

Test Report

Report Number: L18080

Date: Sep 19, 2018

Issued by:

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

Test of one Linear

Unit manufacturer: Dialight Corporation
Unit model number: LGx4WW23xxxxN

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 19, 2018 through September 19, 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: L18080
Manufacturer: Dialight Corporation
Product Name: 2ft Linear
Description: Linear
Model Number: LGx4WW23xxxxN

Report Summary

Sample number L18080
Dialight unit model number LGx4WW23xxxxxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	2802 (lumens)	2807 (lumens)
Electrical Power:	22.7 (W)	22.8 (W)
Luminous Efficacy:	123.4 (lumens/W)	123.3 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 22.7 (W)
Power Factor (120VAC): 0.991
Current ATHD % (120VAC): 6.319
Input Power (277VAC): 22.7 (W)
Power Factor (277VAC): 0.907
Current ATHD % (277VAC): 16.66

Color Measurements:

Correlated Color Temperature (CCT): 2735
Color Rendering Index (CRI): 87.2
Chromaticity Coordinate (x): 0.452
Chromaticity Coordinate (y): 0.401
Chromaticity Coordinate (u'): 0.262
Chromaticity Coordinate (v'): 0.348
DUV: 0.0031

Temperature Measurements:

In Situ LED Source Temperature: 42.6 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18080.

Dialight unit model number LGx4WW23xxxxxN

Test Conditions:

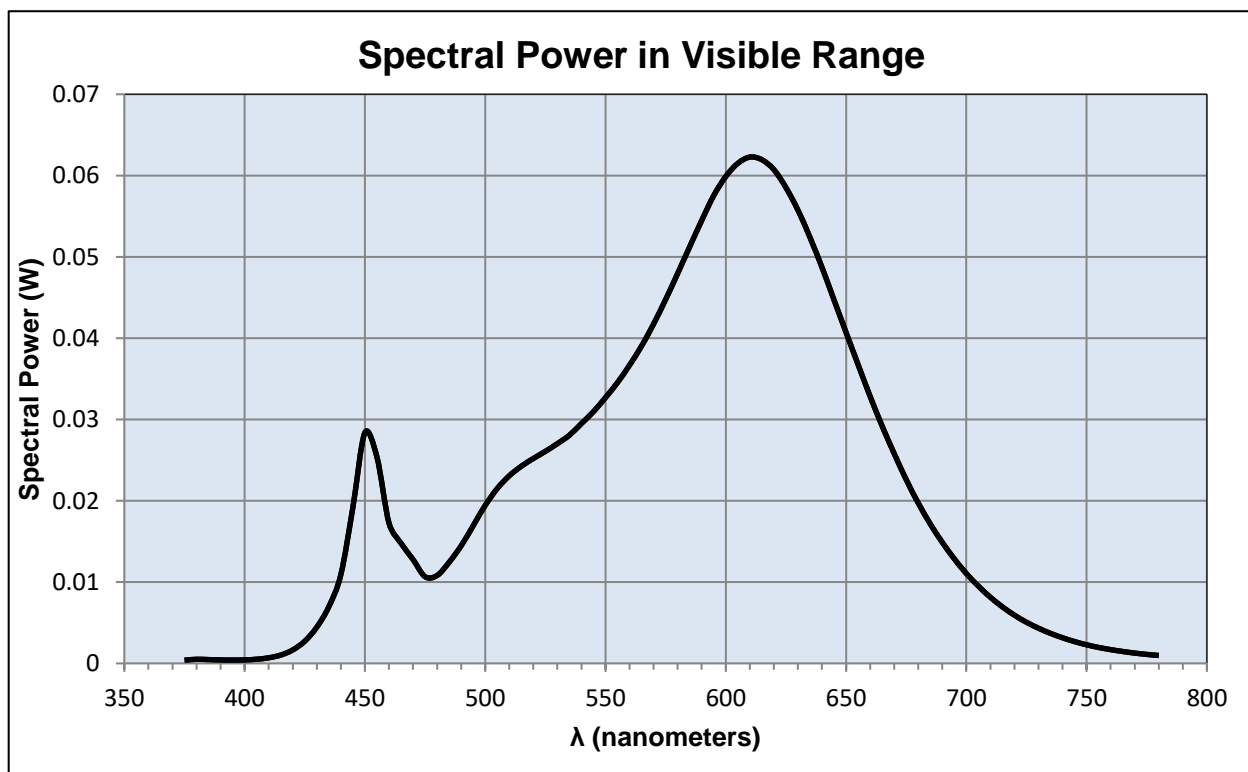
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
 Input Current: 0.19 (A)
 Input Power: 22.7 (W)
 Input Power Factor: 0.991
 Current ATHD: 6.319 (%)

