

Test Report

Report Number: L18098

Date: Nov 6, 2018

Issued by:

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

Test of one High Output High Bay
Unit manufacturer: Dialight Corporation
Unit model number: H6x-7NCD-Nxxx-xxx

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 1, 2018 through November 6, 2018

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: L18098
Manufacturer: Dialight Corporation
Product Name: H6x-7NCD-Nxxx-xxx
Description: High Output High Bay
Model Number: H6x-7NCD-Nxxx-xxx

Report Summary

Sample number L18098
Dialight unit model number H6x-7NCD-Nxxx-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	59002 (lumens)	59191 (lumens)
Electrical Power:	429.0 (W)	430.1 (W)
Luminous Efficacy:	137.5 (lumens/W)	137.6 (lumens/W)

Electrical Measurements:

Input Power (480): 429.0 (W)
Power Factor (480): 0.972
Current ATHD % (480): 6.89

Color Measurements:

Correlated Color Temperature (CCT): 4759
Color Rendering Index (CRI): 82.1
Chromaticity Coordinate (x): 0.354
Chromaticity Coordinate (y): 0.367
Chromaticity Coordinate (u'): 0.211
Chromaticity Coordinate (v'): 0.329
DUV: 0.0045

Temperature Measurements:

In Situ LED Source Temperature: 53.3 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18098.

Dialight unit model number H6x-7NCD-Nxxx-xxx

Test Conditions:

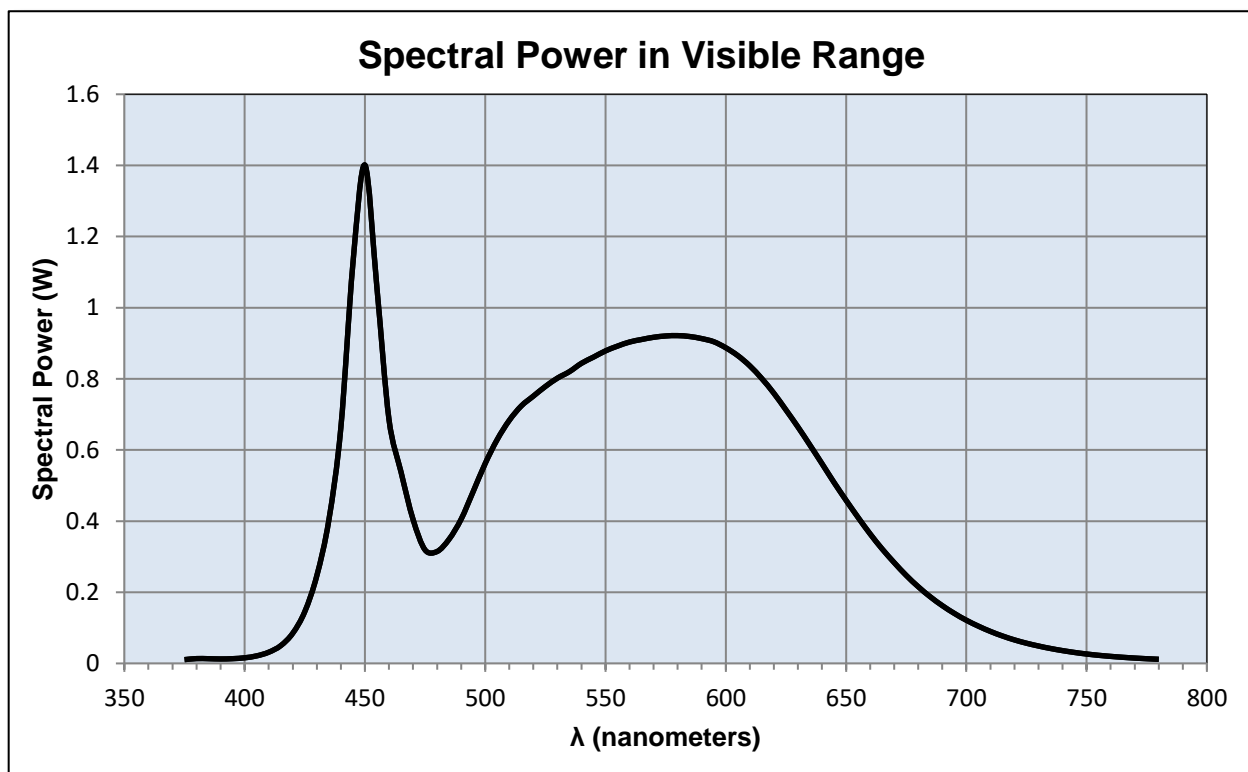
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 480 (VAC)
Input Current: 0.93 (A)
Input Power: 429.0 (W)
Input Power Factor: 0.972
Current ATHD: 6.89 (%)

