

Test Report

Report Number: L14024

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: LTM3C4M2P

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: L14024
Manufacturer: Dialight Corporation
Product Name: 4-foot Gen II Linear
Description: Linear Light fixture
Model Number: LTM3C4M2P

Report Summary

Sample number L14024

Dialight unit model number LTM3C4M2P

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	7216 (lumens)	7126 (lumens)
Electrical Power:	65.68 (W)	65.83 (W)
Luminous Efficacy:	109.9 (lumens/W)	108.2 (lumens/W)

Electrical Measurements:

Power Factor (120VAC): 0.991
 Current ATHD % (120VAC): 11.07
 Power Factor (277VAC): 0.938
 Current ATHD % (277VAC): 14.84

Color Measurements:

Correlated Color Temperature (CCT): 4873
 Color Rendering Index (CRI): 75.8
 Chromaticity Coordinate (x): 0.349
 Chromaticity Coordinate (y): 0.358
 Chromaticity Coordinate (u'): 0.212
 Chromaticity Coordinate (v'): 0.323
 DUV: 0.00153

Temperature Measurements:

In Situ LED Source Temperature: 43.1 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L14024.

Dialight unit model number LTM3C4M2P

Test Conditions:

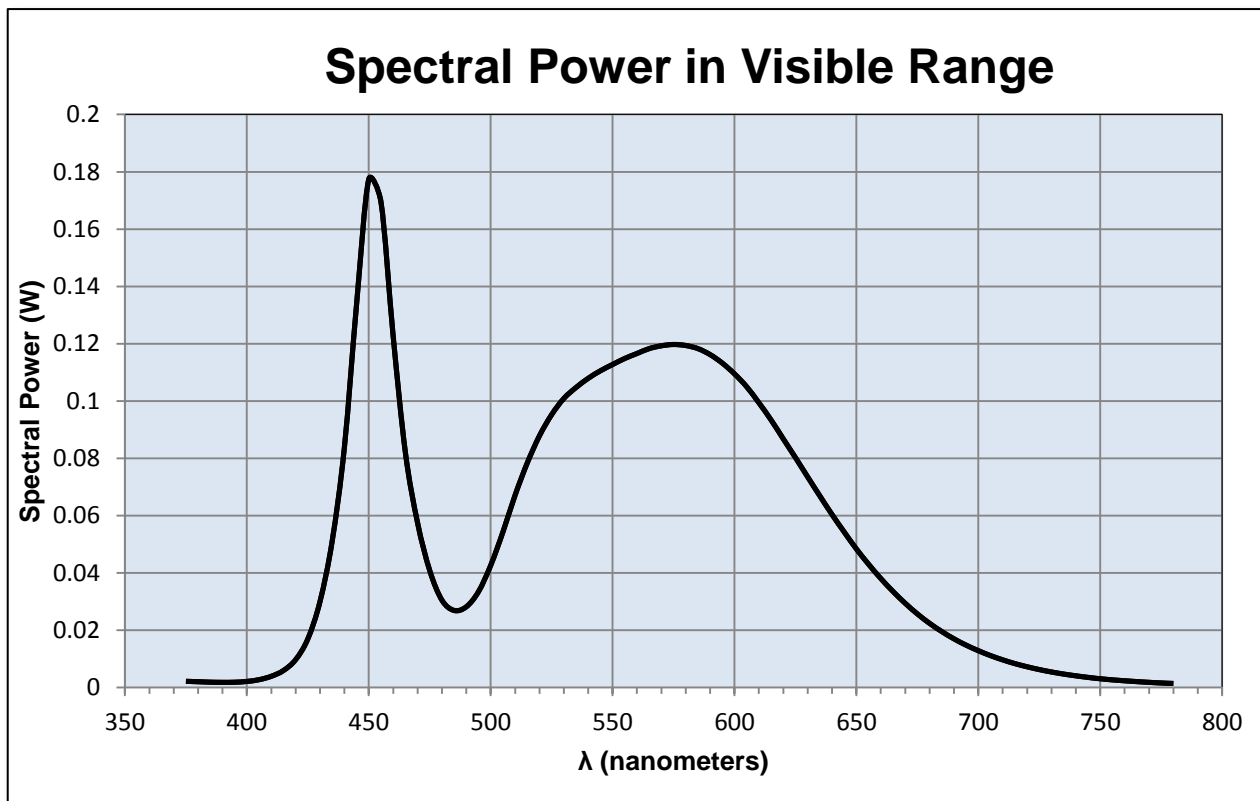
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
 Input Current: 0.552 (A)
 Input Power: 65.68 (W)
 Input Power Factor: 0.991
 Current ATHD: 11.07 (%)

