

Test Report

Report Number: L16083

Date: Nov 2, 2016

Issued by:

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

Test of one SafeSite Linear
Unit manufacturer: Dialight Corporation
Unit model number: LSx3C4MEP

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: October 24, 2016 through November 1, 2016

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

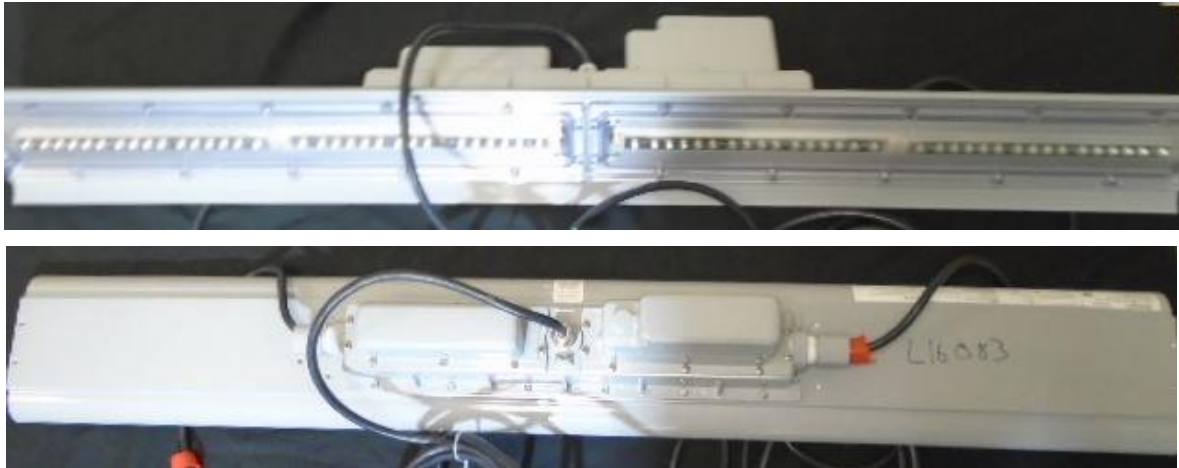
Description of sample:

Sample Number: L16083
Manufacturer: Dialight Corporation
Product Name: SafeSite Linear
Description: SafeSite Linear
Model Number: LSx3C4MEP

Report Summary

Sample number L16083
Dialight unit model number LSx3C4MEP

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	6882 (lumens)	6767 (lumens)
Electrical Power:	68.1 (W)	68.1 (W)
Luminous Efficacy:	101.1 (lumens/W)	99.36 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 68.1 (W)
 Power Factor (120VAC): 0.993
 Current ATHD % (120VAC): 10.88
 Input Power (277VAC): 65.5 (W)
 Power Factor (277VAC): 0.96
 Current ATHD % (277VAC): 16.96

Color Measurements:

Correlated Color Temperature (CCT): 5042
 Color Rendering Index (CRI): 72.6
 Chromaticity Coordinate (x): 0.344
 Chromaticity Coordinate (y): 0.349
 Chromaticity Coordinate (u'): 0.212
 Chromaticity Coordinate (v'): 0.322
 DUV: 0.00072

Temperature Measurements:

In Situ LED Source Temperature: 45.5 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L16083.

Dialight unit model number LSx3C4MEP

Test Conditions:

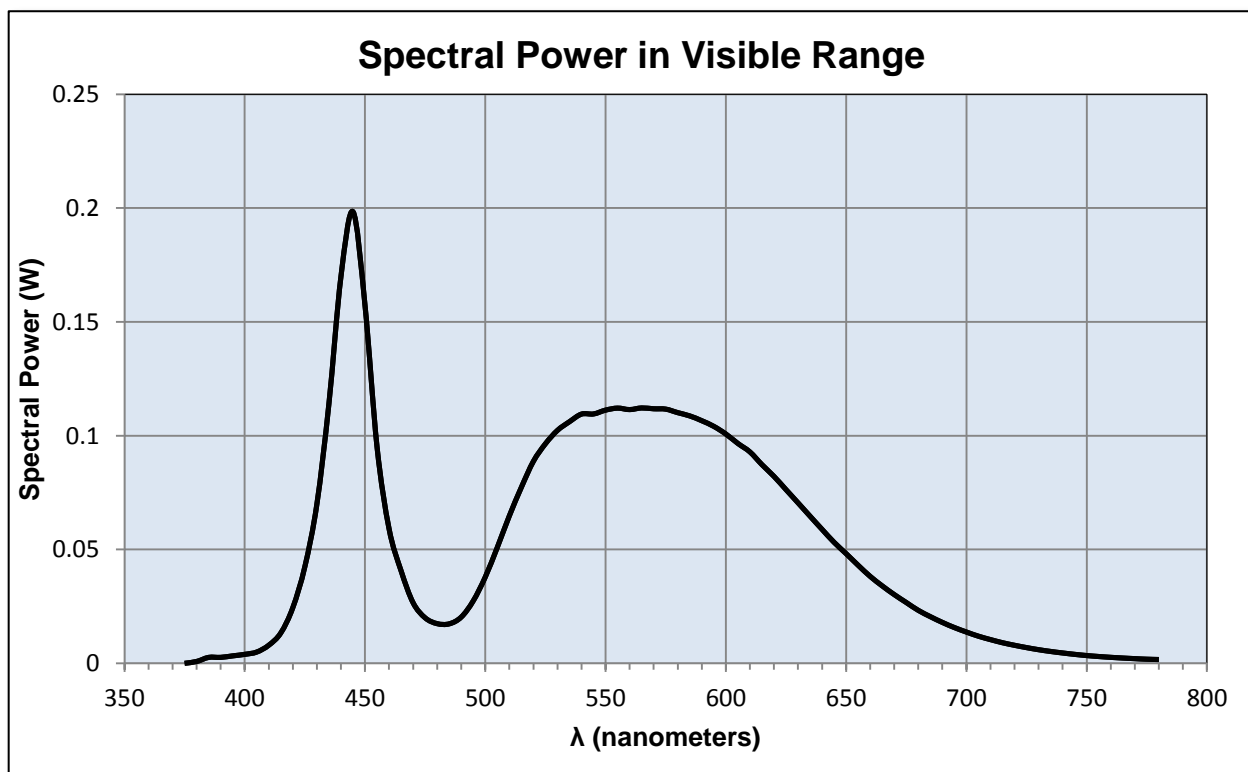
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 0.57 (A)
Input Power: 68.1 (W)
Input Power Factor: 0.993
Current ATHD: 10.88 (%)

Photometric measurements:

Luminous Flux: 6882 (lumens)
Luminous Efficacy: 101.1 (lumens/W)
Correlated Color Temperature (CCT): 5042 (K)
CRI -Ra: 72.6
CRI -R9: -12.9
DUV: 0.00072
CIE Coordinate (x): 0.344
CIE Coordinate (y): 0.349
CIE Coordinate (u'): 0.212
CIE Coordinate (v'): 0.322



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	0.000	515	0.077	655	0.043
380	0.001	520	0.089	660	0.038
385	0.003	525	0.096	665	0.034
390	0.003	530	0.102	670	0.030
395	0.003	535	0.106	675	0.027
400	0.004	540	0.109	680	0.023
405	0.005	545	0.110	685	0.021
410	0.008	550	0.111	690	0.018
415	0.013	555	0.112	695	0.016
420	0.024	560	0.111	700	0.014
425	0.042	565	0.112	705	0.012
430	0.070	570	0.112	710	0.010
435	0.114	575	0.112	715	0.009
440	0.170	580	0.110	720	0.008
445	0.198	585	0.109	725	0.007
450	0.157	590	0.107	730	0.006
455	0.095	595	0.104	735	0.005
460	0.059	600	0.101	740	0.005
465	0.041	605	0.097	745	0.004
470	0.027	610	0.093	750	0.003
475	0.020	615	0.087	755	0.003
480	0.017	620	0.082	760	0.003
485	0.017	625	0.076	765	0.002
490	0.020	630	0.071	770	0.002
495	0.027	635	0.065	775	0.002
500	0.038	640	0.059	780	0.002
505	0.051	645	0.053		
510	0.065	650	0.048		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L16083.
Dialight unit model number LSx3C4MEP

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.569 (A)
Input Power: 68.1 (W)
Power Factor: 0.992

Photometric measurements:

Absolute Luminous Flux: 6767 (lumens)
Luminous Efficacy: 99.4 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	2331	2331	2331	2331	2331	
5	2336	2336	2336	2336	2336	87
15	2353	2353	2353	2353	2353	501
25	2261	2261	2261	2261	2261	913
35	2382	2382	2382	2382	2382	1328
45	2016	2016	2016	2016	2016	1597
55	1196	1196	1196	1196	1196	1238
65	634	634	634	634	634	828
75	96	96	96	96	96	230
85	18	18	18	18	18	43
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