Photometric measurements:

Luminous Flux: 59002 (lumens)
Luminous Efficacy: 137.5 (lumens/W)
Correlated Color Temperature (CCT): 4759 (K)
CRI -Ra: 82.1
CRI -R9: 8.6
DUV: 0.0045
CIE Coordinate (x): 0.354
CIE Coordinate (y): 0.367
CIE Coordinate (u'): 0.211
CIE Coordinate (v'): 0.329



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	0.011	515	0.724	655	0.410
380	0.014	520	0.751	660	0.364
385	0.013	525	0.778	665	0.322
390	0.013	530	0.802	670	0.284
395	0.013	535	0.820	675	0.248
400	0.016	540	0.844	680	0.216
405	0.021	545	0.861	685	0.187
410	0.031	550	0.879	690	0.163
415	0.050	555	0.892	695	0.141
420	0.085	560	0.904	700	0.121
425	0.146	565	0.911	705	0.105
430	0.246	570	0.917	710	0.090
435	0.403	575	0.921	715	0.077
440	0.663	580	0.922	720	0.066
445	1.124	585	0.919	725	0.057
450	1.401	590	0.913	730	0.049
455	1.055	595	0.904	735	0.042
460	0.686	600	0.887	740	0.036
465	0.538	605	0.865	745	0.031
470	0.405	610	0.837	750	0.026
475	0.319	615	0.801	755	0.023
480	0.315	620	0.759	760	0.020
485	0.349	625	0.713	765	0.017
490	0.406	630	0.665	770	0.015
495	0.483	635	0.614	775	0.013
500	0.562	640	0.562	780	0.012
505	0.629	645	0.509		
510	0.683	650	0.459		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18098.
Dialight unit model number H6x-7NCD-Nxxx-xxx

Electrical Measurements:

Input Voltage: 480 (VAC)
Input current: 0.93 (A)
Input Power: 430.1 (W)
Power Factor: 0.98

Photometric measurements:

Absolute Luminous Flux: 59191 (lumens)
Luminous Efficacy: 137.6 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	80068	80068	80068	80068	80068	
5	74903	74903	74903	74903	74903	2851
15	49774	49774	49774	49774	49774	12291
25	31196	31196	31196	31196	31196	14629
35	20630	20630	20630	20630	20630	13596
45	10775	10775	10775	10775	10775	10521
55	2038	2038	2038	2038	2038	3922
65	894	894	894	894	894	1081
75	129	129	129	129	129	223
85	33	33	33	33	33	74
95	0	0	0	0	0	3
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

