

Test Report

Report Number: L18034

Date: May 29, 2018

Issued by:

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

Test of one 2ft Low Profile
Unit manufacturer: Dialight Corporation
Unit model number: LJx5WN23xxxxN

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: May 21, 2018 through May 23, 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: L18034
Manufacturer: Dialight Corporation
Product Name: 2ft Low Profile
Description: 2ft Low Profile
Model Number: LJx5WN23xxxxN

Report Summary

Sample number L18034
Dialight unit model number LJx5WN23xxxxxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	2760 (lumens)	2736 (lumens)
Electrical Power:	22.8 (W)	22.8 (W)
Luminous Efficacy:	121.2 (lumens/W)	120 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 22.8 (W)
 Power Factor (120VAC): 0.989
 Current ATHD % (120VAC): 7.451
 Input Power (277VAC): 22.8 (W)
 Power Factor (277VAC): 0.904
 Current ATHD % (277VAC): 16.09

Color Measurements:

Correlated Color Temperature (CCT): 3903
 Color Rendering Index (CRI): 85.4
 Chromaticity Coordinate (x): 0.385
 Chromaticity Coordinate (y): 0.382
 Chromaticity Coordinate (u'): 0.227
 Chromaticity Coordinate (v'): 0.336
 DUV: 0.0008

Temperature Measurements:

In Situ LED Source Temperature: 42.3 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18034.

Dialight unit model number LJx5WN23xxxxxN

Test Conditions:

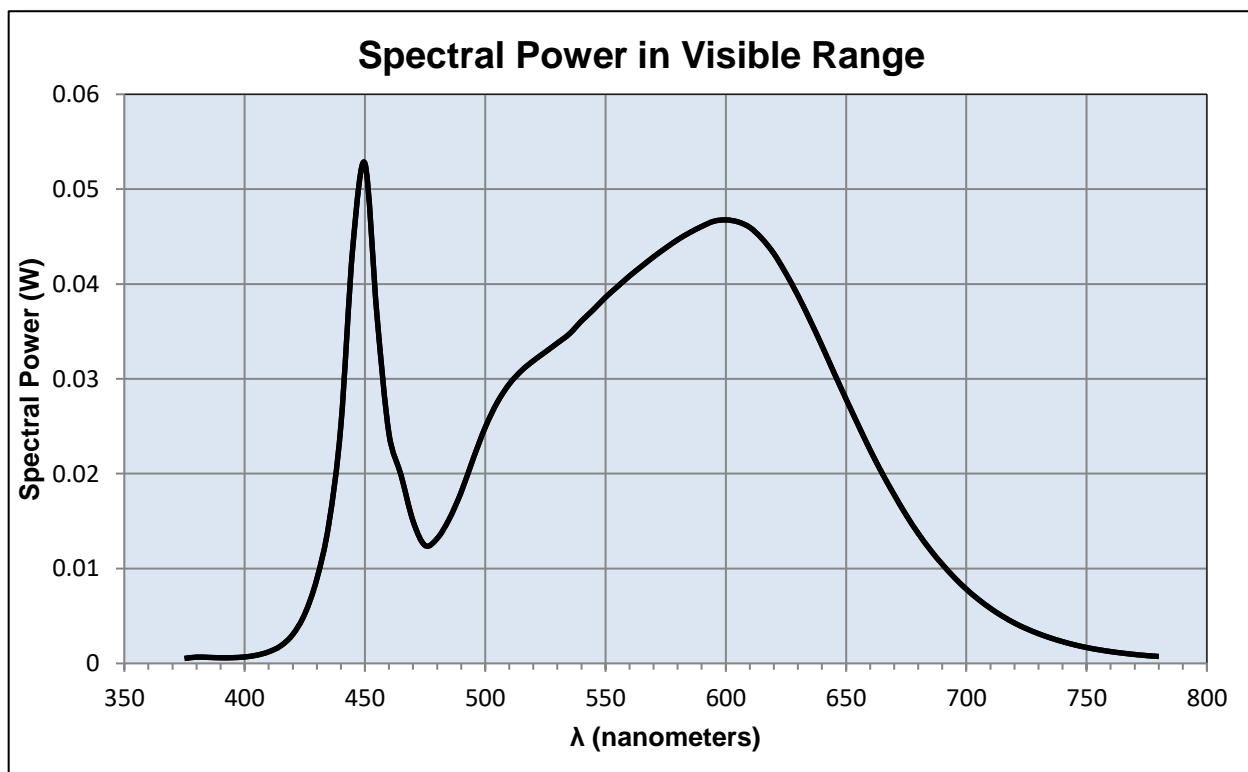
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
 Input Current: 0.191 (A)
 Input Power: 22.8 (W)
 Input Power Factor: 0.989
 Current ATHD: 7.451 (%)

Photometric measurements:

Luminous Flux: 2760 (lumens)
 Luminous Efficacy: 121.2 (lumens/W)
 Correlated Color Temperature (CCT): 3903 (K)
 CRI -Ra: 85.4
 CRI -R9: 23.3
 DUV: 0.0008
 CIE Coordinate (x): 0.385
 CIE Coordinate (y): 0.382
 CIE Coordinate (u'): 0.227
 CIE Coordinate (v'): 0.336



