

# Test Report

Report Number: L15058

Date: May 20, 2015

Issued by:

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

Test of one LED 2ft Linear  
Unit manufacturer: Dialight Corporation  
Unit model number: LTx3N4B2W

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 15, 2015 through May 19, 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: L15058  
Manufacturer: Dialight Corporation  
Product Name: LED 2ft Linear  
Description: LED 2ft Linear  
Model Number: LTx3N4B2W

## Report Summary

Sample number L15058  
Dialight unit model number LTx3N4B2W

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	3258 (lumens)	3200 (lumens)
Electrical Power:	34.0 (W)	34.0 (W)
Luminous Efficacy:	95.82 (lumens/W)	94.17 (lumens/W)

### Electrical Measurements:

Input Power (277VAC): 34.0 (W)  
Power Factor (277VAC): 0.919  
Current ATHD % (277VAC): 16.34  
Input Power (120VAC): 32.9 (W)  
Power Factor (120VAC): 0.988  
Current ATHD % (120VAC): 12.2

### Color Measurements:

Correlated Color Temperature (CCT): 3966  
Color Rendering Index (CRI): 82.8  
Chromaticity Coordinate (x): 0.383  
Chromaticity Coordinate (y): 0.38  
Chromaticity Coordinate (u'): 0.225  
Chromaticity Coordinate (v'): 0.504  
DUV: 0.001

### Temperature Measurements:

In Situ LED Source Temperature: 44.9 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15058.  
Dialight unit model number LTx3N4B2W

### Test Conditions:

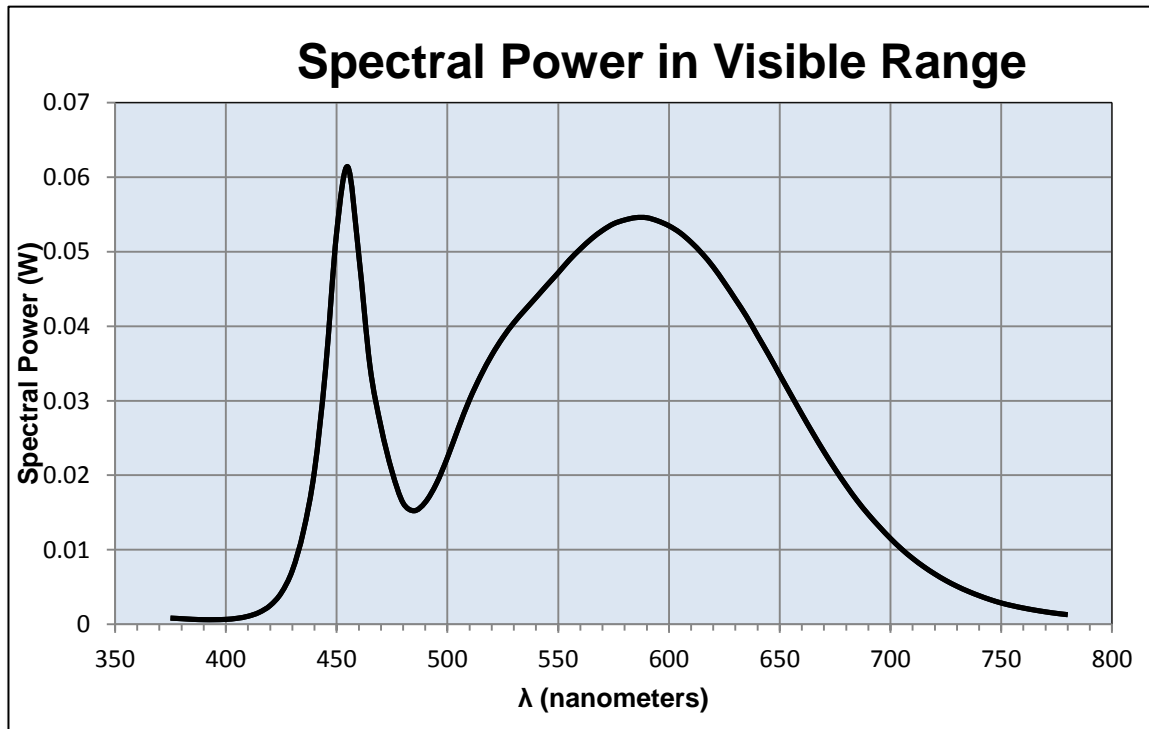
Ambient Temperature: 25 ± 1 (°C)

