Test Report

Report Number: L18020 Date: Jun 11, 2018

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

Test of one 4' Linear LP
Unit manufacturer: Dialight Corporation
Unit model number: LTx3N4H2W

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 4, 2018 through June 6, 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

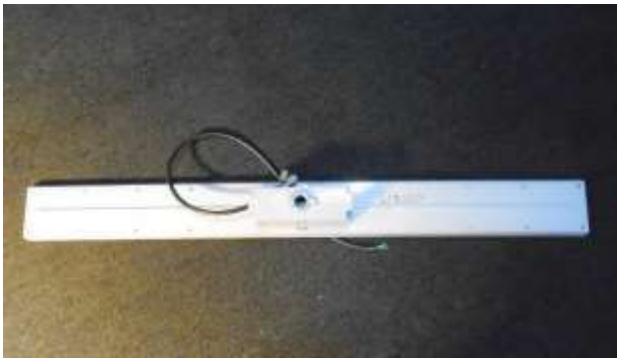
Description of sample:

Sample Number: L18020
Manufacturer: Dialight Corporation
Product Name: 4' Linear LP
Description: 4' Linear LP
Model Number: LTx3N4H2W

Report Summary

Sample number L18020
Dialight unit model number LTx3N4H2W

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere		Goniophotometer	
Luminous Flux:	6896	(lumens)	6839	(lumens)
Electrical Power:	59.3	(W)	59.5	(W)
Luminous Efficacy:	116.3	(lumens/W)	115	(lumens/W)

Electrical Measurements:

Input Power (120VAC):	59.3	(W)
Power Factor (120VAC):	0.991	
Current ATHD % (120VAC):	5.993	
Input Power (277VAC):	59.3	(W)
Power Factor (277VAC):	0.933	
Current ATHD % (277VAC):	16.9	

Color Measurements:

Correlated Color Temperature (CCT):	3783
Color Rendering Index (CRI):	83.5
Chromaticity Coordinate (x):	0.39
Chromaticity Coordinate (y):	0.381
Chromaticity Coordinate (u'):	0.23
Chromaticity Coordinate (v'):	0.337
DUV:	0.00071

Temperature Measurements:

In Situ LED Source Temperature:	48.8	(°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18020.
Dialight unit model number LTx3N4H2W

Test Conditions:

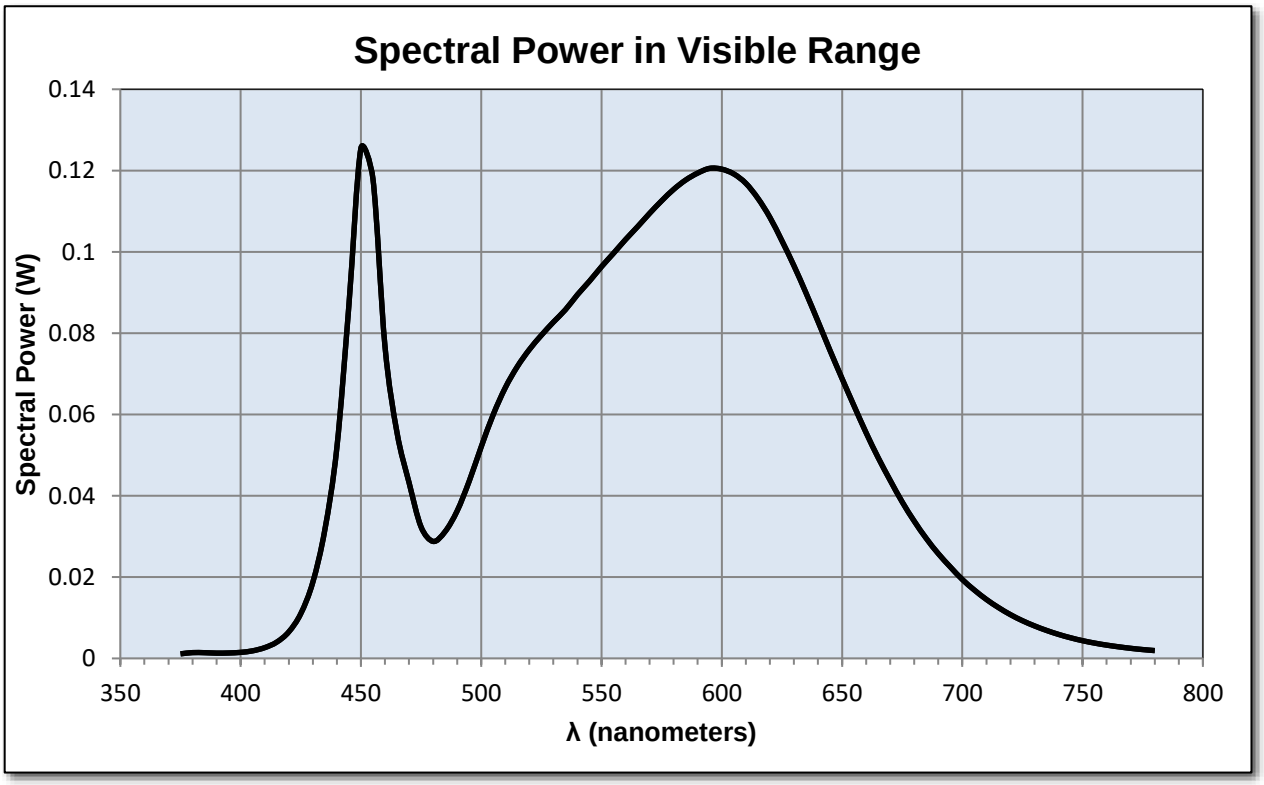
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	0.499	(A)
Input Power:	59.3	(W)
Input Power Factor:	0.991	
Current ATHD:	5.993	(%)

Photometric measurements:

Luminous Flux:	6896	(lumens)
Luminous Efficacy:	116.3	(lumens/W)
Correlated Color Temperature (CCT):	3783	(K)
CRI -Ra:	83.5	
CRI -R9:	16.4	
DUV:	0.00071	
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:

λ(nm)	(W/nm)	λ(nm)	(W/nm)	λ(nm)	(W/nm)
375	0.001	515	0.072	655	0.062
380	0.001	520	0.076	660	0.056
385	0.001	525	0.079	665	0.049
390	0.001	530	0.083	670	0.044
395	0.001	535	0.086	675	0.038
400	0.001	540	0.089	680	0.034
405	0.002	545	0.093	685	0.030
410	0.003	550	0.096	690	0.026
415	0.004	555	0.100	695	0.023
420	0.007	560	0.103	700	0.019
425	0.011	565	0.106	705	0.017
430	0.019	570	0.109	710	0.015
435	0.032	575	0.113	715	0.013
440	0.052	580	0.115	720	0.011
445	0.087	585	0.118	725	0.009
450	0.126	590	0.119	730	0.008
455	0.118	595	0.121	735	0.007
460	0.077	600	0.120	740	0.006
465	0.056	605	0.119	745	0.005
470	0.043	610	0.117	750	0.004
475	0.032	615	0.113	755	0.004
480	0.029	620	0.108	760	0.003
485	0.031	625	0.103	765	0.003
490	0.036	630	0.097	770	0.002
495	0.044	635	0.090	775	0.002
500	0.052	640	0.083	780	0.002
505	0.060	645	0.076		
510	0.067	650	0.069		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18020.
Dialight unit model number LTx3N4H2W

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	0.504	(A)
Input Power:	59.5	(W)
Power Factor:	0.983	

Photometric measurements:

Absolute Luminous Flux:	6839	(lumens)
Luminous Efficacy:	115.0	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	3725	3725	3725	3725	3725	
5	3699	3699	3699	3699	3699	138
15	3467	3467	3467	3467	3467	760
25	2902	2902	2902	2902	2902	1239
35	2073	2073	2073	2073	2073	1349
45	1352	1352	1352	1352	1352	1148
55	908	908	908	908	908	898
65	624	624	624	624	624	694
75	335	335	335	335	335	463
85	29	29	29	29	29	149
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