Photometric measurements:

Luminous Flux: 2802 (lumens)
 Luminous Efficacy: 123.4 (lumens/W)
 Correlated Color Temperature (CCT): 2735 (K)
 CRI -Ra: 87.2
 CRI -R9: 26.6
 DUV: 0.0031
 CIE Coordinate (x): 0.452
 CIE Coordinate (y): 0.401
 CIE Coordinate (u'): 0.262
 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	0.024	655	0.037
380	0.001	520	0.025	660	0.033
385	0.000	525	0.026	665	0.029
390	0.000	530	0.027	670	0.026
395	0.000	535	0.028	675	0.023
400	0.000	540	0.030	680	0.020
405	0.001	545	0.031	685	0.017
410	0.001	550	0.033	690	0.015
415	0.001	555	0.035	695	0.013
420	0.002	560	0.037	700	0.011
425	0.003	565	0.039	705	0.010
430	0.004	570	0.042	710	0.008
435	0.007	575	0.045	715	0.007
440	0.011	580	0.048	720	0.006
445	0.019	585	0.051	725	0.005
450	0.028	590	0.054	730	0.004
455	0.025	595	0.058	735	0.004
460	0.017	600	0.060	740	0.003
465	0.015	605	0.062	745	0.003
470	0.013	610	0.062	750	0.002
475	0.011	615	0.062	755	0.002
480	0.011	620	0.061	760	0.002
485	0.012	625	0.059	765	0.001
490	0.014	630	0.056	770	0.001
495	0.017	635	0.052	775	0.001
500	0.019	640	0.049	780	0.001
505	0.022	645	0.045		
510	0.023	650	0.041		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18080.
Dialight unit model number LGx4WW23xxxxxN

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.192 (A)
Input Power: 22.8 (W)
Power Factor: 0.987

Photometric measurements:

Absolute Luminous Flux: 2807 (lumens)
Luminous Efficacy: 123.3 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	971	971	971	971	971	
5	975	975	975	975	975	36
15	975	975	975	975	975	209
25	917	917	917	917	917	373
35	834	834	834	834	834	492
45	752	752	752	752	752	563
55	694	694	694	694	694	611
65	292	292	292	292	292	456
75	10	10	10	10	10	62
85	2	2	2	2	2	4
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