### Electrical Measurements:

Input Voltage: 277 (VAC)  
Input Current: 0.134 (A)  
Input Power: 34.0 (W)  
Input Power Factor: 0.919  
Current ATHD: 16.34 (%)

### Photometric measurements:

Luminous Flux: 3258 (lumens)  
Luminous Efficacy: 95.8 (lumens/W)  
Correlated Color Temperature (CCT): 3966 (K)  
CRI -Ra: 82.8  
CRI -R9: 20  
DUV: 0.001  
CIE Coordinate (x): 0.383  
CIE Coordinate (y): 0.38  
CIE Coordinate (u'): 0.225  
CIE Coordinate (v'): 0.504



## 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	8E-04	515	0.033	655	0.031
380	8E-04	520	0.036	660	0.028
385	7E-04	525	0.038	665	0.026
390	6E-04	530	0.04	670	0.023
395	6E-04	535	0.042	675	0.021
400	7E-04	540	0.044	680	0.019
405	8E-04	545	0.046	685	0.017
410	0.001	550	0.047	690	0.015
415	0.002	555	0.049	695	0.013
420	0.003	560	0.05	700	0.012
425	0.004	565	0.052	705	0.01
430	0.007	570	0.053	710	0.009
435	0.012	575	0.054	715	0.008
440	0.021	580	0.054	720	0.007
445	0.034	585	0.055	725	0.006
450	0.053	590	0.055	730	0.005
455	0.061	595	0.054	735	0.004
460	0.05	600	0.053	740	0.004
465	0.035	605	0.053	745	0.003
470	0.027	610	0.051	750	0.003
475	0.021	615	0.05	755	0.002
480	0.016	620	0.048	760	0.002
485	0.015	625	0.046	765	0.002
490	0.016	630	0.044	770	0.002
495	0.019	635	0.041	775	0.001
500	0.022	640	0.039	780	0.001
505	0.026	645	0.036		
510	0.03	650	0.033		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15058.  
Dialight unit model number LTx3N4B2W

### Electrical Measurements:

Input Voltage: 277 (VAC)  
Input current: 0.134 (A)  
Input Power: 34.0 (W)  
Power Factor: 0.916

### Photometric measurements:

Absolute Luminous Flux: 3200 (lumens)  
Luminous Efficacy: 94.2 (lumens/W)

### Intensity Summary:

<b>INTENSITY (CANDLEPOWER) SUMMARY</b>						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	1689	1689	1689	1689	1689	
5	1677	1677	1677	1677	1677	63
15	1572	1572	1572	1572	1572	345
25	1321	1321	1321	1321	1321	563
35	954	954	954	954	954	617
45	638	638	638	638	638	536
55	455	455	455	455	455	438
65	318	318	318	318	318	354
75	150	150	150	150	150	223
85	10	10	10	10	10	60
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