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	0.031	655	0.025
380	0.001	520	0.032	660	0.023
385	0.001	525	0.033	665	0.020
390	0.001	530	0.034	670	0.018
395	0.001	535	0.035	675	0.016
400	0.001	540	0.036	680	0.014
405	0.001	545	0.037	685	0.012
410	0.001	550	0.039	690	0.010
415	0.002	555	0.040	695	0.009
420	0.003	560	0.041	700	0.008
425	0.005	565	0.042	705	0.007
430	0.009	570	0.043	710	0.006
435	0.015	575	0.044	715	0.005
440	0.025	580	0.045	720	0.004
445	0.044	585	0.045	725	0.004
450	0.053	590	0.046	730	0.003
455	0.037	595	0.047	735	0.003
460	0.024	600	0.047	740	0.002
465	0.020	605	0.047	745	0.002
470	0.015	610	0.046	750	0.002
475	0.012	615	0.045	755	0.001
480	0.013	620	0.043	760	0.001
485	0.015	625	0.041	765	0.001
490	0.018	630	0.039	770	0.001
495	0.022	635	0.036	775	0.001
500	0.025	640	0.033	780	0.001
505	0.028	645	0.031		
510	0.029	650	0.028		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18034.
Dialight unit model number LJx5WN23xxxxxN

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.192 (A)
Input Power: 22.8 (W)
Power Factor: 0.988

Photometric measurements:

Absolute Luminous Flux: 2736 (lumens)
Luminous Efficacy: 120.0 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	1418	1418	1418	1418	1418	
5	1408	1408	1408	1408	1408	53
15	1324	1324	1324	1324	1324	290
25	1139	1139	1139	1139	1139	480
35	855	855	855	855	855	546
45	567	567	567	567	567	481
55	371	371	371	371	371	372
65	246	246	246	246	246	278
75	128	128	128	128	128	179
85	11	11	11	11	11	56
95	0	0	0	0	0	1
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

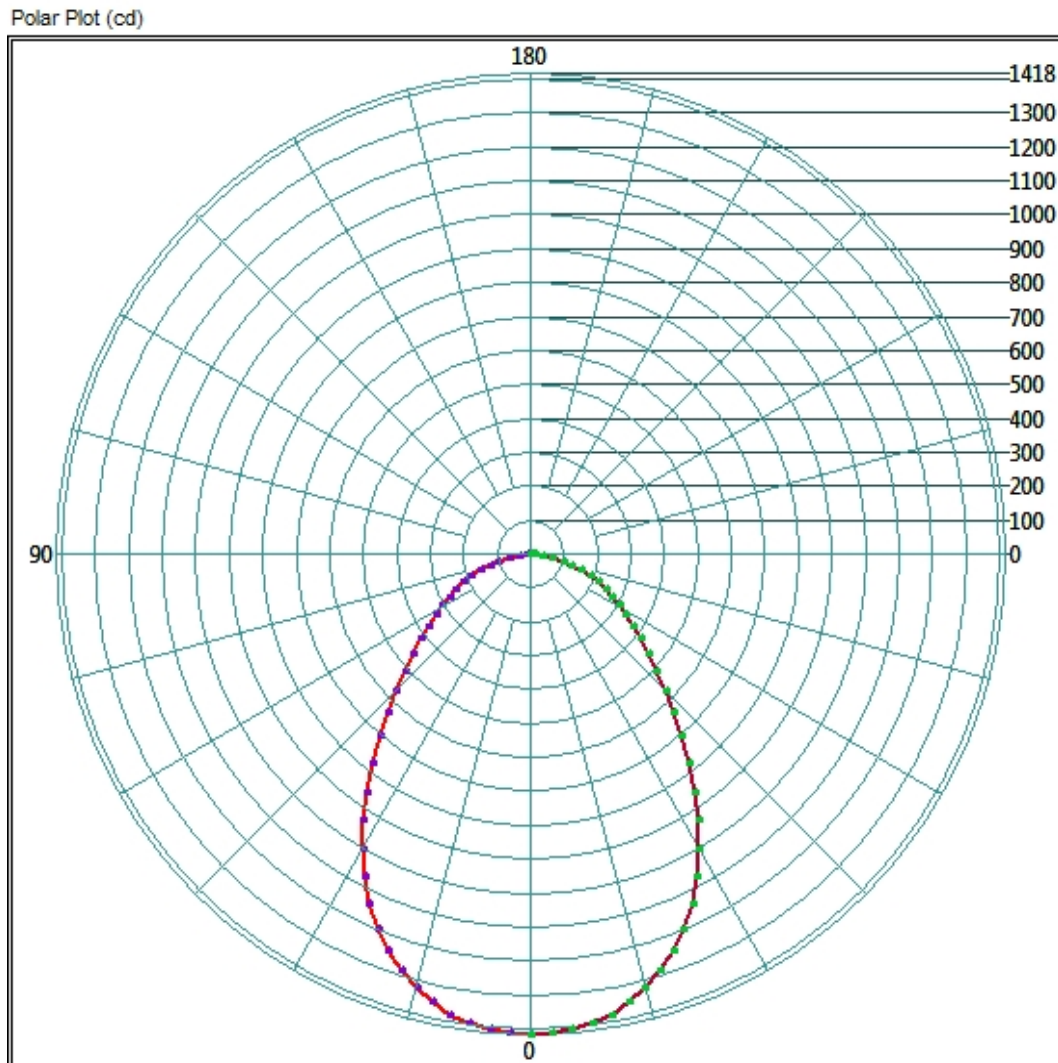
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1096.96	40.1%
0-40	1622.72	59.3%
0-60	2371.36	86.7%
60-90	436.32	16.0%
0-90	2735.52	100.0%
90-180	0	0.0%
0-180	2735.52	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

