

Test Report

Report Number: L14023

Date: Jul 16, 2014

Issued by:

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

Test of one Linear Light fixture
Unit manufacturer: Dialight Corporation
Unit model number: LTM3C4D2P

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 8, 2014 through July 9, 2014

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

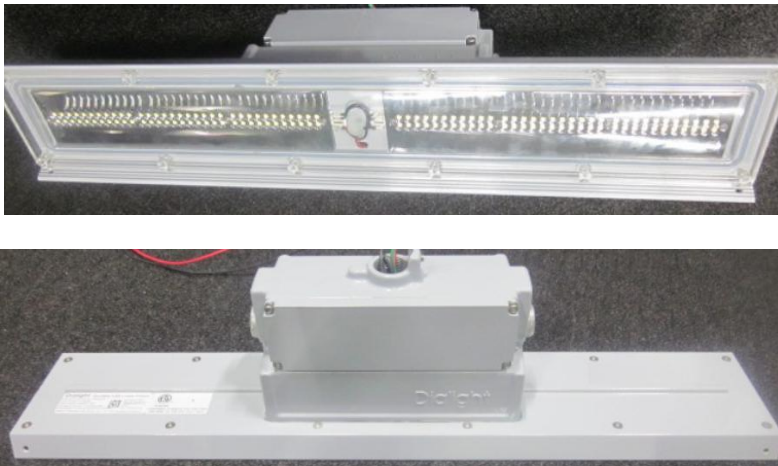
Description of sample:

Sample Number: L14023
Manufacturer: Dialight Corporation
Product Name: 2-foot Gen II Linear
Description: Linear Light fixture
Model Number: LTM3C4D2P

Report Summary

Sample number L14023
Dialight unit model number LTM3C4D2P

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	3713 (lumens)	3686 (lumens)
Electrical Power:	33.97 (W)	33.03 (W)
Luminous Efficacy:	112.7 (lumens/W)	111.6 (lumens/W)

Electrical Measurements:

Power Factor (120VAC): 0.988
Current ATHD % (120VAC): 12.17
Power Factor (277VAC): 0.912
Current ATHD % (277VAC): 16.49

Color Measurements:

Correlated Color Temperature (CCT): 4897
Color Rendering Index (CRI): 76
Chromaticity Coordinate (x): 0.348
Chromaticity Coordinate (y): 0.355
Chromaticity Coordinate (u'): 0.212
Chromaticity Coordinate (v'): 0.324
DUV: 0.000024

Temperature Measurements:

In Situ LED Source Temperature: 40.2 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L14023.

Dialight unit model number LTM3C4D2P

Test Conditions:

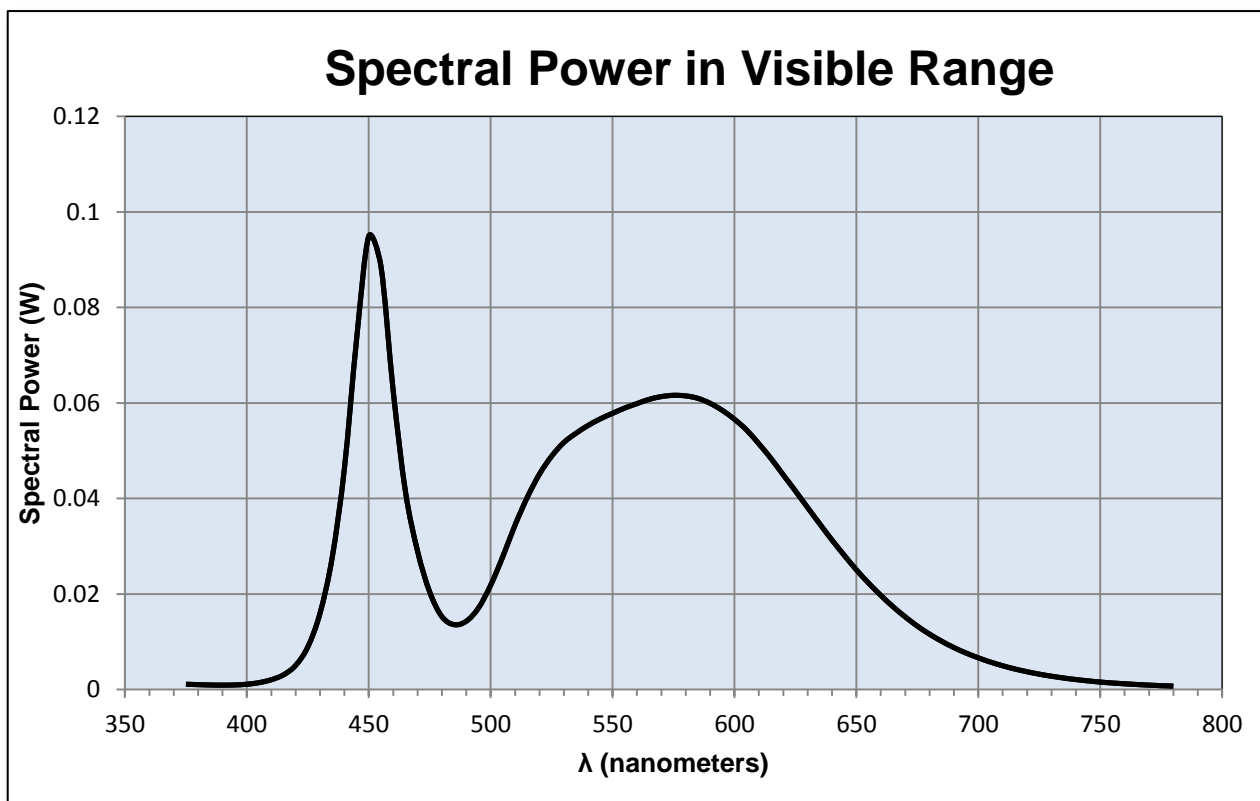
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
 Input Current: 0.278 (A)
 Input Power: 33.97 (W)
 Input Power Factor: 0.988
 Current ATHD: 12.17 (%)

Photometric measurements:

Luminous Flux: 3713 (lumens)
 Luminous Efficacy: 112.7 (lumens/W)
 Correlated Color Temperature (CCT): 4897 (K)
 CRI -Ra: 76
 CRI -R9: -12.8
 DUV: 0.000024
 CIE Coordinate (x): 0.348
 CIE Coordinate (y): 0.355
 CIE Coordinate (u'): 0.212
 CIE Coordinate (v'): 0.324



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	0.04	655	0.022
380	0.001	520	0.045	660	0.02
385	1E-03	525	0.049	665	0.017
390	9E-04	530	0.052	670	0.015
395	1E-03	535	0.054	675	0.013
400	0.001	540	0.055	680	0.012
405	0.001	545	0.057	685	0.01
410	0.002	550	0.058	690	0.009
415	0.003	555	0.059	695	0.008
420	0.005	560	0.06	700	0.007
425	0.009	565	0.061	705	0.006
430	0.016	570	0.061	710	0.005
435	0.028	575	0.062	715	0.004
440	0.046	580	0.062	720	0.004
445	0.073	585	0.061	725	0.003
450	0.095	590	0.06	730	0.003
455	0.089	595	0.058	735	0.002
460	0.063	600	0.057	740	0.002
465	0.042	605	0.054	745	0.002
470	0.029	610	0.051	750	0.002
475	0.02	615	0.048	755	0.001
480	0.015	620	0.045	760	0.001
485	0.014	625	0.042	765	0.001
490	0.014	630	0.038	770	9E-04
495	0.017	635	0.035	775	8E-04
500	0.022	640	0.031	780	7E-04
505	0.028	645	0.028		
510	0.034	650	0.025		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L14023.
Dialight unit model number LTM3C4D2P

