

Test Report

Report Number: L15150

Date: Nov 13, 2015

Issued by:

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

Test of one CID1 Gen 1 Linear
Unit manufacturer: Dialight Corporation
Unit model number: LSC3B4M3G-xx

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: November 10, 2015 through November 11, 2015

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: L15150
Manufacturer: Dialight Corporation
Product Name: CID1 Gen 1 Linear
Description: CID1 Gen 1 Linear
Model Number: LSC3B4M3G-xx

Report Summary
Sample number L15150
Dialight unit model number LSC3B4M3G-xx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	6609 (lumens)	6477 (lumens)
Electrical Power:	66.8 (W)	66.7 (W)
Luminous Efficacy:	98.94 (lumens/W)	97.03 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 66.8 (W)
 Power Factor (120VAC): 0.988
 Current ATHD % (120VAC): 13.07
 Input Power (277VAC): 66.8 (W)
 Power Factor (277VAC): 0.921
 Current ATHD % (277VAC): 12.89

Color Measurements:

Correlated Color Temperature (CCT): 5053
 Color Rendering Index (CRI): 85.1
 Chromaticity Coordinate (x): 0.344
 Chromaticity Coordinate (y): 0.351
 Chromaticity Coordinate (u'): 0.211
 Chromaticity Coordinate (v'): 0.323
 DUV: 0.00033

Temperature Measurements:

In Situ LED Source Temperature: 49.8 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15150.
Dialight unit model number LSC3B4M3G-xx

Test Conditions:

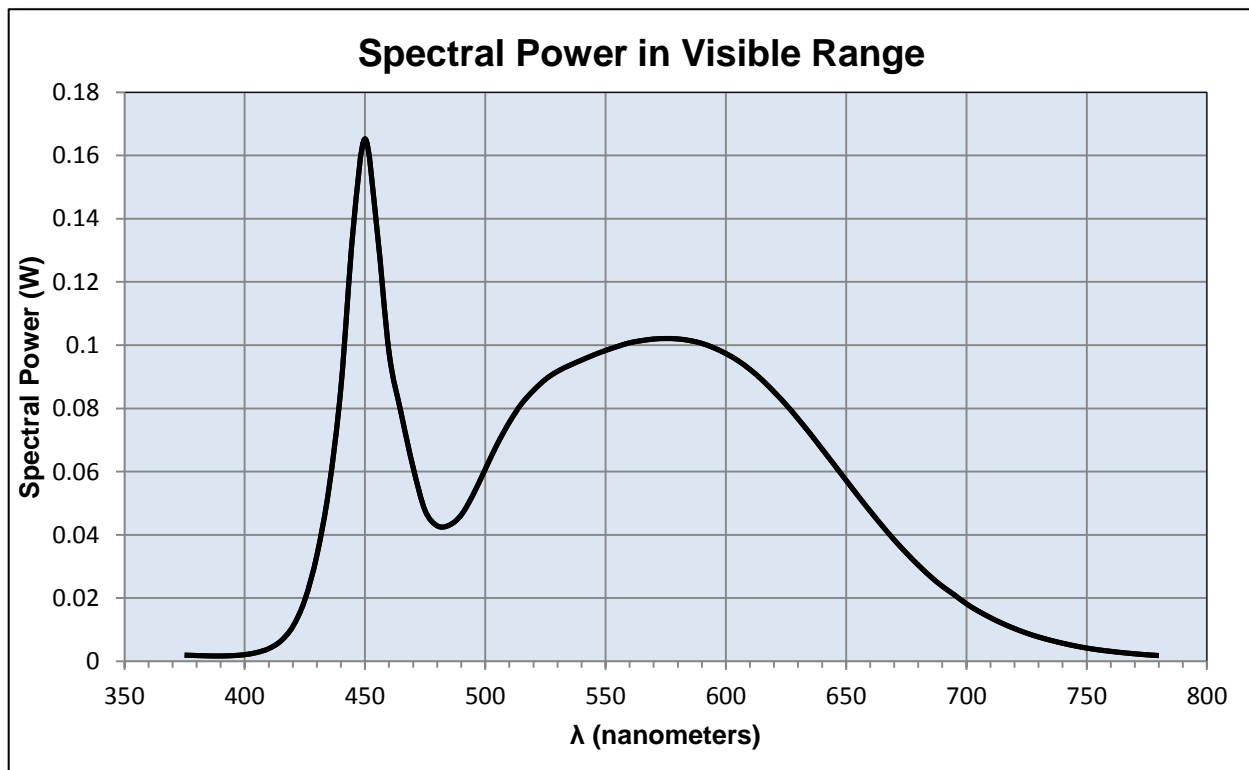
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 0.562 (A)
Input Power: 66.8 (W)
Input Power Factor: 0.988
Current ATHD: 13.07 (%)

Photometric measurements:

Luminous Flux: 6609 (lumens)
Luminous Efficacy: 98.9 (lumens/W)
Correlated Color Temperature (CCT): 5053 (K)
CRI -Ra: 85.1
CRI -R9: 27.9
DUV: 0.00033
CIE Coordinate (x): 0.344
CIE Coordinate (y): 0.351
CIE Coordinate (u'): 0.211
CIE Coordinate (v'): 0.323



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	0.002	515	0.081	655	0.052
380	0.002	520	0.086	660	0.047
385	0.002	525	0.089	665	0.043
390	0.002	530	0.092	670	0.038
395	0.002	535	0.094	675	0.034
400	0.002	540	0.095	680	0.03
405	0.003	545	0.097	685	0.027
410	0.004	550	0.098	690	0.024
415	0.006	555	0.1	695	0.021
420	0.011	560	0.101	700	0.018
425	0.019	565	0.101	705	0.016
430	0.034	570	0.102	710	0.014
435	0.055	575	0.102	715	0.012
440	0.087	580	0.102	720	0.01
445	0.136	585	0.101	725	0.009
450	0.165	590	0.101	730	0.008
455	0.136	595	0.099	735	0.007
460	0.098	600	0.097	740	0.006
465	0.079	605	0.095	745	0.005
470	0.061	610	0.092	750	0.004
475	0.048	615	0.089	755	0.004
480	0.043	620	0.085	760	0.003
485	0.043	625	0.081	765	0.003
490	0.046	630	0.077	770	0.002
495	0.053	635	0.072	775	0.002
500	0.061	640	0.067	780	0.002
505	0.069	645	0.062		
510	0.076	650	0.057		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15150.
Dialight unit model number LSC3B4M3G-xx

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.56 (A)
Input Power: 66.7 (W)
Power Factor: 0.987

Photometric measurements:

Absolute Luminous Flux: 6477 (lumens)
Luminous Efficacy: 97.0 (lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	2011	2011	2011	2011	2011	
5	2005	2005	2005	2005	2005	75
15	1997	1997	1997	1997	1997	426
25	2018	2018	2018	2018	2018	802
35	2225	2225	2225	2225	2225	1191
45	2317	2317	2317	2317	2317	1746
55	1246	1246	1246	1246	1246	1323
65	470	470	470	470	470	769
75	28	28	28	28	28	130
85	6	6	6	6	6	14
95	0	0	0	0	0	1
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

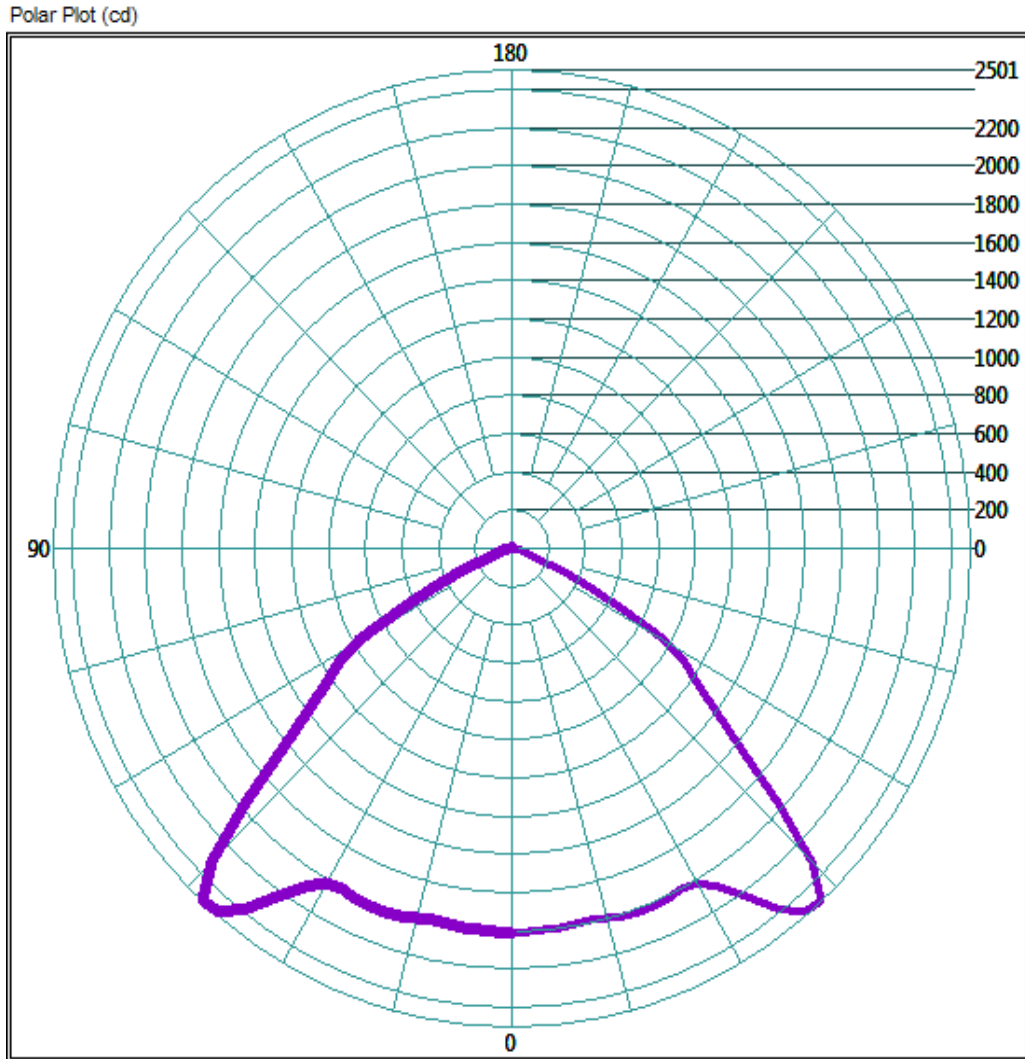
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1835.2	28.3%
0-40	3327.84	51.4%
0-60	6049.92	93.4%
60-90	654.72	10.1%
0-90	6476.48	100.0%
90-180	0	0.0%
0-180	6476.48	100.0%