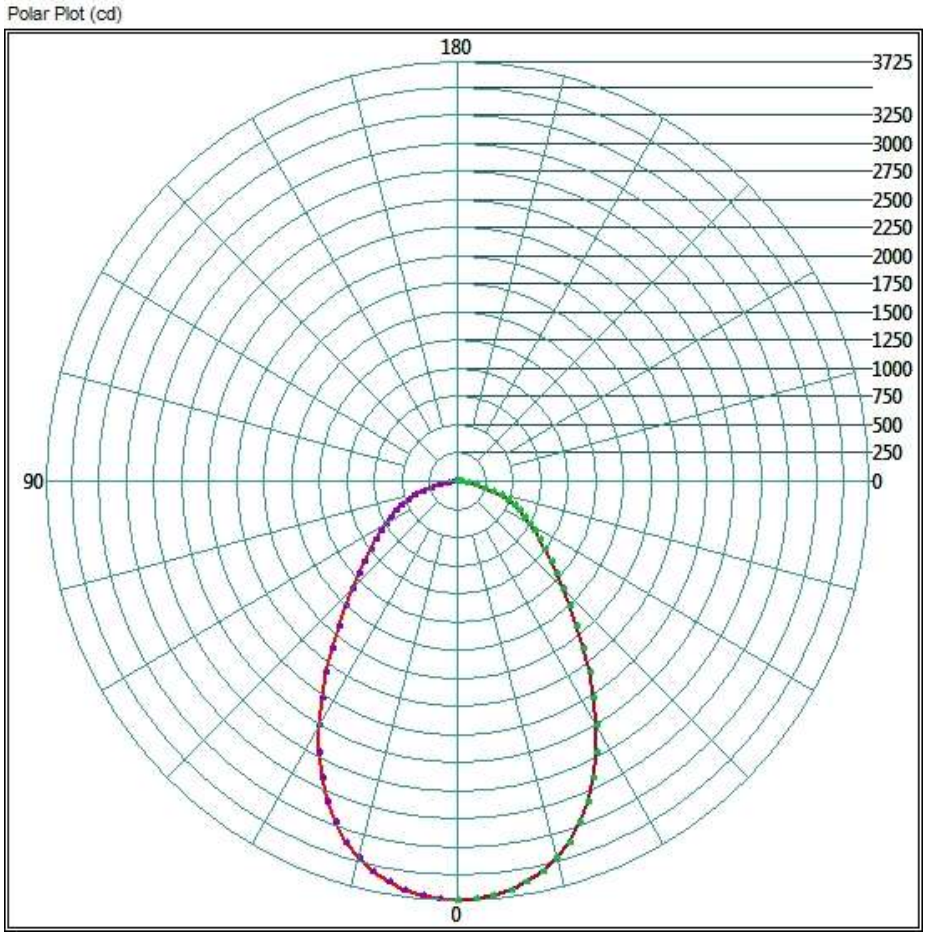
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	2823.2	41.3%
0-40	4093.6	59.9%
0-60	5903.36	86.3%
60-90	1115.68	16.3%
0-90	6839.36	100.0%
90-180	0	0.0%
0-180	6839.36	100.0%

Test Results: Goniometer

Results continued from previous page.

