Test Report

Report Number: L18079 Date: Oct 17, 2018

Issued by:
Dialight Optics Laboratory
1501 Route 34 South, Farmingdale, NJ 07727

Test of one Linear
Unit manufacturer: Dialight Corporation
Unit model number: LJx4WN23xxxxxN

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: October 15, 2018 through October 17, 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: L18079
Manufacturer: Dialight Corporation
Product Name: 2ft Linear
Description: Linear
Model Number: LJx4WN23xxxxxN

Report Summary

Sample number L18079
Dialight unit model number LJx4WN23xxxxxN

Photograph(s) of sample:

*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere		Goniophotometer	
Luminous Flux:	3272	(lumens)	3203	(lumens)
Electrical Power:	22.9	(W)	22.9	(W)
Luminous Efficacy:	142.8	(lumens/W)	139.9	(lumens/W)

Electrical Measurements:

Input Power (277VAC):	22.9	(W)
Power Factor (277VAC):	0.99	
Current ATHD % (277VAC):	9.552	
Input Power (120VAC):	22.8	(W)
Power Factor (120VAC):	0.905	
Current ATHD % (120VAC):	10.71	

Color Measurements:

Correlated Color Temperature (CCT):	3937
Color Rendering Index (CRI):	83.68
Chromaticity Coordinate (x):	0.385
Chromaticity Coordinate (y):	0.383
Chromaticity Coordinate (u'):	0.225
Chromaticity Coordinate (v'):	0.505
DUV:	0.0019

Temperature Measurements:

In Situ LED Source Temperature:	41.8	(°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18079.
Dialight unit model number LJx4WN23xxxxxN

Test Conditions:

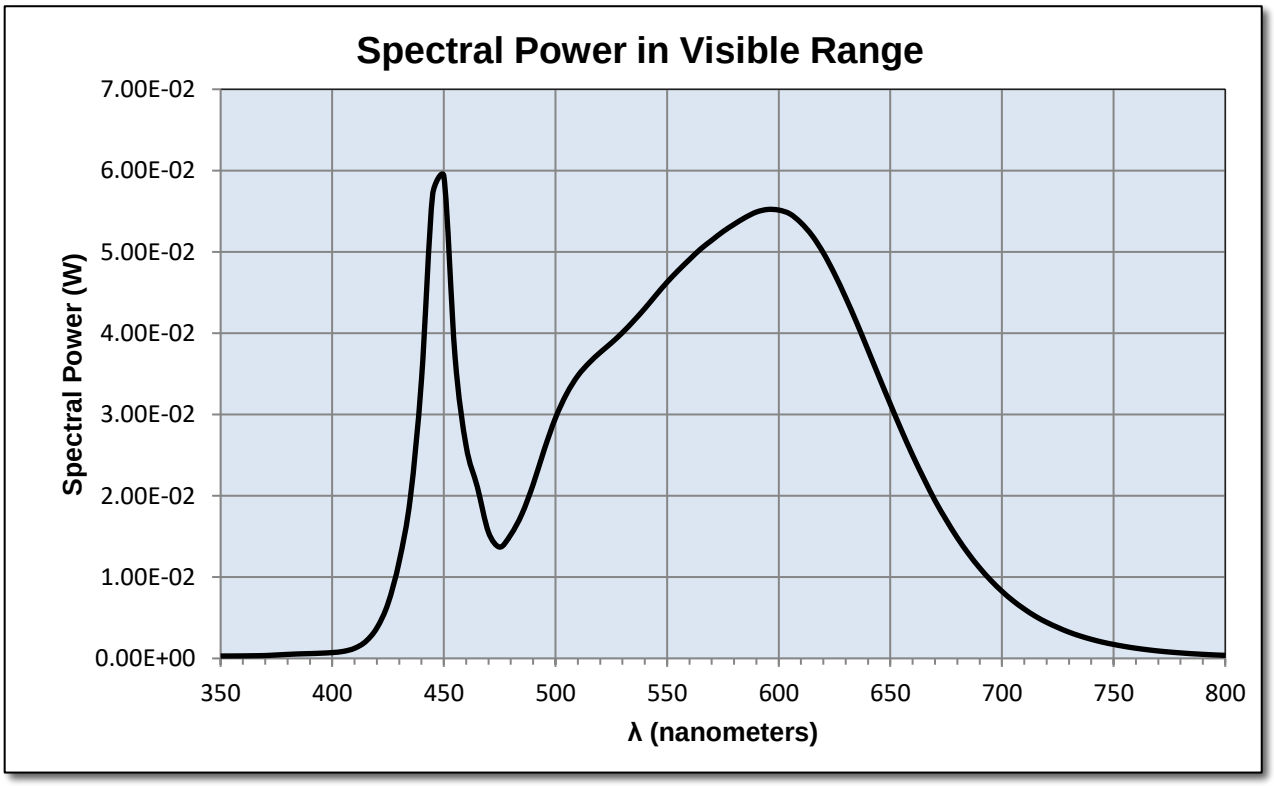
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	0.193	(A)
Input Power:	22.9	(W)
Input Power Factor:	0.99	
Current ATHD:	9.552	(%)