Test Results: Goniometer

Results continued from previous page.

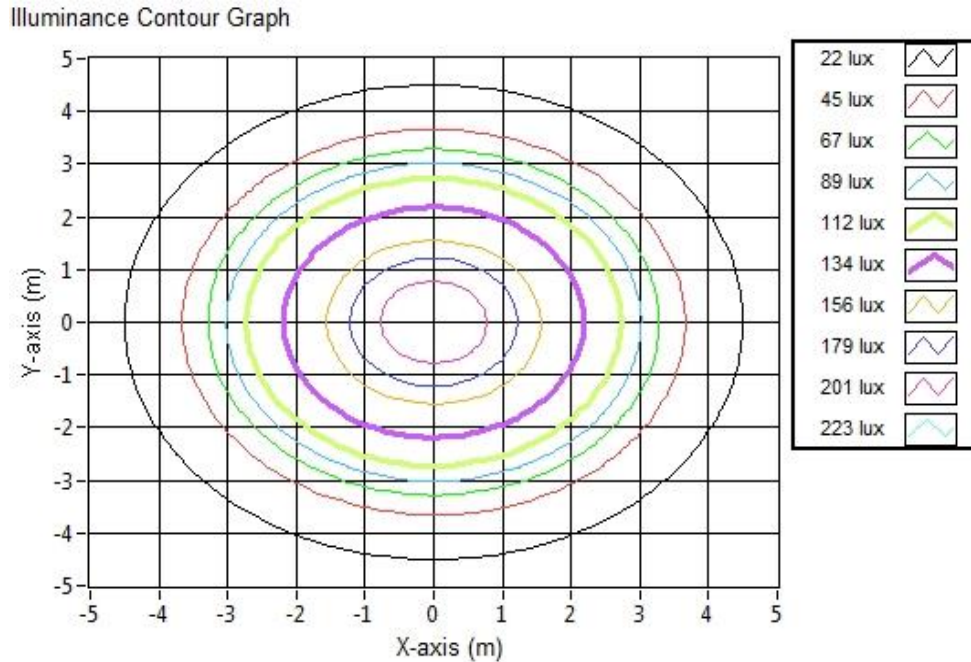
Polar Plot:



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	10.27	10.27	216.4
6.096	20.53	20.53	54.1
9.144	30.80	30.80	24.0
12.192	41.07	41.07	13.5
15.24	51.33	51.33	8.7
18.288	61.60	61.60	6.0
21.336	71.87	71.87	4.4
24.384	82.14	82.14	3.4
27.432	92.40	92.40	2.7
30.48	102.67	102.67	2.2

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15150.
Dialight unit model number LSC3B4M3G-xx

LED identified as Nichia part number 219B.

LED drive current (as indicated by customer): 321 (mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If): 1500 (mA)
Maximum Rated Power Dissipation: 5.1 (W)
Maximum Junction Temp. (Tj): 150 (°C)
Thermal Resistance (Rth): 11 (°C/W)

Derived Specifications:

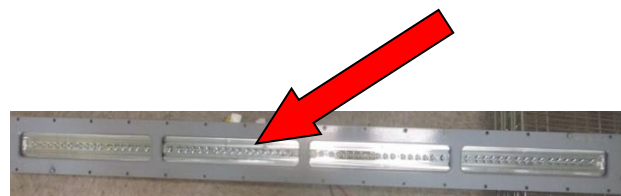
Maximum Power at Indicated Current: 1.091 (W)
Maximum Source Temperature: 138 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 1^{\circ}$ (°C)
Ambient temperature at time of measurement: 24.2 (°C)
Relative humidity at time of measurement: 39%

Results:

Measured LED source temperature: 49.8 (°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
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 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.

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