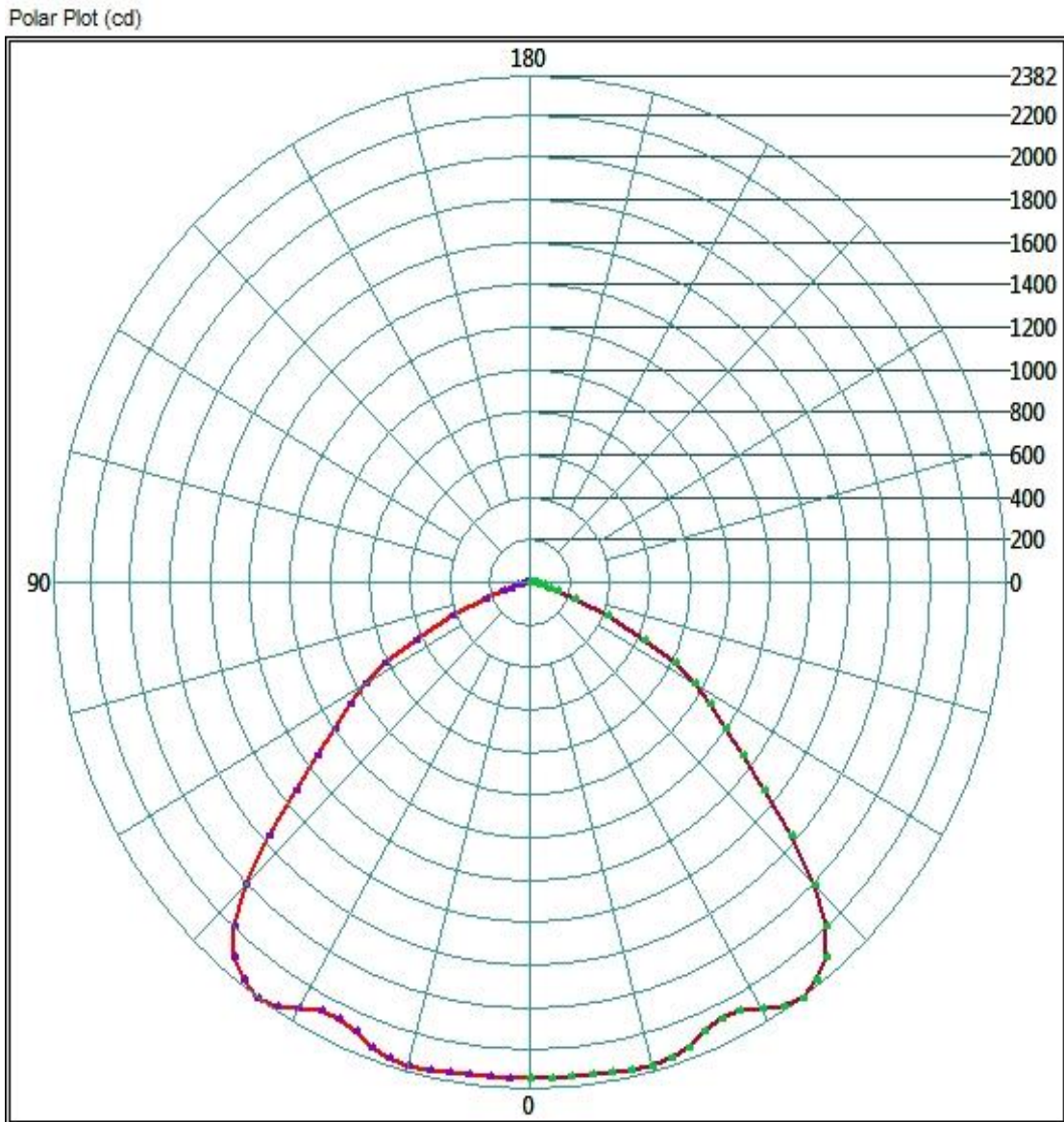
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	2107.04	31.1%
0-40	3629.28	53.6%
0-60	6136.64	90.7%
60-90	854.72	12.6%
0-90	6766.56	100.0%
90-180	0	0.0%
0-180	6766.56	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