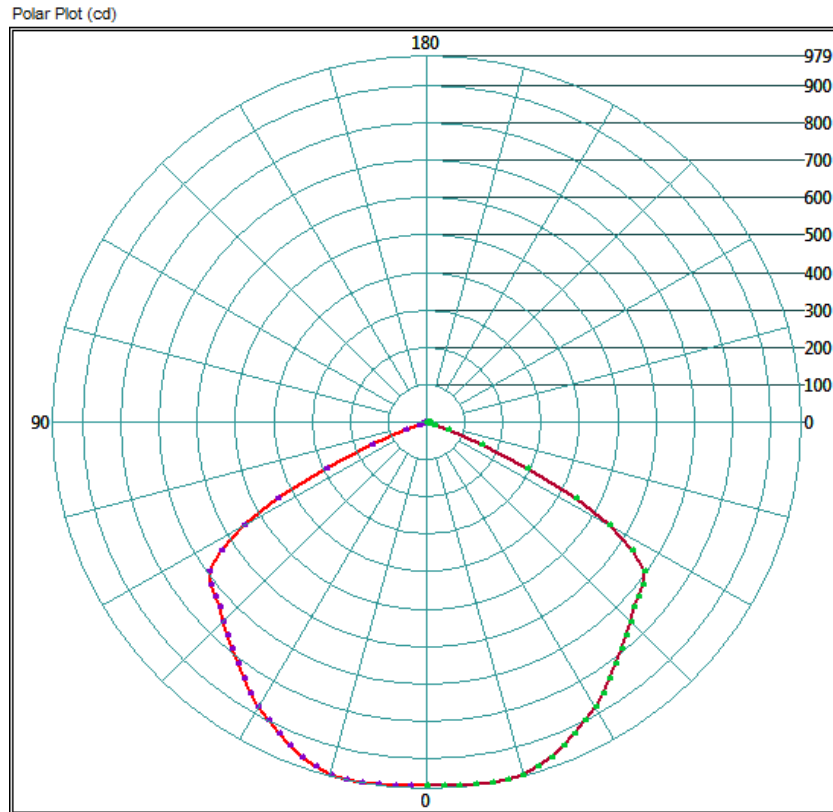
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	852.8	30.4%
0-40	1384.96	49.3%
0-60	2561.6	91.3%
60-90	376	13.4%
0-90	2807.04	100.0%
90-180	0	0.0%
0-180	2807.04	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

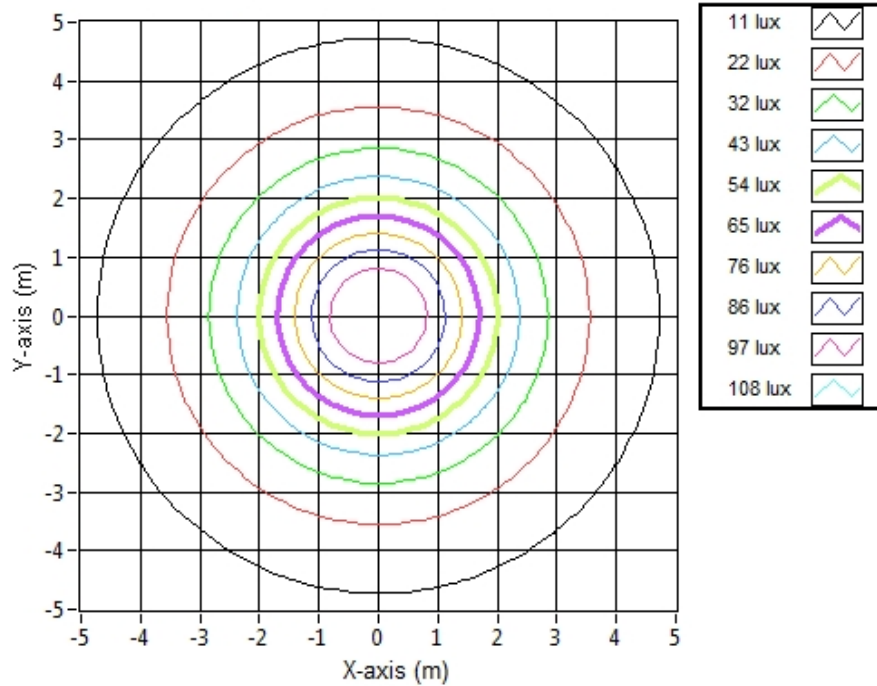


Test Results: Goniometer

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	11.20	11.20	104.5
6.096	22.41	22.41	26.1
9.144	33.61	33.61	11.6
12.192	44.81	44.81	6.5
15.24	56.01	56.01	4.2
18.288	67.22	67.22	2.9
21.336	78.42	78.42	2.1
24.384	89.62	89.62	1.6
27.432	100.83	100.83	1.3
30.48	112.03	112.03	1.0

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18080.

Dialight unit model number LGx4WW23xxxxxN

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: 24.4 (°C)

Relative humidity at time of measurement: 59%

Results:

Measured LED source temperature: 42.6 (°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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