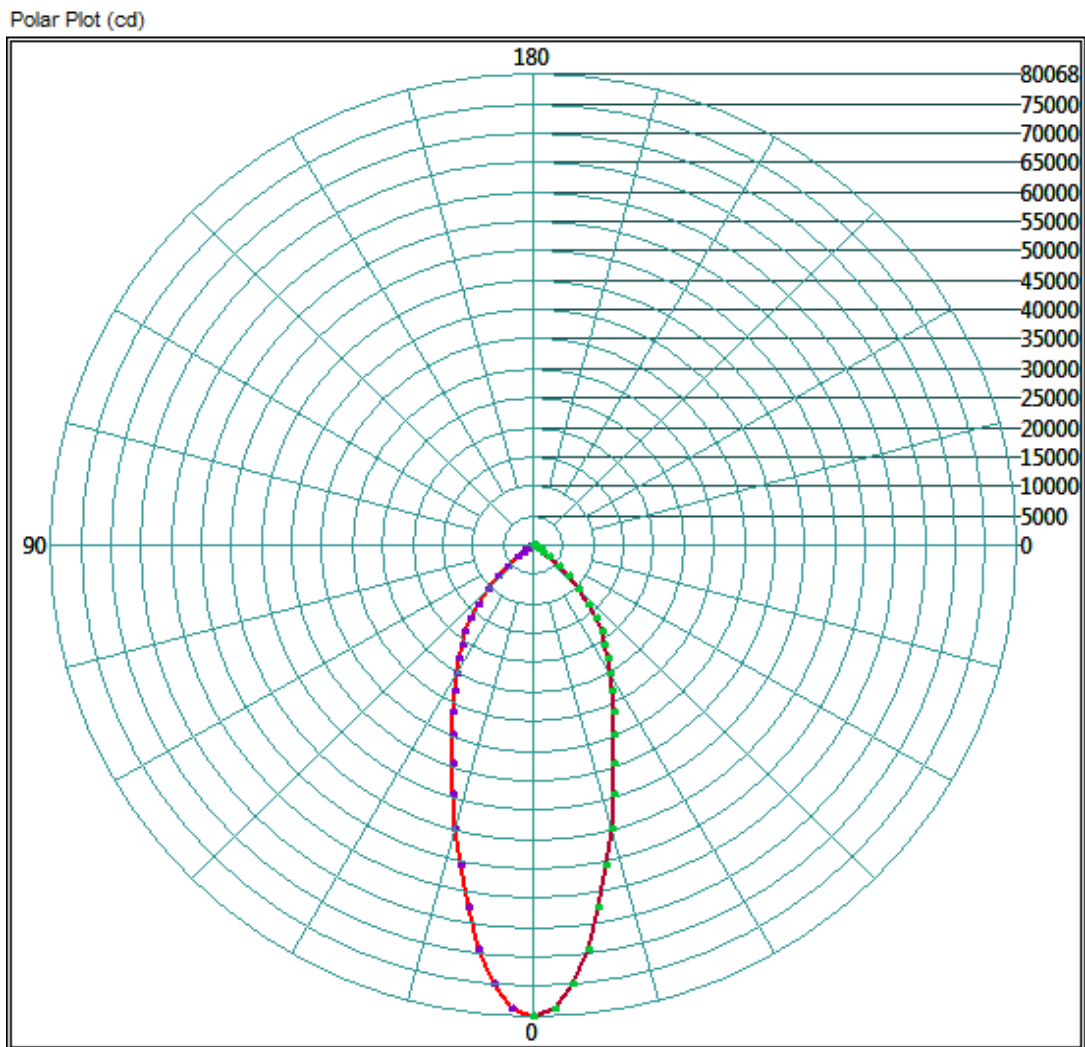
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	36763.84	62.1%
0-40	49288.96	83.3%
0-60	58402.72	98.7%
60-90	1060	1.8%
0-90	59190.56	100.0%
90-180	0	0.0%
0-180	59190.56	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