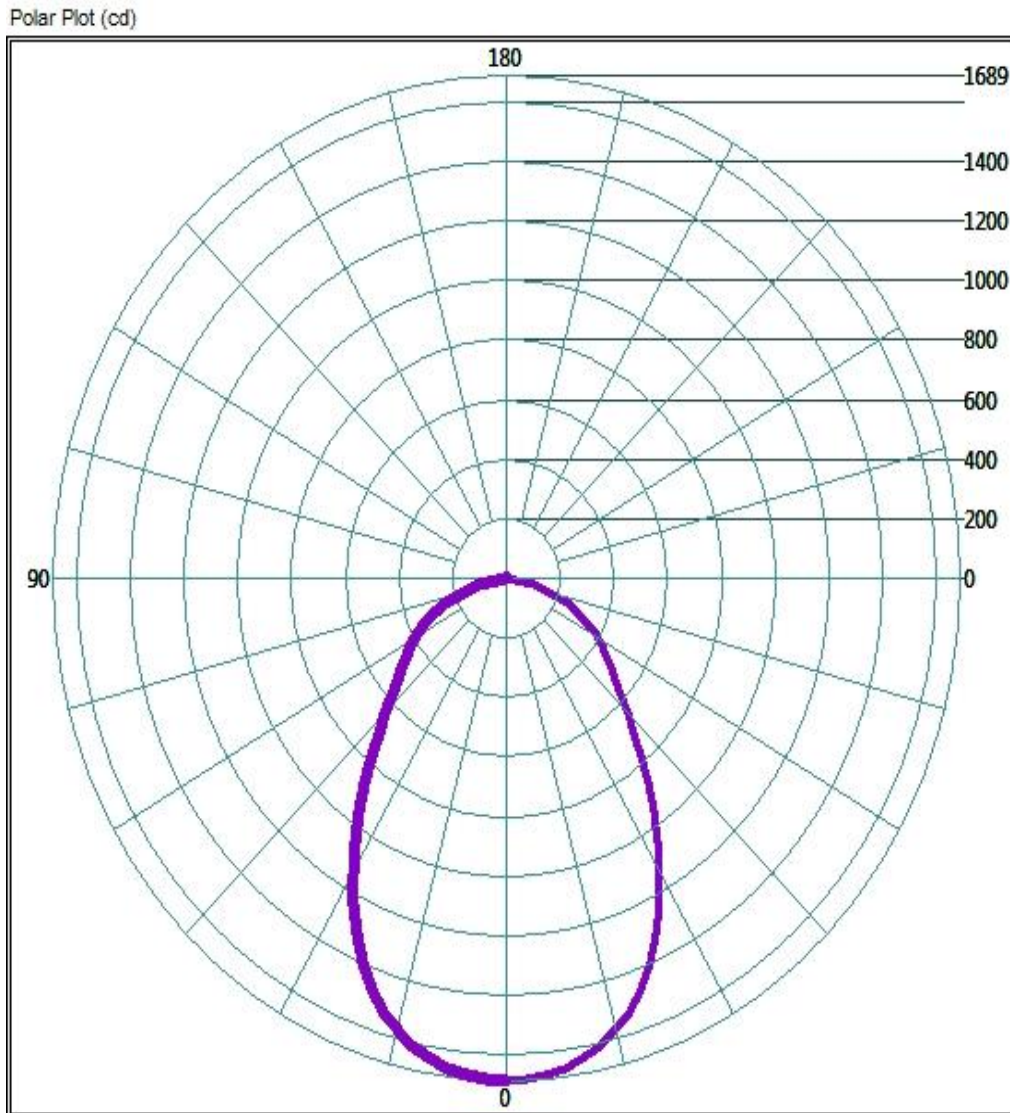
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1283.2	40.1%
0-40	1868.96	58.4%
0-60	2750.72	86.0%
60-90	540.32	16.9%
0-90	3199.2	100.0%
90-180	0	0.0%
0-180	3199.2	100.0%

### Test Results: Goniometer

Results continued from previous page.