Photometric measurements:

Luminous Flux:	3272	(lumens)
Luminous Efficacy:	142.8	(lumens/W)
Correlated Color Temperature (CCT):	3937	(K)
CRI -Ra:	83.68	
CRI -R9:	15.1	
DUV:	0.0019	
CIE Coordinate (x):	0.385	
CIE Coordinate (y):	0.383	
CIE Coordinate (u'):	0.225	
CIE Coordinate (v'):	0.505	



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	0.00030	**490**	0.02140	**630**	0.04437	**770**	0.00092
355	0.00030	**495**	0.02570	**635**	0.04124	**775**	0.00079
360	0.00031	**500**	0.02957	**640**	0.03792	**780**	0.00068
365	0.00033	**505**	0.03255	**645**	0.03457	**785**	0.00058
370	0.00036	**510**	0.03476	**650**	0.03127	**790**	0.00050
375	0.00043	**515**	0.03633	**655**	0.02805	**795**	0.00043
380	0.00050	**520**	0.03762	**660**	0.02497	**800**	0.00038
385	0.00056	**525**	0.03879	**665**	0.02212		
390	0.00059	**530**	0.04007	**670**	0.01942		
395	0.00064	**535**	0.04150	**675**	0.01704		
400	0.00072	**540**	0.04304	**680**	0.01484		
405	0.00087	**545**	0.04468	**685**	0.01288		
410	0.00125	**550**	0.04627	**690**	0.01113		
415	0.00208	**555**	0.04771	**695**	0.00961		
420	0.00375	**560**	0.04906	**700**	0.00825		
425	0.00677	**565**	0.05035	**705**	0.00708		
430	0.01194	**570**	0.05143	**710**	0.00607		
435	0.01978	**575**	0.05249	**715**	0.00518		
440	0.03433	**580**	0.05339	**720**	0.00444		
445	0.05709	**585**	0.05423	**725**	0.00380		
450	0.05931	**590**	0.05490	**730**	0.00323		
455	0.03715	**595**	0.05522	**735**	0.00276		
460	0.02610	**600**	0.05515	**740**	0.00235		
465	0.02110	**605**	0.05468	**745**	0.00201		
470	0.01551	**610**	0.05357	**750**	0.00172		
475	0.01369	**615**	0.05199	**755**	0.00147		
480	0.01523	**620**	0.04987	**760**	0.00125		
485	0.01778	**625**	0.04729	**765**	0.00107		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18079.
Dialight unit model number LJx4WN23xxxxxN

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	0.193	(A)
Input Power:	22.9	(W)
Power Factor:	0.987	

Photometric measurements:

Absolute Luminous Flux:	3203	(lumens)
Luminous Efficacy:	139.9	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	1097	1097	1097	1097	1097	
5	1102	1102	1102	1102	1102	41
15	1105	1105	1105	1105	1105	236
25	1043	1043	1043	1043	1043	424
35	954	954	954	954	954	561
45	861	861	861	861	861	645
55	782	782	782	782	782	697
65	335	335	335	335	335	515
75	16	16	16	16	16	78
85	1	1	1	1	1	6
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

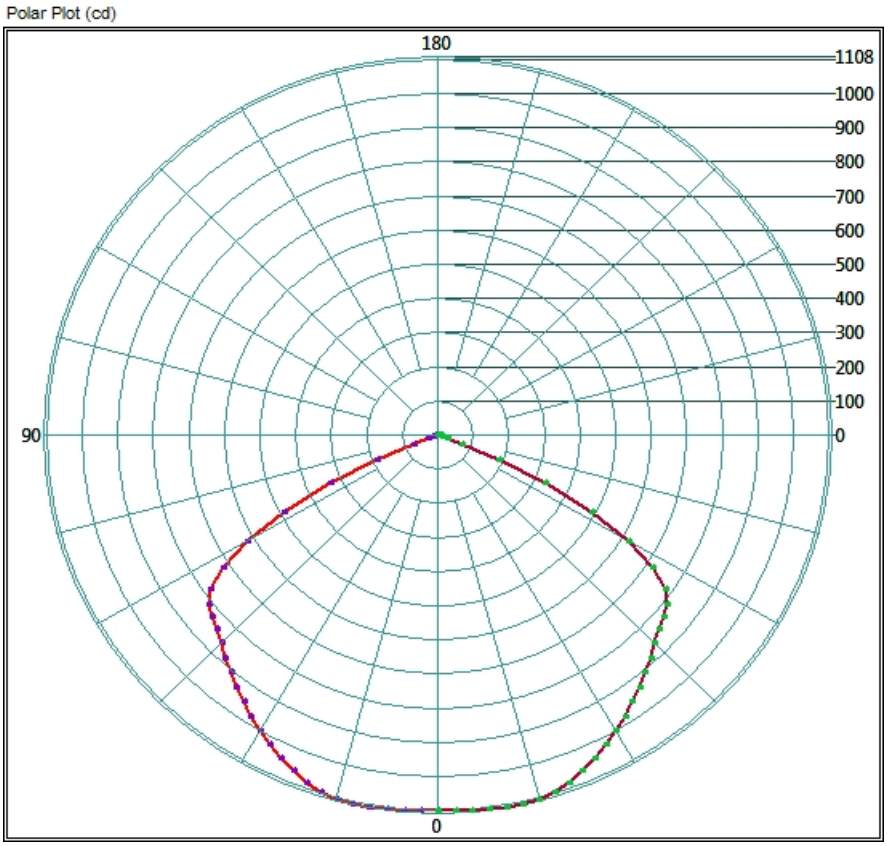
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	968.32	30.2%
0-40	1577.28	49.2%
0-60	2917.28	91.1%
60-90	432.64	13.5%
0-90	3203.36	100.0%
90-180	0	0.0%
0-180	3203.36	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:



Test Results: Goniometer

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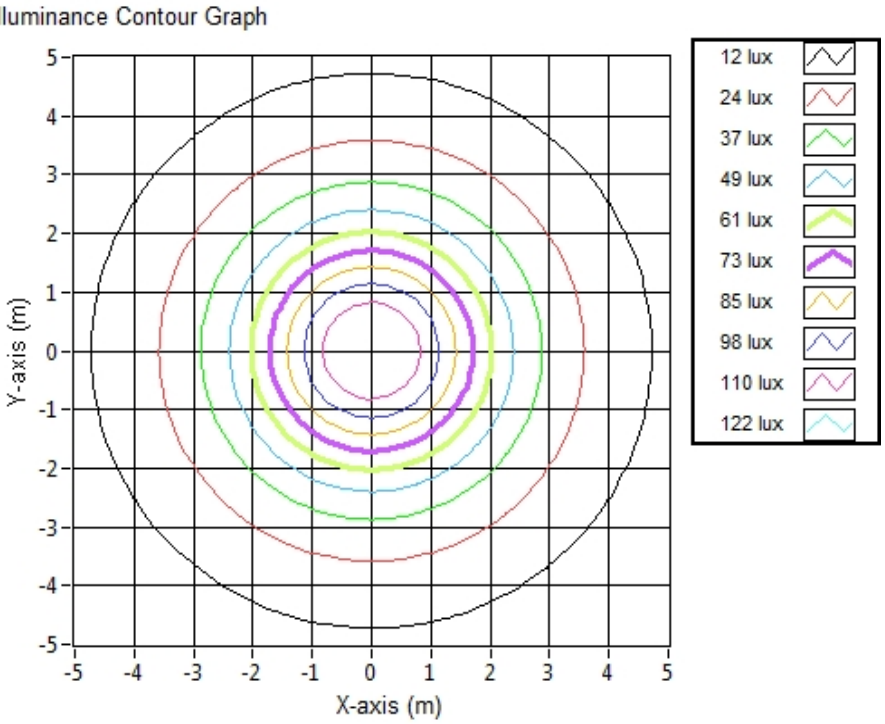
Illuminance Plot:



Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone Width (m)	Projected Illuminance (lux)
3.048	11.16	11.16	118.1
6.096	22.31	22.31	29.5
9.144	33.47	33.47	13.1
12.192	44.63	44.63	7.4
15.24	55.78	55.78	4.7
18.288	66.94	66.94	3.3
21.336	78.10	78.10	2.4
24.384	89.26	89.26	1.8
27.432	100.41	100.41	1.5
30.48	111.57	111.57	1.2

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18079.
Dialight unit model number LJx4WN23xxxxxN

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:

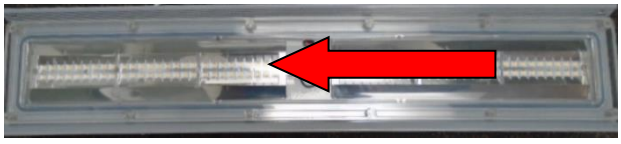
Maximum Power at Indicated Current:	0.24	(W)
Maximum Source Temperature:	120.9	(°C)

Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 5‘	(°C)
Ambient temperature at time of measurement:	25.1	(°C)
Relative humidity at time of measurement:	39%	

Results:

Measured LED source temperature:	41.8	(°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
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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.
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.

Test Report Issued By:

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Dialight Optics Laboratory
Senior Optical Engineering Technician
Lighting Division

Test Report Reviewed and Approved By:

Vishnu Shastry
Dialight Optics Laboratory
Optical Engineer
Approved Signatory