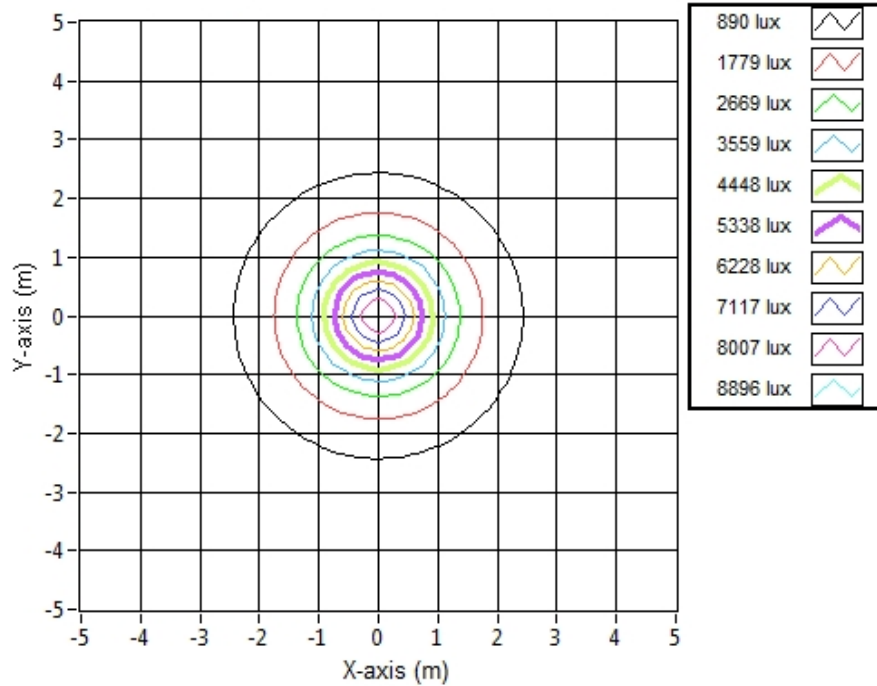


Test Results: Goniometer

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	2.18	2.18	8618.5
6.096	4.36	4.36	2154.6
9.144	6.53	6.53	957.6
12.192	8.71	8.71	538.7
15.24	10.89	10.89	344.7
18.288	13.07	13.07	239.4
21.336	15.25	15.25	175.9
24.384	17.43	17.43	134.7
27.432	19.60	19.60	106.4
30.48	21.78	21.78	86.2

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18098.
Dialight unit model number H6x-7NCD-Nxxx-xxx

LED identified as Seoul part number SAW8C22B.

LED drive current (as indicated by customer): 43 (mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If): 250 (mA)
Maximum Rated Power Dissipation: 1.5 (W)
Maximum Junction Temp. (Tj): 125 (°C)
Thermal Resistance (Rth): 17 (°C/W)

Derived Specifications:

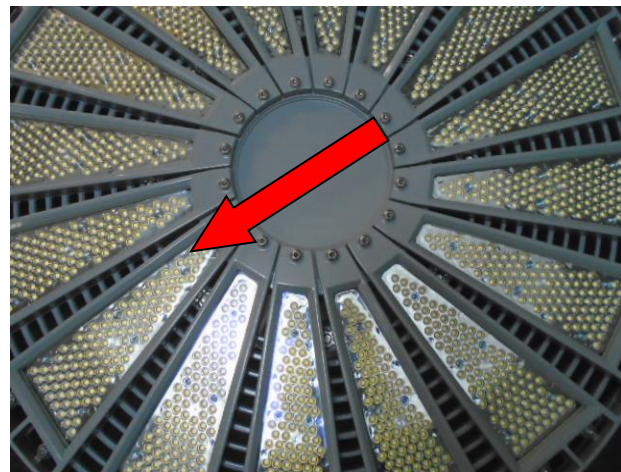
Maximum Power at Indicated Current: 0.258 (W)
Maximum Source Temperature: 120.6 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 5^{\circ}$ (°C)
Ambient temperature at time of measurement: 24.1 (°C)
Relative humidity at time of measurement: 45%

Results:

Measured LED source temperature: 53.3 (°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
Delta Elektronika DC Power Supply	SM.300-5
Instek AC Power Supply	APS-9501
Sorensen DC Power Supply	XHR150-7
TPI Digital Thermometer	TPI 343
Fluke 52II Thermometer	068158
Fluke 971 Humidity Meter	971
Volttech Power Analyzer	PM1000+
Volttech Universal Breakout Box	PM1000+
BK Precision	1715A
Step-Up Transformer	
Omega TC	Dpi8-C24
Agilent True RMS OLED Multimeter	U1273A
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
Adaptive Power Systems AC Power Supply	FC-210
Xitron Power Analyzer	XT2640
GwINSTEK DC Power Supply	GEP172679
Osram Sylvania Calibration Lamp for Sphere	STD-20WF-3

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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