

# Test Report

Report Number: L15108

Date: Aug 3, 2015

Issued by:

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

Test of one 4' Low Profile Linear  
Unit manufacturer: Dialight Corporation  
Unit model number: LPx3C4H2W

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:** July 29, 2015 through August 3, 2015

**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):

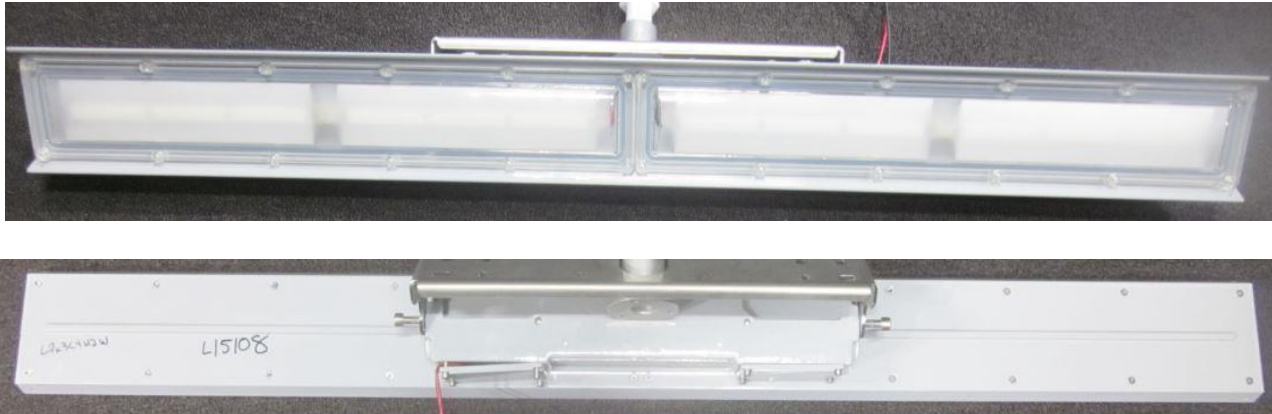
- IES LM-79:2008: Electrical and Photometric Measurements of Solid-State Lighting Products
- ANSI/UL 1598:2008: Underwriters Laboratories Inc. Standard for Safety: Luminaires
- ENERGY STAR Manufacturer's Guide for Qualifying Solid State Lighting Luminaires Version 2.1

**Description of sample:**

Sample Number: L15108  
Manufacturer: Dialight Corporation  
Product Name: 4' Low Profile Linear  
Description: 4' Low Profile Linear  
Model Number: LPx3C4H2W

**Report Summary**  
Sample number L15108  
Dialight unit model number LPx3C4H2W

**Photograph(s) of sample:**



\*Photographs not to scale. For reference only.

**Summary of Results:**

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	6989 (lumens)	6908 (lumens)
Electrical Power:	65.9 (W)	65.9 (W)
Luminous Efficacy:	106.1 (lumens/W)	104.9 (lumens/W)

**Electrical Measurements:**

Input Power (120VAC): 65.9 (W)  
 Power Factor (120VAC): 0.991  
 Current ATHD % (120VAC): 10.36  
 Input Power (277VAC): 65.0 (W)  
 Power Factor (277VAC): 0.937  
 Current ATHD % (277VAC): 12.74

**Color Measurements:**

Correlated Color Temperature (CCT): 4812  
 Color Rendering Index (CRI): 75.2  
 Chromaticity Coordinate (x): 0.351  
 Chromaticity Coordinate (y): 0.36  
 Chromaticity Coordinate (u'): 0.212  
 Chromaticity Coordinate (v'): 0.326  
 DUV: 0.0016

**Temperature Measurements:**

In Situ LED Source Temperature: 48.2 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15108.  
Dialight unit model number LPx3C4H2W

