

Test Report

Report Number: L18019

Date: Mar 1, 2018

Issued by:

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

Test of one 2' Linear LT
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: February 26, 2018 through March 1, 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: L18019
Manufacturer: Dialight Corporation
Product Name: 2' Linear LT
Description: 2' Linear LT
Model Number: LTx3N4B2W

Report Summary

Sample number L18019
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:	3345 (lumens)	3357 (lumens)
Electrical Power:	28.7 (W)	28.8 (W)
Luminous Efficacy:	116.7 (lumens/W)	116.7 (lumens/W)

Electrical Measurements:

Input Power (277VAC): 28.7 (W)
 Power Factor (277VAC): 0.896
 Current ATHD % (277VAC): 16.1
 Input Power (120VAC): 27.1 (W)
 Power Factor (120VAC): 0.986
 Current ATHD % (120VAC): 11.57

Color Measurements:

Correlated Color Temperature (CCT): 3771
 Color Rendering Index (CRI): 83.6
 Chromaticity Coordinate (x): 0.39
 Chromaticity Coordinate (y): 0.381
 Chromaticity Coordinate (u'): 0.23
 Chromaticity Coordinate (v'): 0.337
 DUV: 0.0008

Temperature Measurements:

In Situ LED Source Temperature: 38.8 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18019.

Dialight unit model number LTx3N4B2W

Test Conditions:

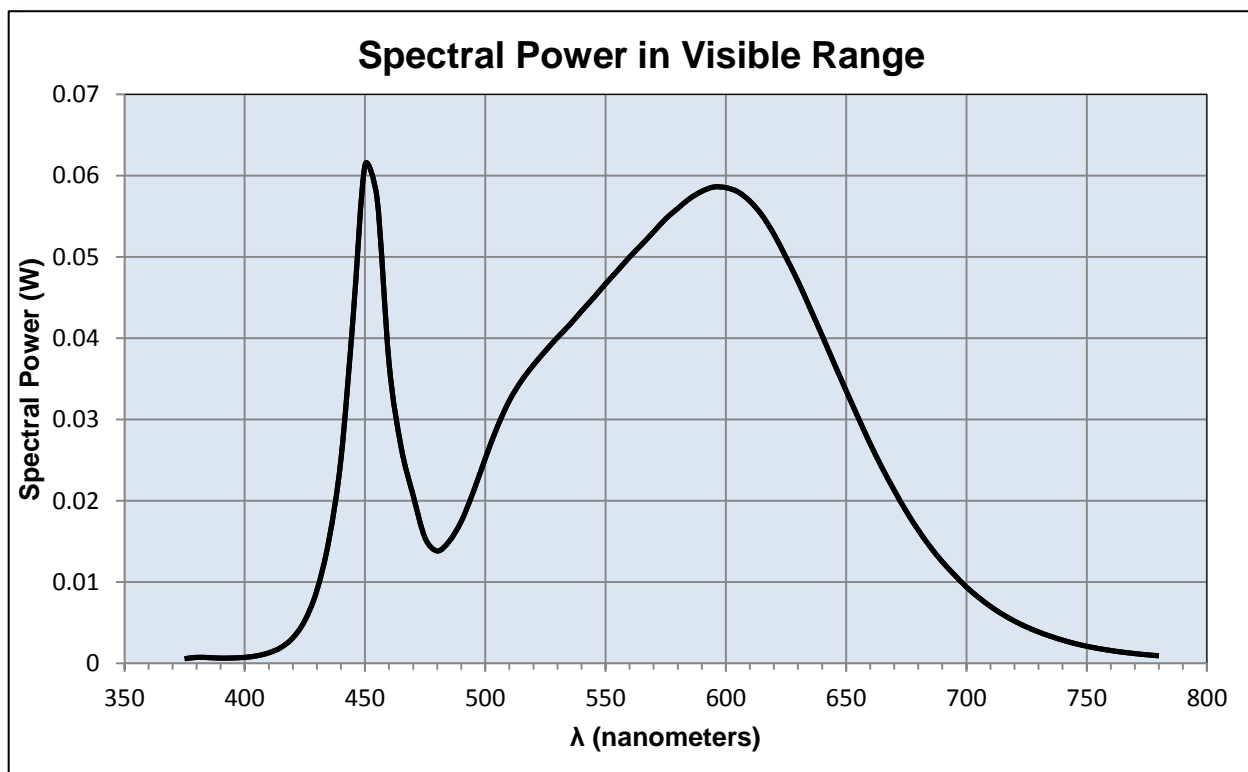
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 277 (VAC)
 Input Current: 0.116 (A)
 Input Power: 28.7 (W)
 Input Power Factor: 0.896
 Current ATHD: 16.1 (%)

Photometric measurements:

Luminous Flux: 3345 (lumens)
 Luminous Efficacy: 116.7 (lumens/W)
 Correlated Color Temperature (CCT): 3771 (K)
 CRI -Ra: 83.6
 CRI -R9: 17
 DUV: 0.0008
 CIE Coordinate (x): 0.39
 CIE Coordinate (y): 0.381
 CIE Coordinate (u'): 0.23
 CIE Coordinate (v'): 0.337



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	0.035	655	0.030
380	0.001	520	0.037	660	0.027
385	0.001	525	0.038	665	0.024
390	0.001	530	0.040	670	0.021
395	0.001	535	0.042	675	0.019
400	0.001	540	0.043	680	0.016
405	0.001	545	0.045	685	0.014
410	0.001	550	0.047	690	0.012
415	0.002	555	0.048	695	0.011
420	0.003	560	0.050	700	0.009
425	0.005	565	0.052	705	0.008
430	0.009	570	0.053	710	0.007
435	0.015	575	0.055	715	0.006
440	0.025	580	0.056	720	0.005
445	0.042	585	0.057	725	0.004
450	0.061	590	0.058	730	0.004
455	0.057	595	0.059	735	0.003
460	0.037	600	0.059	740	0.003
465	0.027	605	0.058	745	0.002
470	0.021	610	0.057	750	0.002
475	0.015	615	0.055	755	0.002
480	0.014	620	0.053	760	0.002
485	0.015	625	0.050	765	0.001
490	0.017	630	0.047	770	0.001
495	0.021	635	0.044	775	0.001
500	0.025	640	0.040	780	0.001
505	0.029	645	0.037		
510	0.032	650	0.034		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18019.
Dialight unit model number LTx3N4B2W

Electrical Measurements:

Input Voltage: 277 (VAC)
Input current: 0.116 (A)
Input Power: 28.8 (W)
Power Factor: 0.898

Photometric measurements:

Absolute Luminous Flux: 3357 (lumens)
Luminous Efficacy: 116.7 (lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	1802	1802	1802	1802	1802	
5	1787	1787	1787	1787	1787	67
15	1660	1660	1660	1660	1660	365
25	1376	1376	1376	1376	1376	589
35	991	991	991	991	991	641
45	668	668	668	668	668	559
55	469	469	469	469	469	456
65	327	327	327	327	327	363
75	169	169	169	169	169	238
85	20	20	20	20	20	77
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

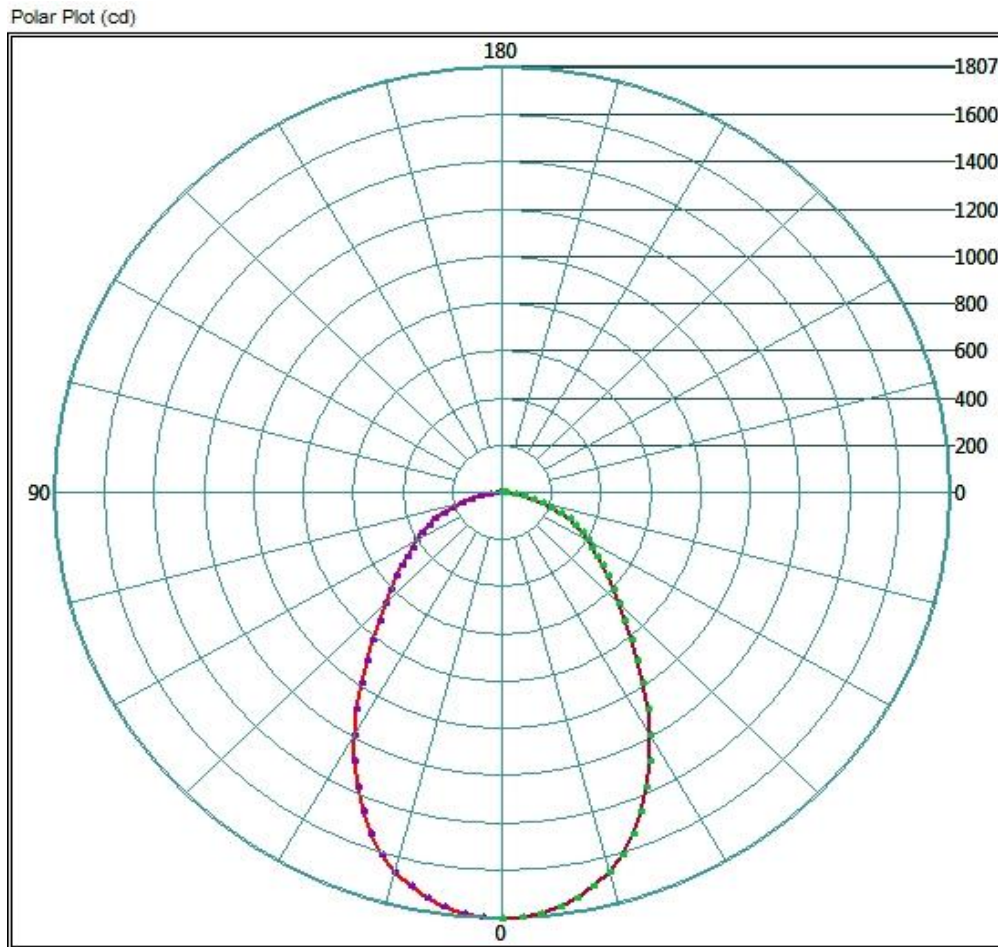
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1346.4	40.1%
0-40	1955.52	58.2%
0-60	2871.04	85.5%
60-90	580.32	17.3%
0-90	3357.12	100.0%
90-180	0	0.0%
0-180	3357.12	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