Electrical Measurements:

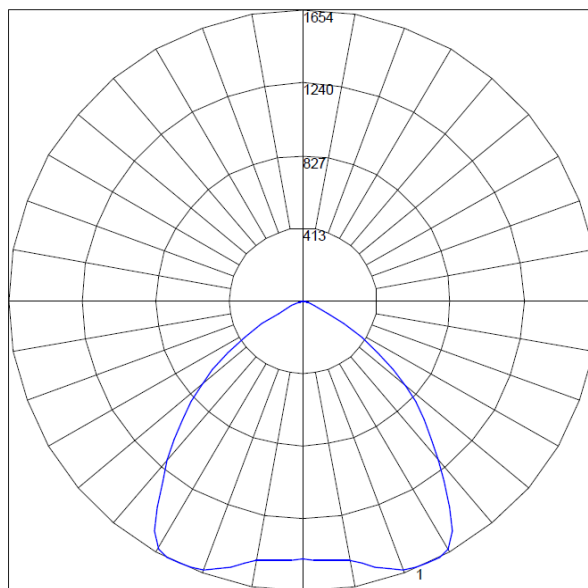
Input Voltage: 120 (VAC)
Input current: 0.28 (A)
Input Power: 33.03 (W)
Power Factor: 0.984

Photometric measurements:

Absolute Luminous Flux: 3686 (lumens)
Luminous Efficacy: 111.6 (lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY						OUTPUT LUMENS
ANGLE	ALONG	22.5	45	67.5	ACROSS	
0	1473	1473	1473	1473	1473	
5	1488	1487	1495	1481	1488	145
15	1519	1521	1580	1575	1569	441
25	1572	1568	1605	1649	1650	742
35	1523	1521	1514	1474	1434	920
45	1076	1054	1023	967	957	786
55	674	647	580	548	515	515
65	121	109	96	79	71	121
75	18	16	13	11	9	14
85	3	2	0	0	0	2
90	0	0	0	0	0	
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	