### Test Conditions:

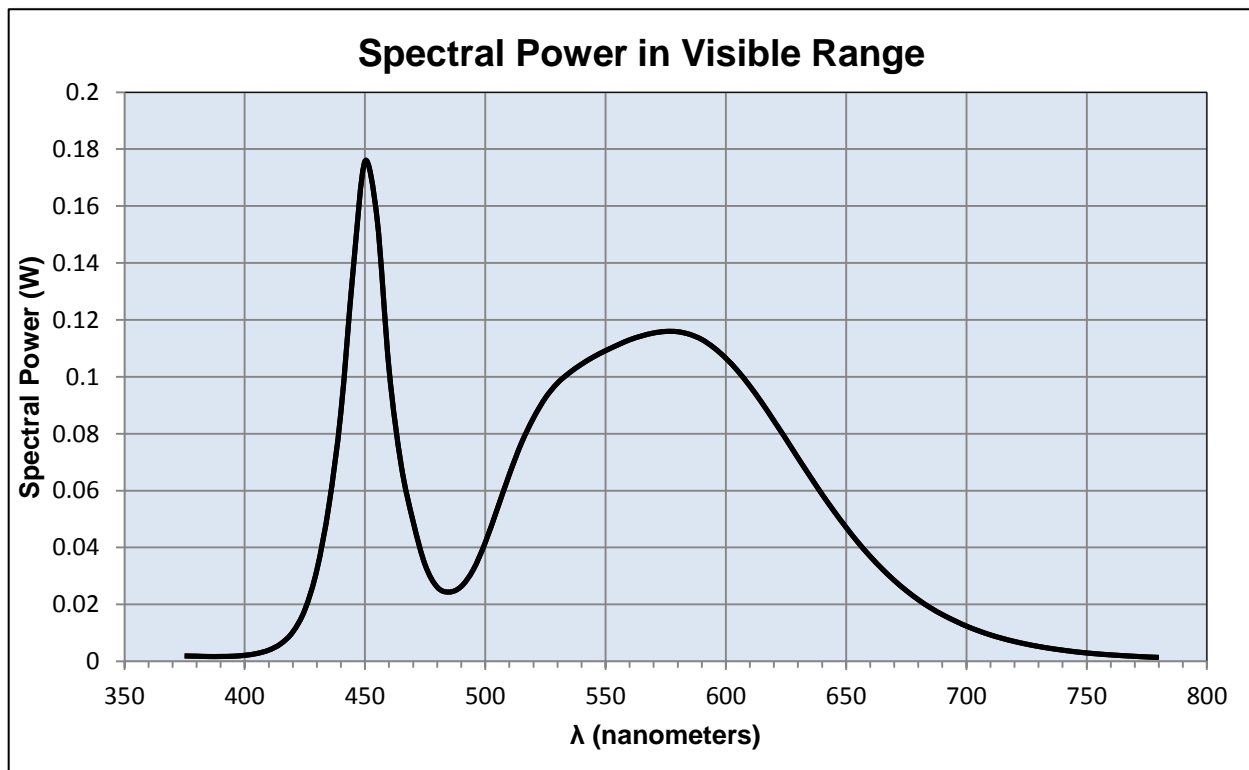
Ambient Temperature: 25 ± 1 (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input Current: 0.554 (A)  
Input Power: 65.9 (W)  
Input Power Factor: 0.991  
Current ATHD: 10.36 (%)

### Photometric measurements:

Luminous Flux: 6989 (lumens)  
Luminous Efficacy: 106.1 (lumens/W)  
Correlated Color Temperature (CCT): 4812 (K)  
CRI -Ra: 75.2  
CRI -R9: -17.1  
DUV: 0.0016  
CIE Coordinate (x): 0.351  
CIE Coordinate (y): 0.36  
CIE Coordinate (u'): 0.212  
CIE Coordinate (v'): 0.326



## 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	0.077	655	0.042
380	0.002	520	0.085	660	0.037
385	0.002	525	0.093	665	0.032
390	0.002	530	0.098	670	0.028
395	0.002	535	0.101	675	0.025
400	0.002	540	0.104	680	0.022
405	0.003	545	0.107	685	0.019
410	0.004	550	0.109	690	0.016
415	0.006	555	0.111	695	0.014
420	0.01	560	0.113	700	0.012
425	0.018	565	0.114	705	0.011
430	0.032	570	0.115	710	0.009
435	0.055	575	0.116	715	0.008
440	0.088	580	0.116	720	0.007
445	0.137	585	0.115	725	0.006
450	0.176	590	0.113	730	0.005
455	0.156	595	0.11	735	0.005
460	0.103	600	0.107	740	0.004
465	0.069	605	0.102	745	0.003
470	0.049	610	0.097	750	0.003
475	0.034	615	0.091	755	0.003
480	0.026	620	0.085	760	0.002
485	0.024	625	0.078	765	0.002
490	0.026	630	0.071	770	0.002
495	0.032	635	0.065	775	0.002
500	0.042	640	0.059	780	0.001
505	0.054	645	0.053		
510	0.066	650	0.047		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15108.  
Dialight unit model number LPx3C4H2W

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 0.555 (A)  
Input Power: 65.9 (W)  
Power Factor: 0.983

### Photometric measurements:

Absolute Luminous Flux: 6908 (lumens)  
Luminous Efficacy: 104.9 (lumens/W)

