Dialight
OPTICS LABORATORY

NVLAP®
NVLAP Lab Code 201033-0

Test Report

Report Number: L16023 Date: Apr 6, 2016

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

Test of one 2ft End-to-End Linear With Clear Lens
Unit manufacturer: Dialight Corporation
Unit model number: LAx2MB3BNxxxxN

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: April 5, 2016 through April 5, 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:	L16023
Manufacturer:	Dialight Corporation
Product Name:	2ft End-to-End Linear
Description:	2ft End-to-End Linear With Clear Lens
Model Number:	LAx2MB3BNxxxxN

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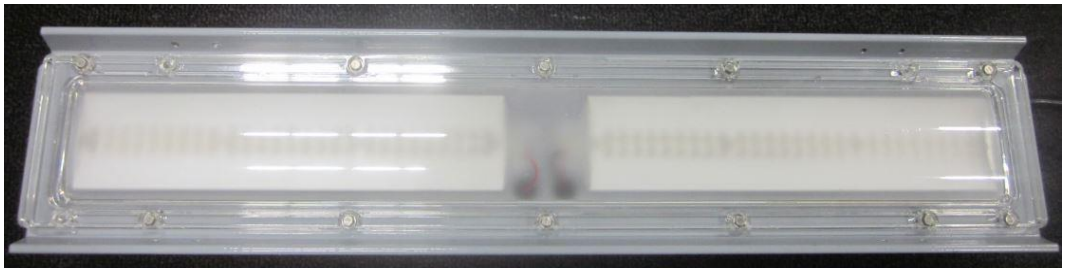
Report Summary

Sample number L16023

Dialight unit model number LAx2MB3BNxxxxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere		Goniophotometer	
Luminous Flux:	3952	(lumens)	3956	(lumens)
Electrical Power:	32.5	(W)	32.5	(W)
Luminous Efficacy:	121.6	(lumens/W)	121.6	(lumens/W)

Electrical Measurements:

Input Power (277VAC):	32.5	(W)
Power Factor (277VAC):	0.933	
Current ATHD % (277VAC):	16.04	
Input Power (120VAC):	31.4	(W)
Power Factor (120VAC):	0.997	
Current ATHD % (120VAC):	9.228	

Color Measurements:

Correlated Color Temperature (CCT):	4790
Color Rendering Index (CRI):	84.7
Chromaticity Coordinate (x):	0.352
Chromaticity Coordinate (y):	0.361
Chromaticity Coordinate (u'):	0.212
Chromaticity Coordinate (v'):	0.327
DUV:	0.002

Temperature Measurements:

In Situ LED Source Temperature:	42.3	(°C)

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Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L16023.
Dialight unit model number LAx2MB3BNxxxxN

Test Conditions:

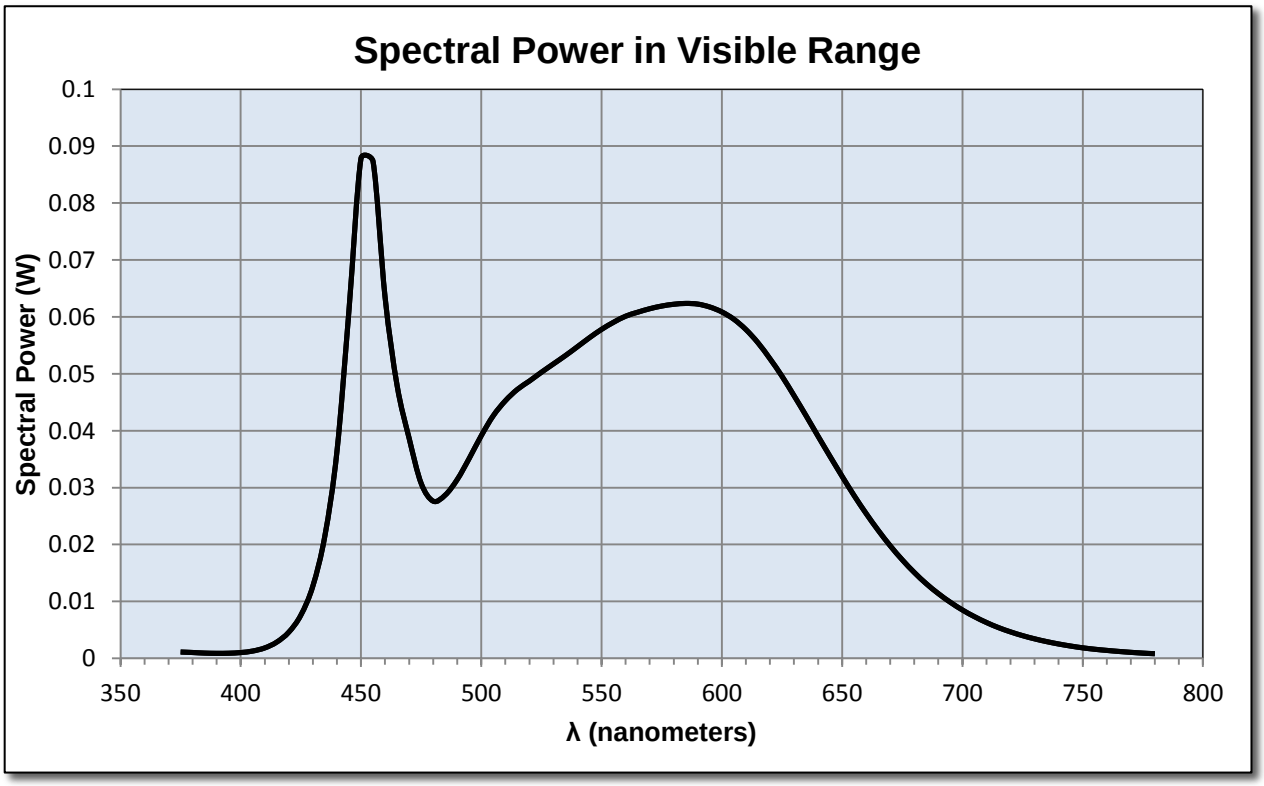
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	277	(VAC)
Input Current:	0.126	(A)
Input Power:	32.5	(W)
Input Power Factor:	0.933	
Current ATHD:	16.04	(%)

Photometric measurements:

Luminous Flux:	3952	(lumens)
Luminous Efficacy:	121.6	(lumens/W)
Correlated Color Temperature (CCT):	4790	(K)
CRI -Ra:	84.7	
CRI -R9:	17.5	
DUV:	0.002	
CIE Coordinate (x):	0.352	
CIE Coordinate (y):	0.361	
CIE Coordinate (u'):	0.212	
CIE Coordinate (v'):	0.327	



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	0.047	655	0.029
380	0.001	520	0.049	660	0.025
385	0.001	525	0.050	665	0.022
390	0.001	530	0.052	670	0.020
395	0.001	535	0.053	675	0.017
400	0.001	540	0.055	680	0.015
405	0.001	545	0.056	685	0.013
410	0.002	550	0.058	690	0.011
415	0.003	555	0.059	695	0.010
420	0.005	560	0.060	700	0.009
425	0.008	565	0.061	705	0.007
430	0.013	570	0.061	710	0.006
435	0.022	575	0.062	715	0.005
440	0.036	580	0.062	720	0.005
445	0.061	585	0.062	725	0.004
450	0.088	590	0.062	730	0.003
455	0.087	595	0.062	735	0.003
460	0.063	600	0.061	740	0.003
465	0.048	605	0.060	745	0.002
470	0.039	610	0.058	750	0.002
475	0.031	615	0.055	755	0.002
480	0.028	620	0.053	760	0.001
485	0.029	625	0.050	765	0.001
490	0.031	630	0.046	770	0.001
495	0.035	635	0.043	775	0.001
500	0.039	640	0.039	780	0.001
505	0.043	645	0.035		
510	0.045	650	0.032		

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Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L16023.
Dialight unit model number LAx2MB3BNxxxxN

Electrical Measurements:

Input Voltage:	277	(VAC)
Input current:	0.125	(A)
Input Power:	32.5	(W)
Power Factor:	0.931	

Photometric measurements:

Absolute Luminous Flux:	3956	(lumens)
Luminous Efficacy:	121.6	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	1548	1548	1548	1548	1548	
5	1569	1569	1569	1569	1569	58
15	1620	1620	1620	1620	1620	345
25	1580	1580	1580	1580	1580	631
35	1392	1392	1392	1392	1392	853
45	977	977	977	977	977	799
55	732	732	732	732	732	703
65	317	317	317	317	317	482
75	18	18	18	18	18	76
85	4	4	4	4	4	8
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	