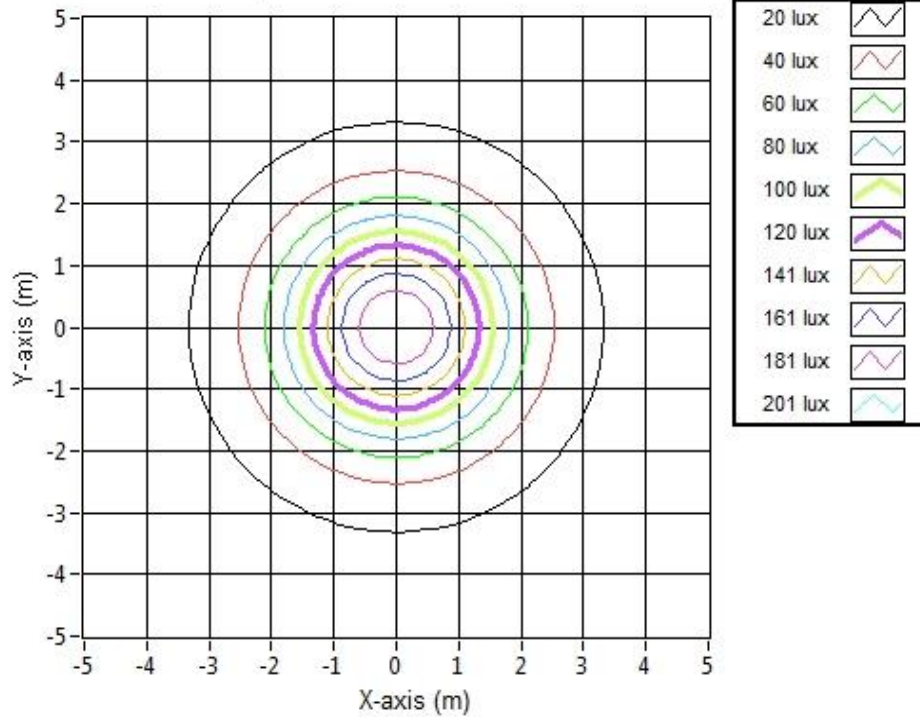


Test Results: Goniometer

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	4.65	4.65	194.5
6.096	9.29	9.29	48.6
9.144	13.94	13.94	21.6
12.192	18.59	18.59	12.2
15.24	23.23	23.23	7.8
18.288	27.88	27.88	5.4
21.336	32.53	32.53	4.0
24.384	37.18	37.18	3.0
27.432	41.82	41.82	2.4
30.48	46.47	46.47	1.9

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18019.
Dialight unit model number LTx3N4B2W

LED identified as Nichia part number NFSL757GT-V1.

LED drive current (as indicated by customer): 63 (mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If): 180 (mA)
Maximum Rated Power Dissipation: 0.558 (W)
Maximum Junction Temp. (Tj): 120 (°C)
Thermal Resistance (Rth): 19 (°C/W)

Derived Specifications:

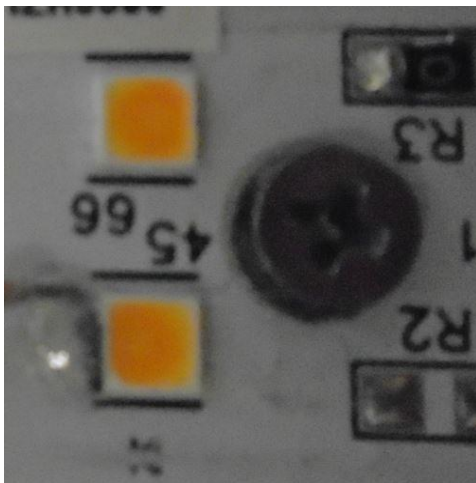
Maximum Power at Indicated Current: 0.195 (W)
Maximum Source Temperature: 116.3 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 5^{\circ}$ (°C)
Ambient temperature at time of measurement: 25.4 (°C)
Relative humidity at time of measurement: 21%

Results:

Measured LED source temperature: 38.8 (°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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