### Intensity Summary:

<b>INTENSITY (CANDLEPOWER) SUMMARY</b>						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	3747	3747	3747	3747	3747	
5	3716	3716	3716	3716	3716	139
15	3446	3446	3446	3446	3446	759
25	2841	2841	2841	2841	2841	1219
35	2018	2018	2018	2018	2018	1313
45	1352	1352	1352	1352	1352	1132
55	972	972	972	972	972	934
65	695	695	695	695	695	765
75	345	345	345	345	345	499
85	30	30	30	30	30	145
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

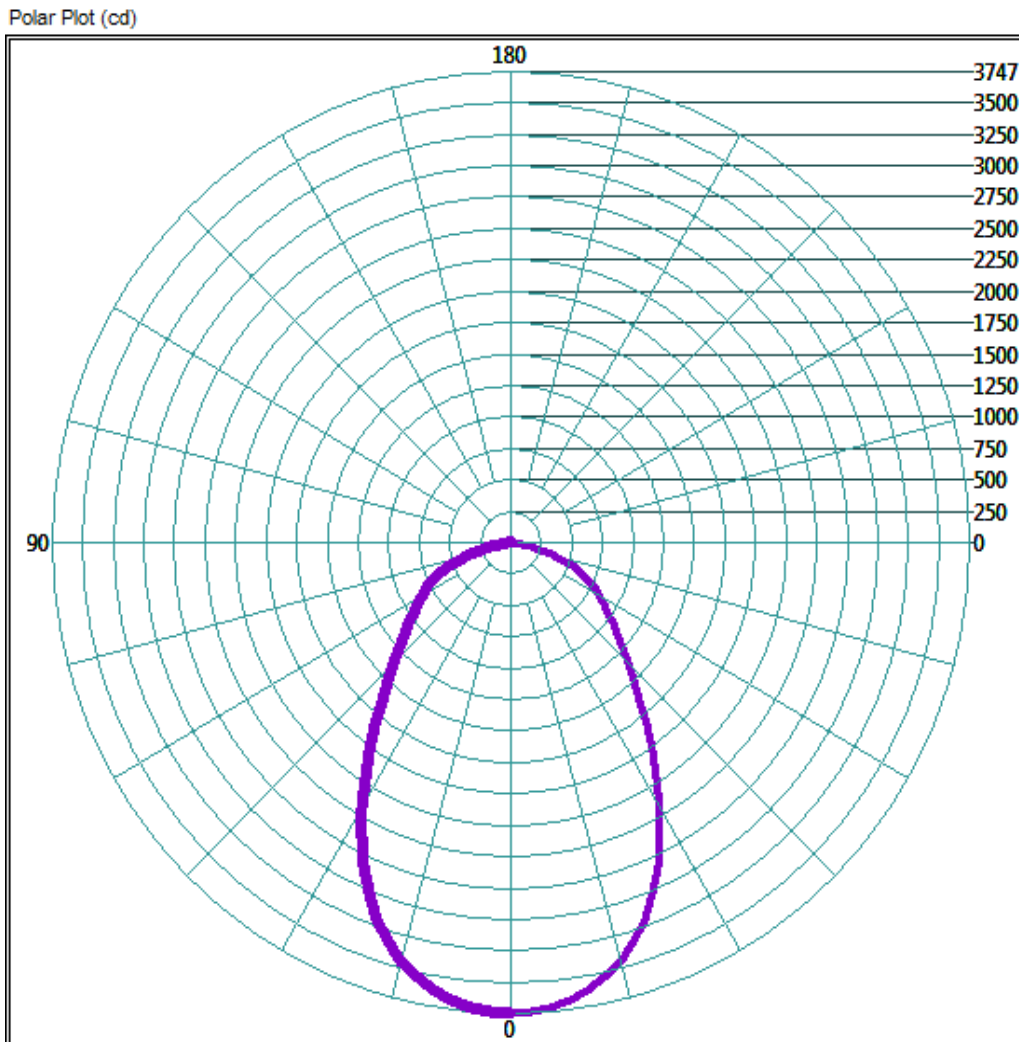
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	2785.44	40.3%
0-40	4024.48	58.3%
0-60	5902.72	85.5%
60-90	1203.04	17.4%
0-90	6907.68	100.0%
90-180	0	0.0%
0-180	6907.68	100.0%

## Test Results: Goniometer

Results continued from previous page.