Photometric measurements:

Luminous Flux: 7216 (lumens)
 Luminous Efficacy: 109.9 (lumens/W)
 Correlated Color Temperature (CCT): 4873 (K)
 CRI -Ra: 75.8
 CRI -R9: -14.3
 DUV: 0.00153
 CIE Coordinate (x): 0.349
 CIE Coordinate (y): 0.358
 CIE Coordinate (u'): 0.212
 CIE Coordinate (v'): 0.323



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	0.002	515	0.078	655	0.043
380	0.002	520	0.088	660	0.038
385	0.002	525	0.095	665	0.034
390	0.002	530	0.101	670	0.029
395	0.002	535	0.105	675	0.026
400	0.002	540	0.108	680	0.022
405	0.003	545	0.111	685	0.02
410	0.004	550	0.113	690	0.017
415	0.006	555	0.115	695	0.015
420	0.01	560	0.117	700	0.013
425	0.017	565	0.118	705	0.011
430	0.03	570	0.119	710	0.01
435	0.051	575	0.12	715	0.008
440	0.084	580	0.119	720	0.007
445	0.134	585	0.118	725	0.006
450	0.177	590	0.116	730	0.005
455	0.169	595	0.113	735	0.005
460	0.123	600	0.109	740	0.004
465	0.082	605	0.105	745	0.004
470	0.058	610	0.099	750	0.003
475	0.041	615	0.093	755	0.003
480	0.031	620	0.087	760	0.002
485	0.027	625	0.08	765	0.002
490	0.028	630	0.074	770	0.002
495	0.033	635	0.067	775	0.002
500	0.043	640	0.06	780	0.001
505	0.054	645	0.054		
510	0.067	650	0.048		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L14024.
Dialight unit model number LTM3C4M2P

Electrical Measurements:

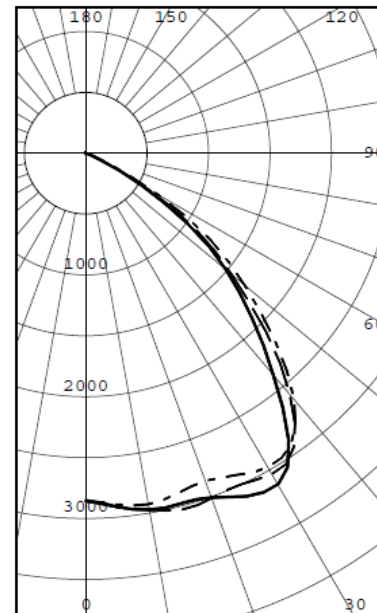
Input Voltage: 120 (VAC)
Input current: 0.556 (A)
Input Power: 65.83 (W)
Power Factor: 0.986

Photometric measurements:

Absolute Luminous Flux: 7126 (lumens)
Luminous Efficacy: 108.2 (lumens/W)

Intensity Summary:

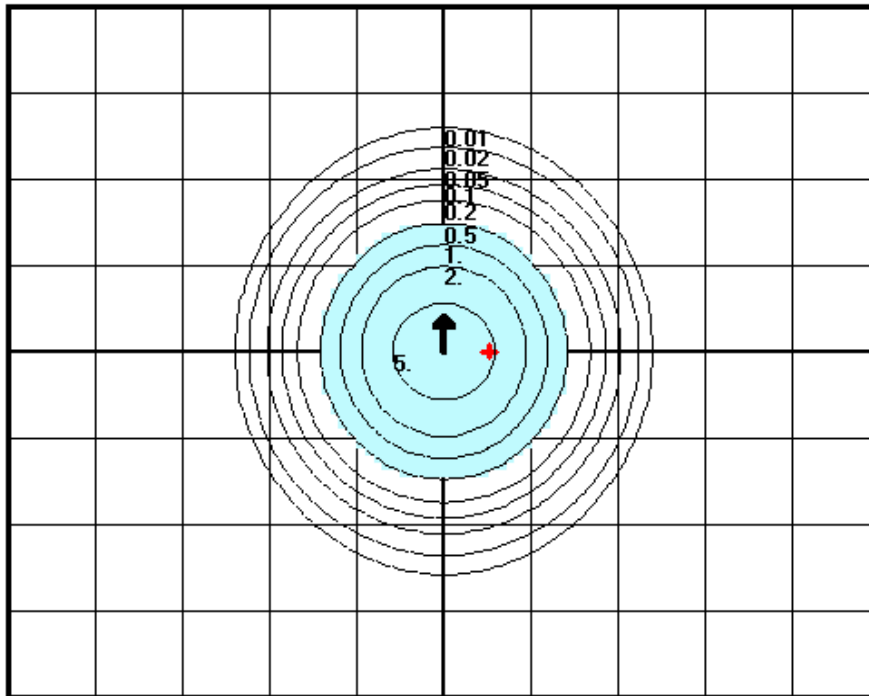
ANGLE	INTENSITY (CANDLEPOWER) SUMMARY					OUTPUT LUMENS
	ALONG	22.5	45	67.5	ACROSS	
0	2854	2854	2854	2854	2854	
5	2898	2868	2918	2899	2915	283
15	2891	2907	3029	3001	2981	839
25	2917	2965	3002	3086	3107	1396
35	2912	2940	2950	2915	2877	1796
45	2176	2123	2073	1919	1910	1570
55	1233	1234	1096	1041	1018	983
65	231	211	188	156	147	231
75	29	30	26	21	18	26
85	6	3	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	1	0
180	0	0	0	0	0	



Test Results: Goniometer

Results continued from previous page.

Iso-illuminance Plot:



Mounting Height	Multiplier
10	4.000
15	1.778
20	1.000
25	0.640
30	0.444
35	0.327
40	0.250
45	0.198
50	0.160

Shade Limit:
0.5 fc.

Shaded Area:
2703 sq.ft.

+ = Point of max candela

Mounting Height = 20'. Each box is one mounting height.

Zonal Lumen Summary:

ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	2518	35.33
0-40	4314	60.53
0-60	6866	96.35
0-90	7126	100.00
40-90	2812	39.47
60-90	260	3.65
90-180	0	0.00
0-180	7126	100.00

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L14024.

Dialight unit model number LTM3C4M2P

LED identified as Nichia part number NS2W757A-V1.

LED drive current (as indicated by customer): 76 (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:

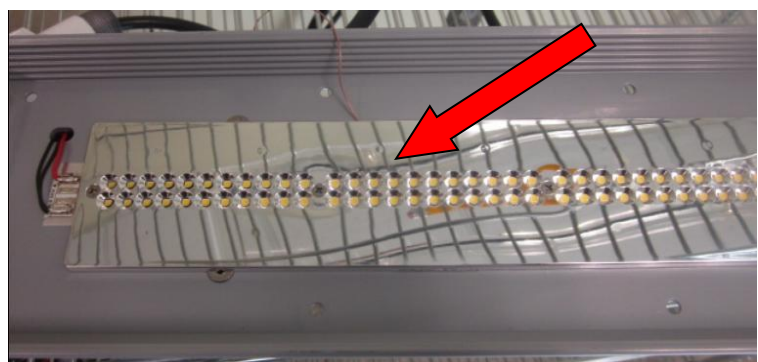
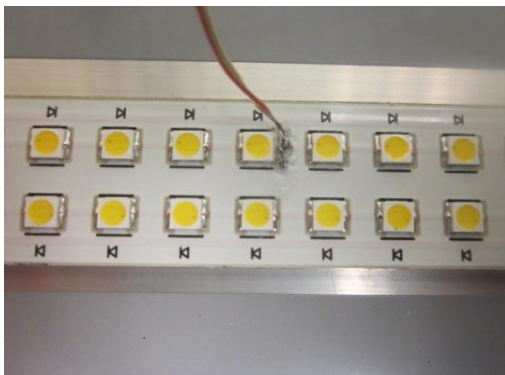
Maximum Power at Indicated Current:	0.266 (W)
Maximum Source Temperature:	114.9 (°C) (Tj - [power dissipation * Rth])

Test Conditions:

Temperature Measurement Location:	See Photographs Below
Ambient Temperature:	25° ± 1° (°C)
Ambient temperature at time of measurement:	24.4 (°C)
Relative humidity at time of measurement:	57%

Results:

Measured LED source temperature: 43.1 (°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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