**Polar Plot:**

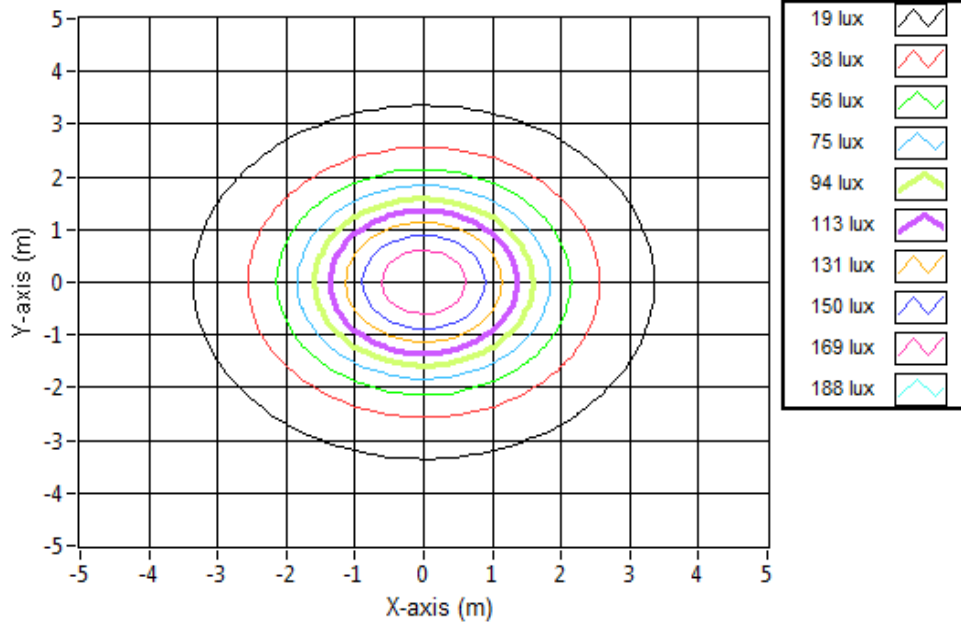


## Test Results: Goniometer

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	4.77	4.77	181.8
6.096	9.55	9.55	45.5
9.144	14.32	14.32	20.2
12.192	19.09	19.09	11.4
15.24	23.86	23.86	7.3
18.288	28.64	28.64	5.1
21.336	33.41	33.41	3.7
24.384	38.18	38.18	2.8
27.432	42.96	42.96	2.2
30.48	47.73	47.73	1.8



## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15058.  
Dialight unit model number LTx3N4B2W

LED identified as Nichia part number NS2L757.

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:

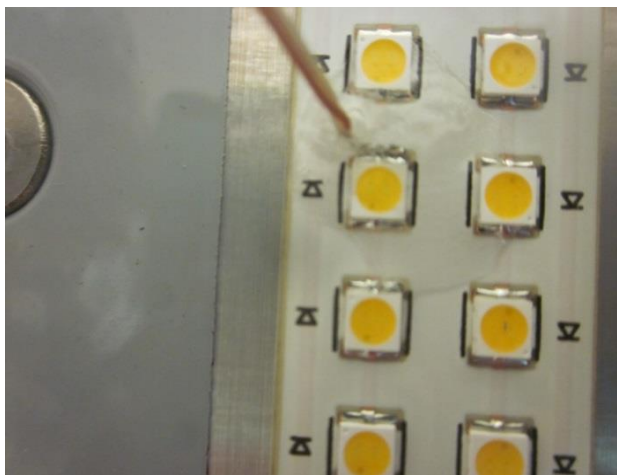
Maximum Power at Indicated Current: 0.27 (W)  
Maximum Source Temperature: 114.9 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 1^{\circ}$  (°C)  
Ambient temperature at time of measurement: 25.5 (°C)  
Relative humidity at time of measurement: 25%

### Results:

Measured LED source temperature: 44.9 (°C)





**Equipment Used:**

Equipment Name	Model Number
Omega TC	Dpi8
Fluke 8808A Digit Multimeter	8808A
YOKOGAWA Digital Power Meter	760401
LSI Standard Lamps	#30279
LSI High Speed Mirror Goniometer	6240T
Instrument System Spectrometer	CAS140B-151
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
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	445703
Extech Hygro-Thermometer	445703
Fluke 52II Thermometer	52II Thermometer
Volttech Power Analyzer	PM1000+
Tenma AC Power Source	72-7675
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

**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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