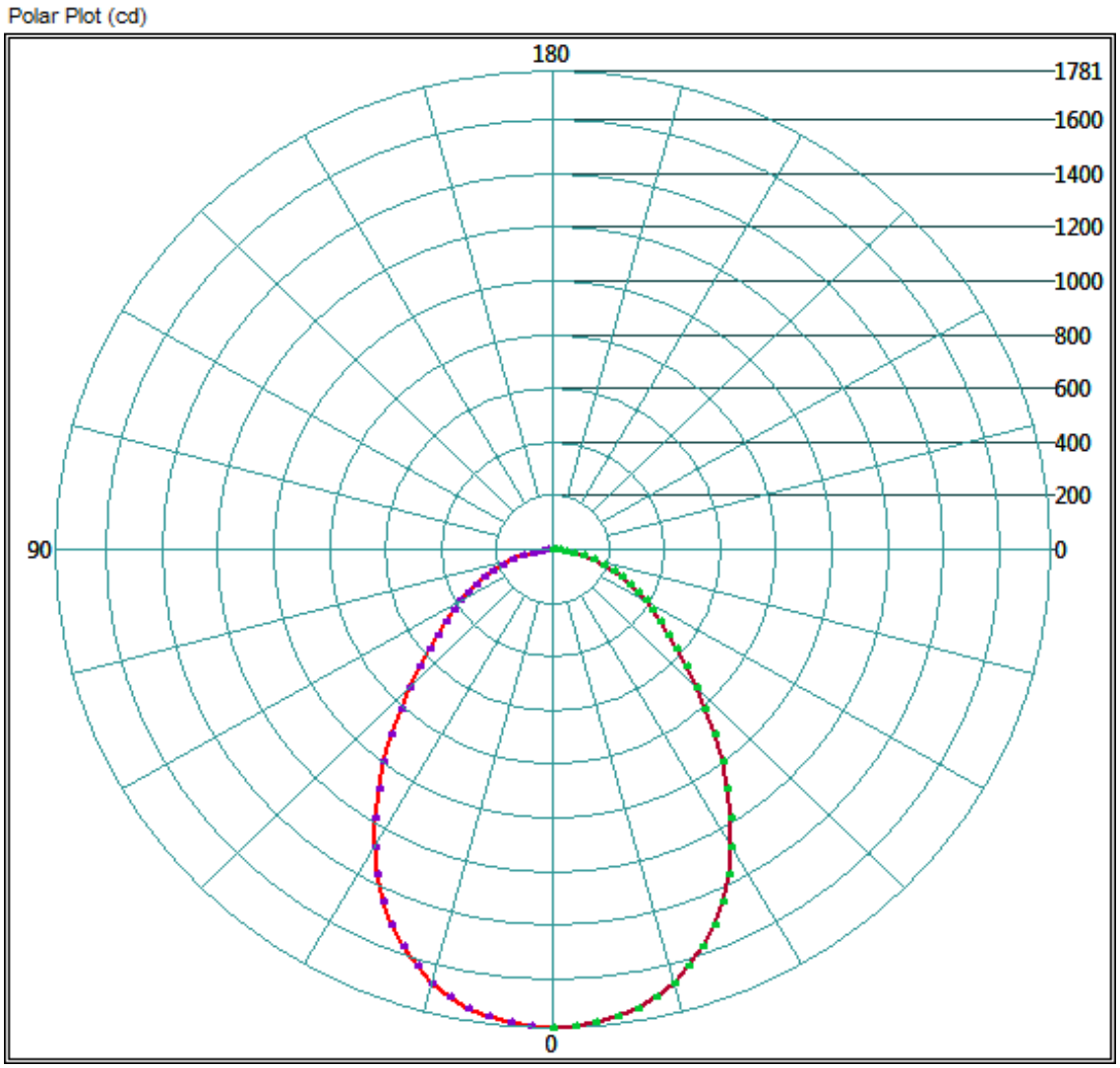
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1447.84	36.6%
0-40	2301.6	58.2%
0-60	3680.48	93.0%
60-90	412.96	10.4%
0-90	3955.84	100.0%
90-180	0	0.0%
0-180	3955.84	100.0%

Test Results: Goniometer

Results continued from previous page.

