341
CIE Coordinate (y): 0.350
CIE Coordinate (u'): 0.209
CIE Coordinate (v'): 0.483



Test Results: Integrating Sphere

Results continued from previous page.

Tabulated Spectral Power in Visible Range:

λ (nm)	(W/nm)	λ (nm)	(W/nm)	λ (nm)	(W/nm)	λ (nm)	(W/nm)
350	0.00019	490	0.07110	630	0.09868	770	0.00212
355	0.00023	495	0.08176	635	0.09125	775	0.00182
360	0.00029	500	0.09240	640	0.08365	780	0.00158
365	0.00039	505	0.10036	645	0.07608	785	0.00137
370	0.00052	510	0.10597	650	0.06868	790	0.00118
375	0.00073	515	0.11004	655	0.06156	795	0.00101
380	0.00103	520	0.11270	660	0.05486	800	0.00087
385	0.00133	525	0.11507	665	0.04859		
390	0.00147	530	0.11741	670	0.04275		
395	0.00155	535	0.11979	675	0.03750		
400	0.00161	540	0.12233	680	0.03276		
405	0.00182	545	0.12478	685	0.02847		
410	0.00256	550	0.12665	690	0.02467		
415	0.00458	555	0.12832	695	0.02133		
420	0.00907	560	0.12951	700	0.01837		
425	0.01780	565	0.13053	705	0.01581		
430	0.03354	570	0.13093	710	0.01356		
435	0.05905	575	0.13111	715	0.01161		
440	0.10183	580	0.13113	720	0.00996		
445	0.18040	585	0.13101	725	0.00855		
450	0.24842	590	0.13056	730	0.00730		
455	0.19770	595	0.12960	735	0.00625		
460	0.12521	600	0.12780	740	0.00533		
465	0.09786	605	0.12540	745	0.00457		
470	0.07517	610	0.12204	750	0.00392		
475	0.05786	615	0.11742	755	0.00337		
480	0.05679	620	0.11194	760	0.00287		
485	0.06272	625	0.10561	765	0.00247		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18095.
Dialight unit model number LKx5WC29xxxxxN

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.594 (A)
Input Power: 70.6 (W)
Power Factor: 0.991

Photometric measurements:

Absolute Luminous Flux: 8412 (lumens)
Luminous Efficacy: 119.1 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	3963	3963	3963	3963	3963	
5	3942	3942	3942	3942	3942	148
15	3778	3778	3778	3778	3778	820
25	3402	3402	3402	3402	3402	1409
35	2695	2695	2695	2695	2695	1687
45	1836	1836	1836	1836	1836	1545
55	1188	1188	1188	1188	1188	1197
65	766	766	766	766	766	874
75	398	398	398	398	398	555
85	32	32	32	32	32	174
95	0	0	0	0	0	2
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

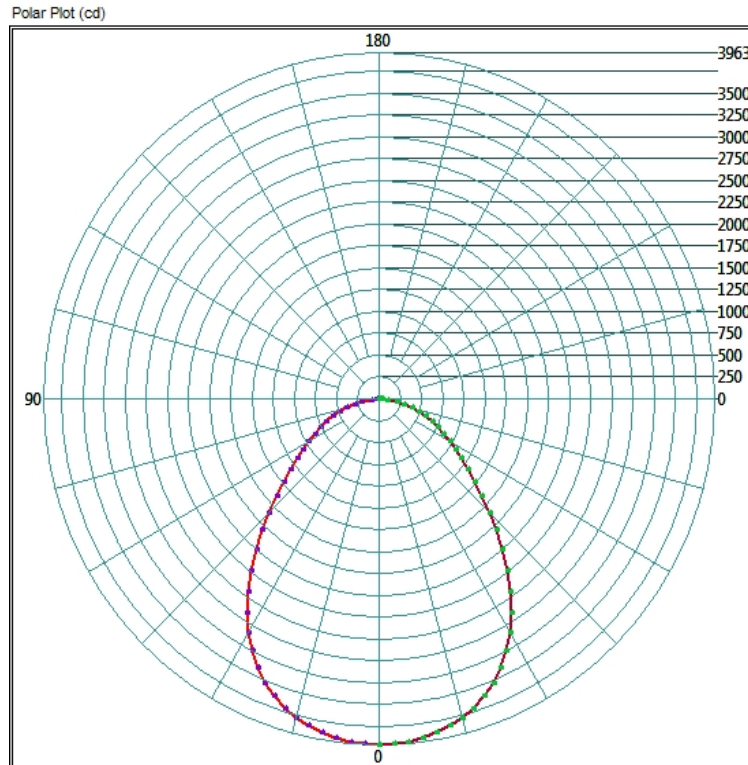
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	3213.12	38.2%
0-40	4875.36	58.0%
0-60	7280.96	86.6%
60-90	1358.4	16.1%
0-90	8411.68	100.0%
90-180	0	0.0%
0-180	8411.68	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