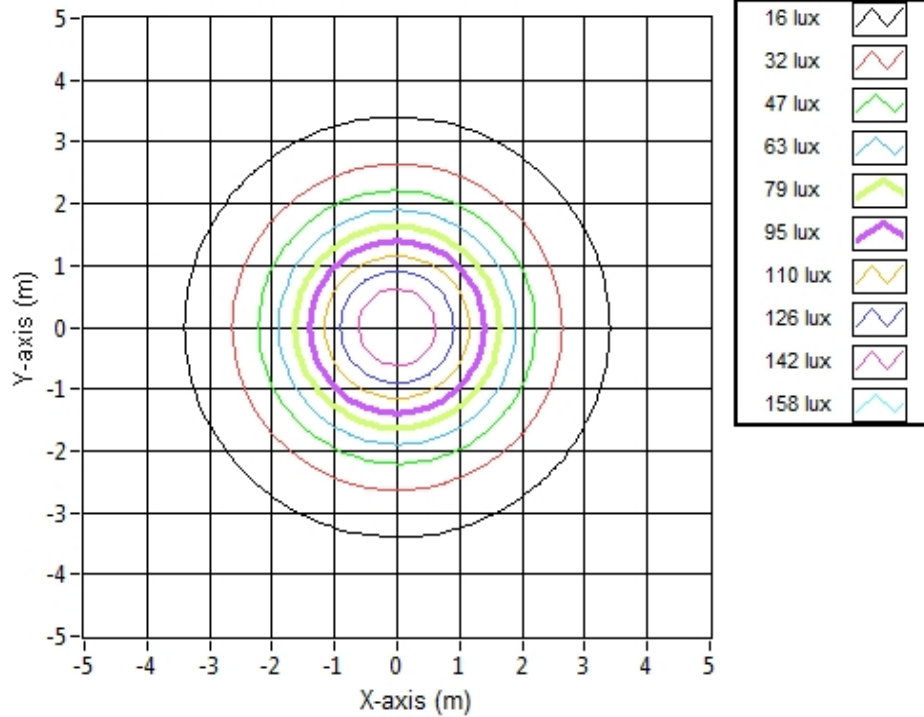


Test Results: Goniometer

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	5.08	5.08	152.6
6.096	10.16	10.16	38.1
9.144	15.25	15.25	17.0
12.192	20.33	20.33	9.5
15.24	25.41	25.41	6.1
18.288	30.49	30.49	4.2
21.336	35.57	35.57	3.1
24.384	40.66	40.66	2.4
27.432	45.74	45.74	1.9
30.48	50.82	50.82	1.5

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18034.
Dialight unit model number LJx5WN23xxxxxN

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:

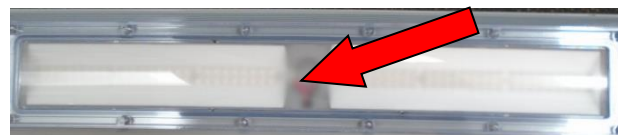
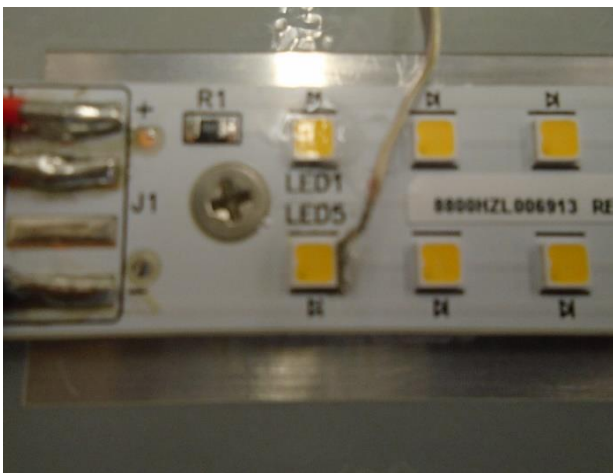
Maximum Power at Indicated Current: 0.24 (W)
Maximum Source Temperature: 120.9 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 5^{\circ}$ (°C)
Ambient temperature at time of measurement: 24 (°C)
Relative humidity at time of measurement: 20%

Results:

Measured LED source temperature: 42.3 (°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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