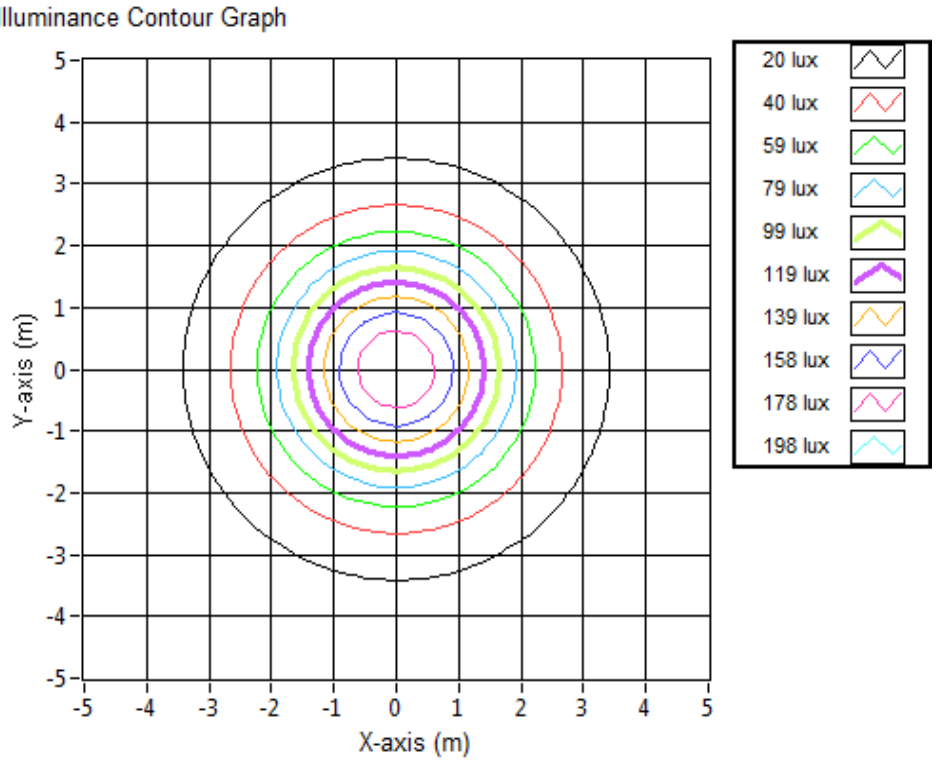
Polar Plot:



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	5.16	5.16	191.7
6.096	10.31	10.31	47.9
9.144	15.47	15.47	21.3
12.192	20.62	20.62	12.0
15.24	25.78	25.78	7.7
18.288	30.94	30.94	5.3
21.336	36.09	36.09	3.9
24.384	41.25	41.25	3.0
27.432	46.40	46.40	2.4
30.48	51.56	51.56	1.9

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L16023.
Dialight unit model number LAx2MB3BNxxxxN

LED identified as Seoul part number STW8C2SA.

LED drive current (as indicated by customer): 45 (mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If):	200	(mA)
Maximum Rated Power Dissipation:	1.44	(W)
Maximum Junction Temp. (Tj):	125	(°C)
Thermal Resistance (Rth):	10	(°C/W)

Derived Specifications:

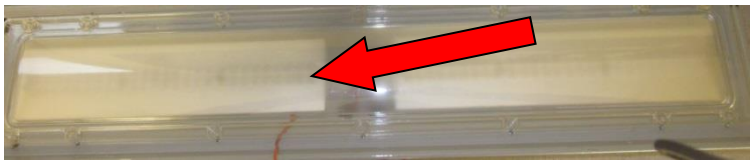
Maximum Power at Indicated Current:	0.324	(W)
Maximum Source Temperature:	121.8	(°C)

Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 5‘	(°C)
Ambient temperature at time of measurement:	23.6	(°C)
Relative humidity at time of measurement:	16%	

Results:

Measured LED source temperature: 42.3 (°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
Extech Hygro-Thermometer	4/16/3120
Extech Hygro-Thermometer	4/16/3120
Fluke 52II Thermometer	52II Thermometer
Volttech Power Analyzer	PM1000+
BK Precison	1715A
TDK-Lambda	GEN1500W
Fluke 8808A Digit Multimeter	8808A
TPI Digitial Thermometer 343	TPI 343
TPI Digitial 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.

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