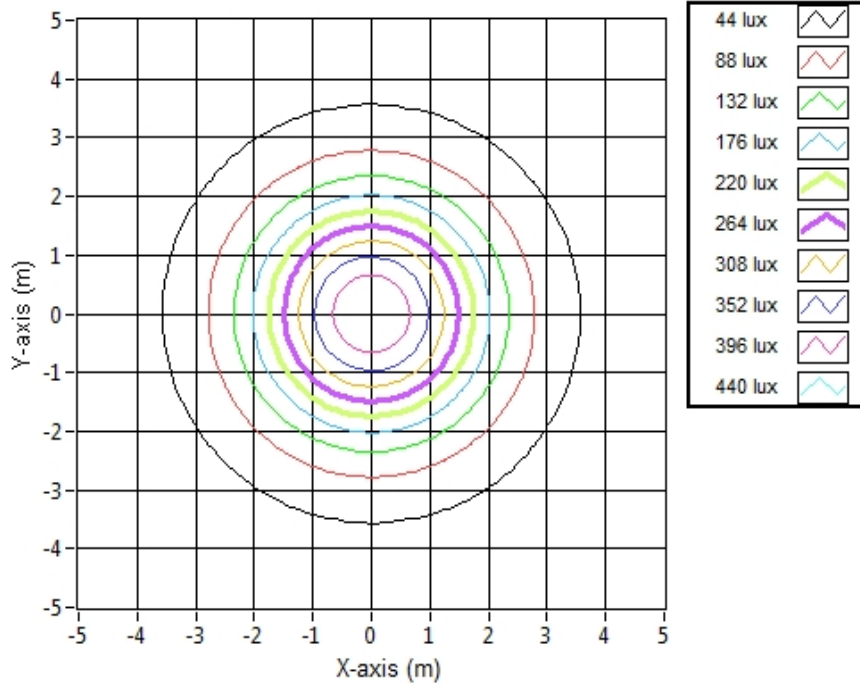


Test Results: Goniometer

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	5.73	5.73	426.5
6.096	11.46	11.46	106.6
9.144	17.19	17.19	47.4
12.192	22.91	22.91	26.7
15.24	28.64	28.64	17.1
18.288	34.37	34.37	11.8
21.336	40.10	40.10	8.7
24.384	45.83	45.83	6.7
27.432	51.56	51.56	5.3
30.48	57.29	57.29	4.3

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18095.
Dialight unit model number LKx5WC29xxxxxN

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:

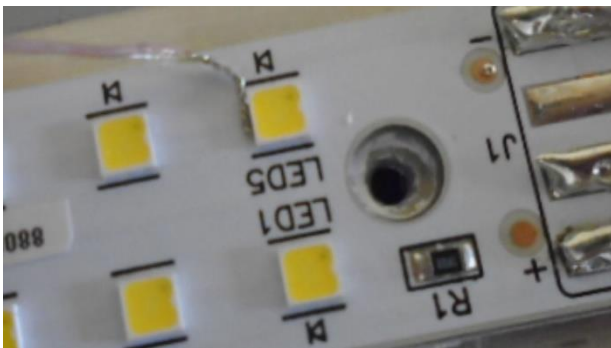
Maximum Power at Indicated Current: 0.312 (W)
Maximum Source Temperature: 119.7 (°C)

Test Conditions:

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

Results:

Measured LED source temperature: 50.9 (°C)



Equipment Used:

Equipment Name	Model Number
Omega TC	DPi8
YOKOGAWA Digital Power Meter	11/26/3981
LSI High Speed Mirror Goniometer	6240T
Elgar AC Power Supply	CW1251P
Sorensen DC Power Supply	XHR150-7
Dialight Confirmation Sample	HB1N4N
Dialight Confirmation Sample	HB1N4J
Fluke 8808A Digit Multimeter	8808A
Step-Up Transformer	
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
Fluke 971 Humdity Meter	8/28/1902
GwINSTEK DC Power Supply	GEP172679
Dialight Confirmation Sample	1/0/1900
Labsphere calibration lamp for 2M sphere	SCL-1400
Labshere 2M sphere	Illumia Plus 2600-1
Labshere Controller	PM-150-140
Labshere Spectrameter- CDS 2600 Spectrometer	CDS-2600
Xitron Power Analyzer	9/1/1907
LED Bulb for Electrical Confirmation Test-Gold Sample	Monte Carlo
LED Bulb for Electrical Confirmation Test-Gold Sample	Monte Carlo
LED Bulb for Electrical Confirmation Test-Gold Sample	Monte Carlo

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.

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Test Report Issued By:

Richard Huegi
Dialight Optics Laboratory
Senior Optical Engineering Technician
Lighting Division

Test Report Reviewed and Approved By:

Vishnu Shastry
Dialight Optics Laboratory
Optical Engineer
Approved Signatory