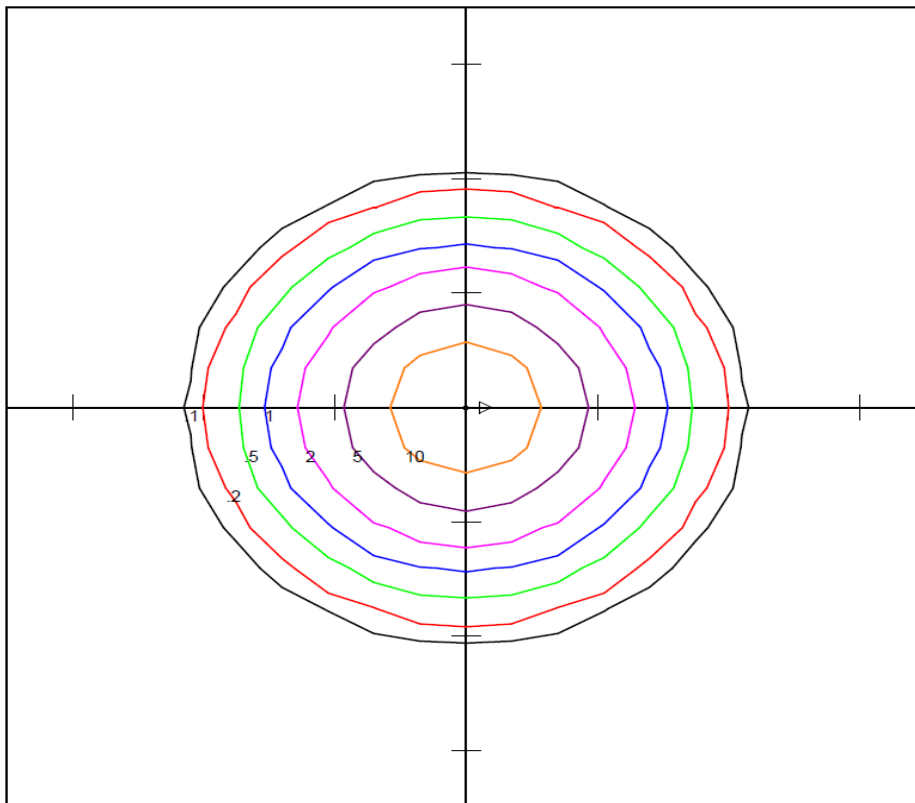


Maximum Candela = 1653.8 - Located At Horizontal Angle = 90, Vertical Angle = 27.5
1 - Vertical Plane Through Horizontal Angles (90 - 270) (Through Max. Cd.)

Test Results: Goniometer

Results continued from previous page.

Iso-illuminance Plot:



DIALIGHT CORPORATION
LTM3C4D2P
141746839, MOD: LTM3C4D2P
LED

Horizontal Footcandles
Scale: 1 Inch = 10 Fc
Light Loss Factor = 1.00
Lumens Per Lamp = N.A. (absolute photometry)
Luminaire Lumens = 3691
Mounting Height = 10.00 Ft
Maximum Calculated Value = 14.73 Fc
Arrangement: Single

Zonal Lumen Summary:

ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1328	36.04
0-40	2249	61.00
0-60	3550	96.30
0-90	3686	100.00
40-90	1437	39.00
60-90	136	3.70
90-180	0	0.00
0-180	3686	100.00

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L14023.

Dialight unit model number LTM3C4D2P

LED identified as Nichia part number NS2W757A-V1.

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) (Tj - [power dissipation * Rth])

Test Conditions:

Temperature Measurement Location: See Photographs Below

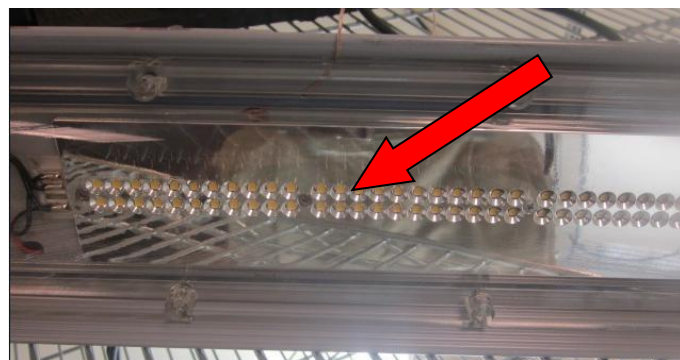
Ambient Temperature: $25^{\circ} \pm 1^{\circ}$ (°C)

Ambient temperature at time of measurement: 24.4 (°C)

Relative humidity at time of measurement: 58%

Results:

Measured LED source temperature: 40.2 (°C)



Equipment Used:

Equipment Name	Model Number	Calibration Due Date
Omega TC	Dpi8	3/7/2015
Fluke 8808A Digit Multimeter	8808A	4/7/2015
YOKOGAWA Digital Power Meter	760401	4/7/2015
LSI Standard Lamps	#30279	4/17/2015
LSI High Speed Mirror Goniometer	6240T	-
Instrument System Spectrometer	CAS140B-151	-
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System 1.5 Meter Sphere	ISP1500	-
TPI Digital Thermometer 342	343	3/6/2015
Volttech Power Analyzer	PM1000+	4/17/2015
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	3/6/2015
Volttech Power Analyzer	PM1000+	4/17/2015
Tenma AC Power Source	72-7675	-
BK Precision	1715A	-
TDK-Lambda	GEN1500W	-
Fluke 8808A Digit Multimeter	8808A	4/14/2015

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.

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Test Report Issued By:

Richard Huegi
Dialight Optics Laboratory
Senior Optical Engineering Technician
Lighting Division

Test Report Reviewed and Approved By:

Cecil Thomas
Dialight Optics Laboratory
Optical Engineering Manager
Approved Signatory