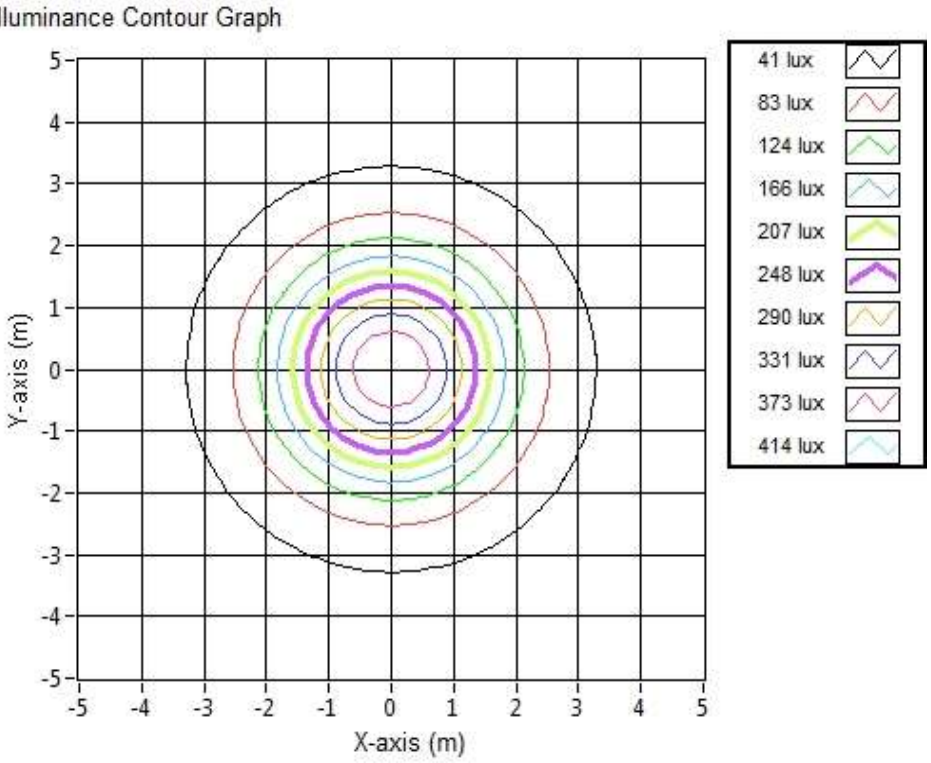
Polar Plot:



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	4.69	4.69	401.0
6.096	9.38	9.38	100.2
9.144	14.07	14.07	44.6
12.192	18.76	18.76	25.1
15.24	23.45	23.45	16.0
18.288	28.14	28.14	11.1
21.336	32.83	32.83	8.2
24.384	37.52	37.52	6.3
27.432	42.21	42.21	5.0
30.48	46.90	46.90	4.0

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18020.
Dialight unit model number LTx3N4H2W

LED identified as Nichia part number NFSL757GT-V1.

LED drive current (as indicated by customer): 69 (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:

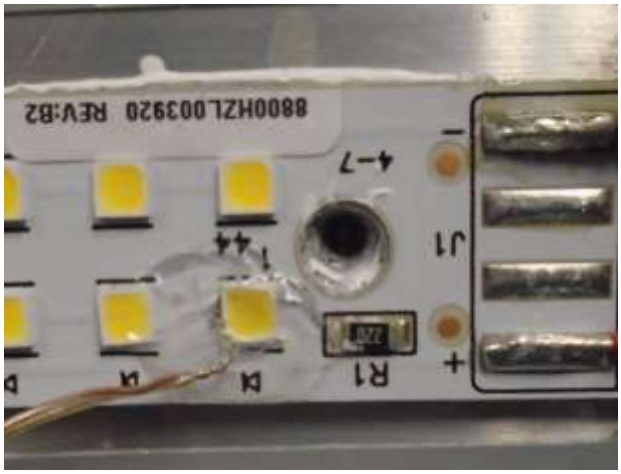
Maximum Power at Indicated Current:	0.214	(W)
Maximum Source Temperature:	115.9	(°C)

Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 5‘	(°C)
Ambient temperature at time of measurement:	24.1	(°C)
Relative humidity at time of measurement:	0%	

Results:

Measured LED source temperature: 48.8 (°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 Precison	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.

Test Report Issued By:

Richard Huegi
Dialight Optics Laboratory
Senior Optical Engineering Technician
Lighting Division

Test Report Reviewed and Approved By:

Vishnu Shastry
Dialight Optics Laboratory
Optical Engineer
Approved Signatory