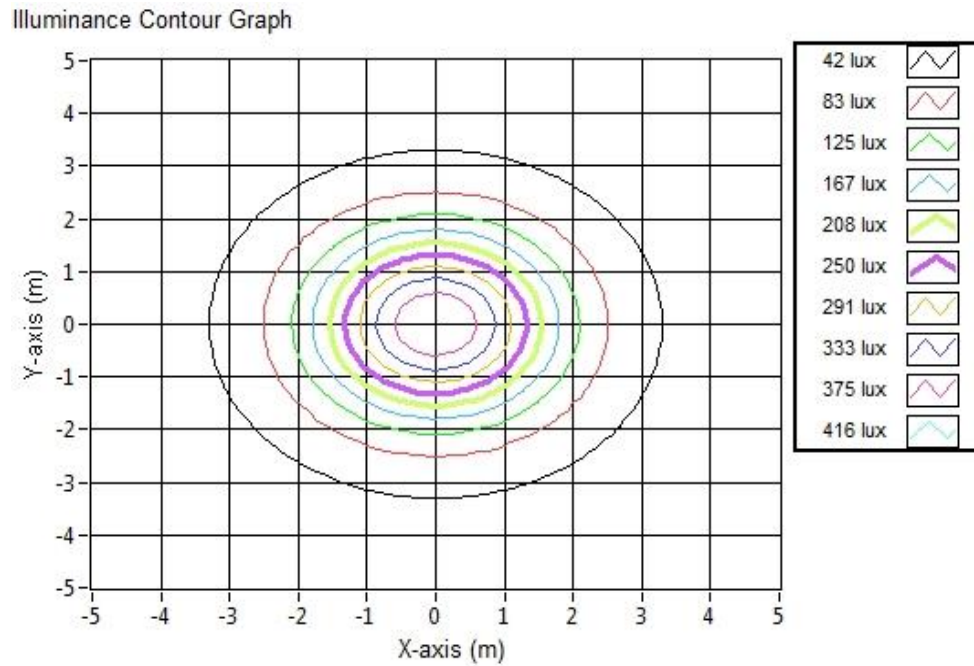
### Polar Plot:



## Test Results: Goniometer

Results continued from previous page.

### Illuminance Plot:



### Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone Width (m)	Projected Illuminance (lux)
3.048	4.57	4.57	403.4
6.096	9.14	9.14	100.8
9.144	13.71	13.71	44.8
12.192	18.27	18.27	25.2
15.24	22.84	22.84	16.1
18.288	27.41	27.41	11.2
21.336	31.98	31.98	8.2
24.384	36.55	36.55	6.3
27.432	41.12	41.12	5.0
30.48	45.68	45.68	4.0

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15108.  
Dialight unit model number LPx3C4H2W

LED identified as Nichia part number NS2L757AT.

LED drive current (as indicated by customer): 77 (mA)

### LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If): 180 (mA)  
Maximum Rated Power Dissipation: 0.63 (W)  
Maximum Junction Temp. (Tj): 120 (°C)  
Thermal Resistance (Rth): 19 (°C/W)

### Derived Specifications:

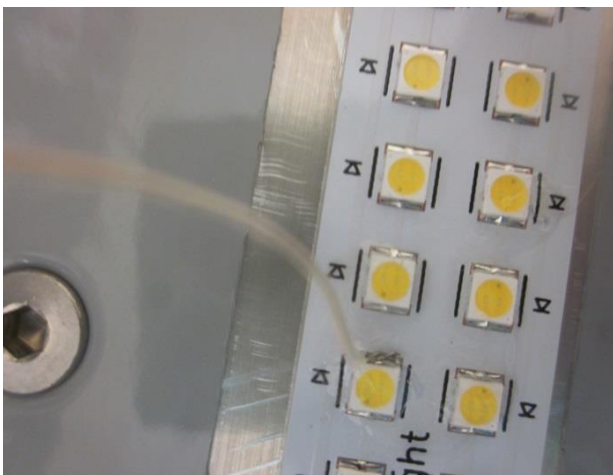
Maximum Power at Indicated Current: 0.27 (W)  
Maximum Source Temperature: 114.9 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 1^{\circ}$  (°C)  
Ambient temperature at time of measurement: 24.9 (°C)  
Relative humidity at time of measurement: 50%

### Results:

**Measured LED source temperature: 48.2 (°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
Volttech Power Analyzer	PM1000+
Delta Elektronika DC Power Supply	SM.300-5
Elgar AC Power Supply	CW1251P
Instek AC Power Supply	APS-9501
Sorensen DC Power Supply	XHR150-7
Extech Hygro-Thermometer	4/16/3120
Extech Hygro-Thermometer	4/16/3120
Fluke 52II Thermometer	52II Thermometer
Volttech Power Analyzer	PM1000+
BK Precision	1715A
TDK-Lambda	GEN1500W
Fluke 8808A Digit Multimeter	8808A
TPI Digital Thermometer 343	TPI 343
TPI Digital Thermometer 343	TPI 343
Step-Up Transformer	
Omega TC	Dpi8-C24
Agilent True RMS OLED Multimeter	U1273A
Adaptive Power Systems AC Power Supply	FC-210
Xitron Power Analyzer	XT2640

**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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 Approved Signatory