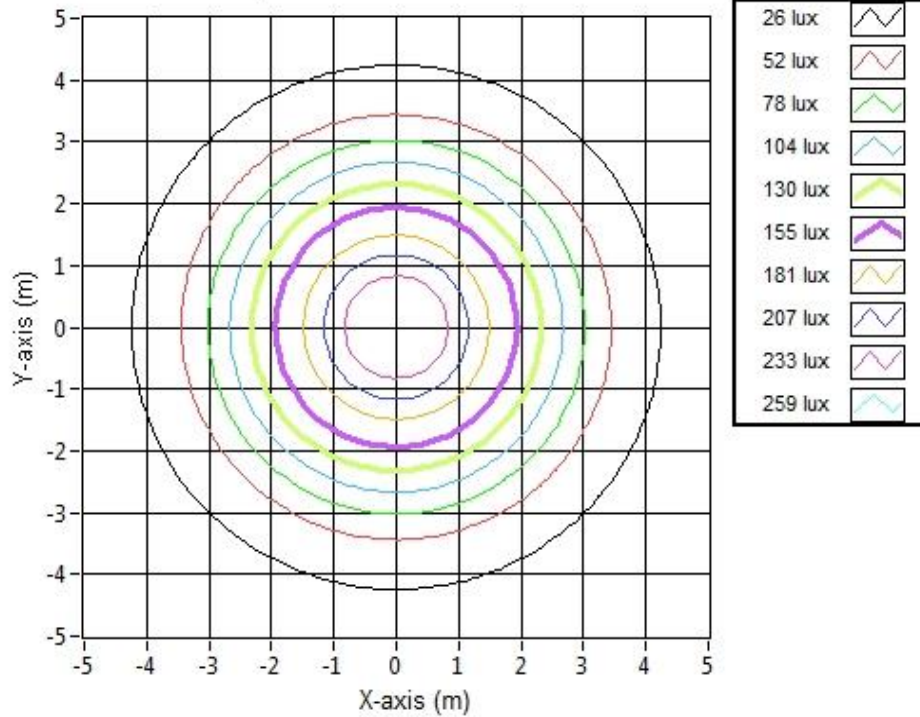


Test Results: Goniometer

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	8.90	8.90	250.9
6.096	17.80	17.80	62.7
9.144	26.71	26.71	27.9
12.192	35.61	35.61	15.7
15.24	44.51	44.51	10.0
18.288	53.41	53.41	7.0
21.336	62.31	62.31	5.1
24.384	71.21	71.21	3.9
27.432	80.12	80.12	3.1
30.48	89.02	89.02	2.5

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L16083.
Dialight unit model number LSx3C4MEP

LED identified as Cree part number XTE-AWT.

LED drive current (as indicated by customer): 350 (mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If): 1500 (mA)
Maximum Rated Power Dissipation: 5.25 (W)
Maximum Junction Temp. (Tj): 150 (°C)
Thermal Resistance (Rth): 5 (°C/W)

Derived Specifications:

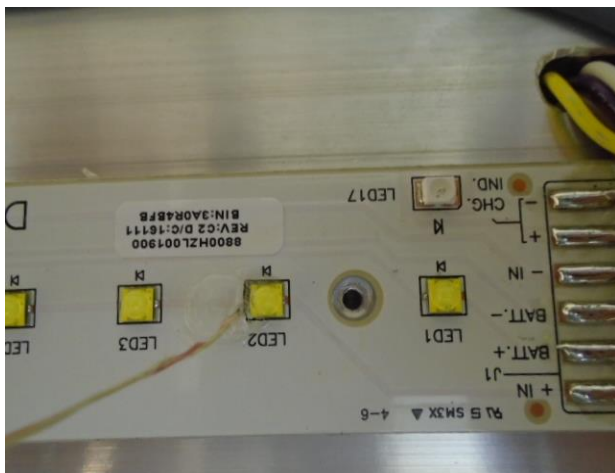
Maximum Power at Indicated Current: 1.225 (W)
Maximum Source Temperature: 143.9 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 5'$ (°C)
Ambient temperature at time of measurement: 23.1 (°C)
Relative humidity at time of measurement: 23%

Results:

Measured LED source temperature: 45.5 (°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
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
Fluke 971 Humidity Meter	971
Extech Hygro-Thermometer	4/16/3120
Fluke 52II Thermometer	52II Thermometer
Volttech Power Analyzer	PM1000+
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
Adaptive Power Systems AC Power Supply	FC-210
Xitron Power Analyzer	XT2640

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.

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