

Test Report

Report Number: L18060

Date: Jul 11, 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: H6U-7NC4-Rxx-xxxx

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 3, 2018 through July 11, 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

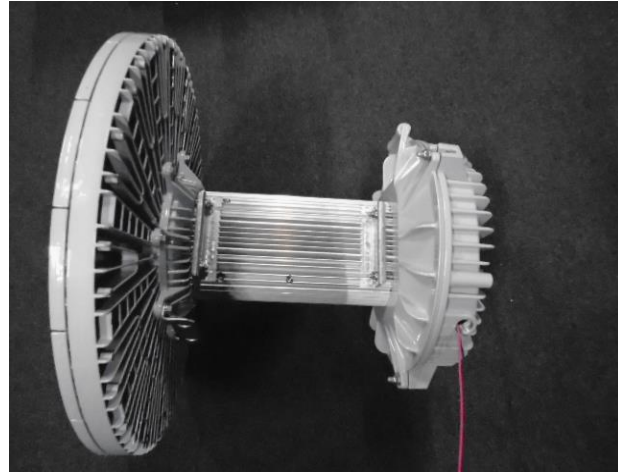
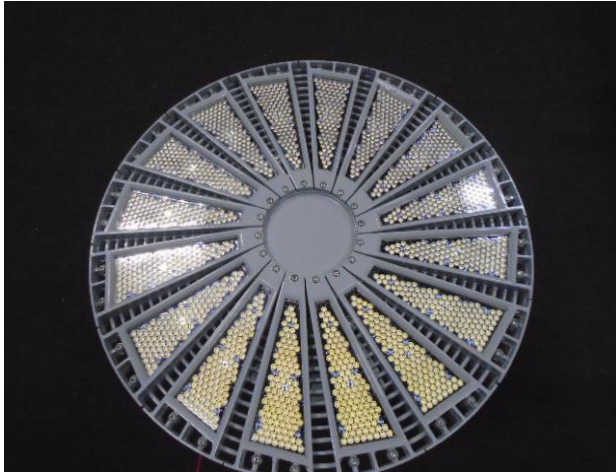
Description of sample:

Sample Number: L18060
Manufacturer: Dialight Corporation
Product Name: H6U7NC4Rxx-xxxx
Description: High Output High Bay
Model Number: H6U-7NC4-Rxx-xxxx

Report Summary

Sample number L18060
Dialight unit model number H6U-7NC4-Rxx-xxxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	67780 (lumens)	68665 (lumens)
Electrical Power:	509.3 (W)	509.3 (W)
Luminous Efficacy:	133.1 (lumens/W)	134.8 (lumens/W)

Electrical Measurements:

Input Power (480VAC): 509.3 (W)
Power Factor (480VAC): 0.985
Current ATHD % (480VAC): 5.122

Color Measurements:

Correlated Color Temperature (CCT): 4779
Color Rendering Index (CRI): 82.1
Chromaticity Coordinate (x): 0.353
Chromaticity Coordinate (y): 0.366
Chromaticity Coordinate (u'): 0.211
Chromaticity Coordinate (v'): 0.329
DUV: 0.0041

Temperature Measurements:

In Situ LED Source Temperature: 59.0 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L18060.

Dialight unit model number H6U-7NC4-Rxx-xxxx

Test Conditions:

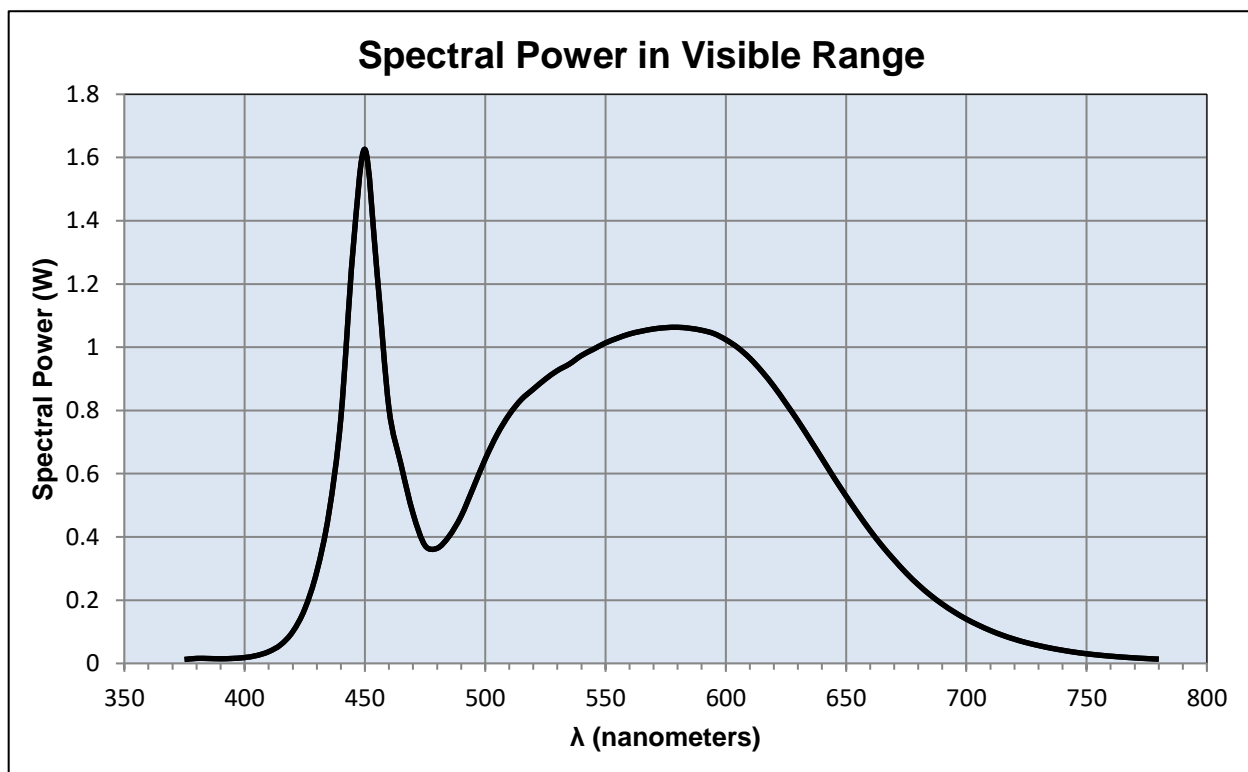
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 480 (VAC)
 Input Current: 1.075 (A)
 Input Power: 509.3 (W)
 Input Power Factor: 0.985
 Current ATHD: 5.122 (%)

Photometric measurements:

Luminous Flux: 67780 (lumens)
 Luminous Efficacy: 133.1 (lumens/W)
 Correlated Color Temperature (CCT): 4779 (K)
 CRI -Ra: 82.1
 CRI -R9: 8.6
 DUV: 0.0041
 CIE Coordinate (x): 0.353
 CIE Coordinate (y): 0.366
 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:

$\lambda(\text{nm})$	(W/nm)	$\lambda(\text{nm})$	(W/nm)	$\lambda(\text{nm})$	(W/nm)
375	0.012	515	0.835	655	0.474
380	0.016	520	0.867	660	0.421
385	0.016	525	0.899	665	0.372
390	0.015	530	0.926	670	0.328
395	0.016	535	0.947	675	0.286
400	0.019	540	0.974	680	0.249
405	0.025	545	0.994	685	0.216
410	0.037	550	1.014	690	0.188
415	0.059	555	1.029	695	0.163
420	0.100	560	1.042	700	0.140
425	0.172	565	1.051	705	0.121
430	0.290	570	1.058	710	0.104
435	0.474	575	1.062	715	0.089
440	0.776	580	1.063	720	0.077
445	1.303	585	1.060	725	0.066
450	1.626	590	1.054	730	0.057
455	1.239	595	1.043	735	0.049
460	0.806	600	1.024	740	0.042
465	0.629	605	0.999	745	0.036
470	0.474	610	0.965	750	0.031
475	0.373	615	0.924	755	0.026
480	0.364	620	0.876	760	0.023
485	0.402	625	0.823	765	0.020
490	0.466	630	0.767	770	0.017
495	0.555	635	0.708	775	0.015
500	0.646	640	0.648	780	0.014
505	0.725	645	0.587		
510	0.787	650	0.530		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L18060.
Dialight unit model number H6U-7NC4-Rxx-xxxx

Electrical Measurements:

Input Voltage: 480 (VAC)
Input current: 1.075 (A)
Input Power: 509.3 (W)
Power Factor: 0.985

Photometric measurements:

Absolute Luminous Flux: 68665 (lumens)
Luminous Efficacy: 134.8 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	95027	95027	95027	95027	95027	
5	88690	88690	88690	88690	88690	3378
15	58247	58247	58247	58247	58247	14440
25	36133	36133	36133	36133	36133	16998
35	23952	23952	23952	23952	23952	15764
45	12418	12418	12418	12418	12418	12187
55	2222	2222	2222	2222	2222	4423
65	1014	1014	1014	1014	1014	1207
75	108	108	108	108	108	197
85	33	33	33	33	33	67
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

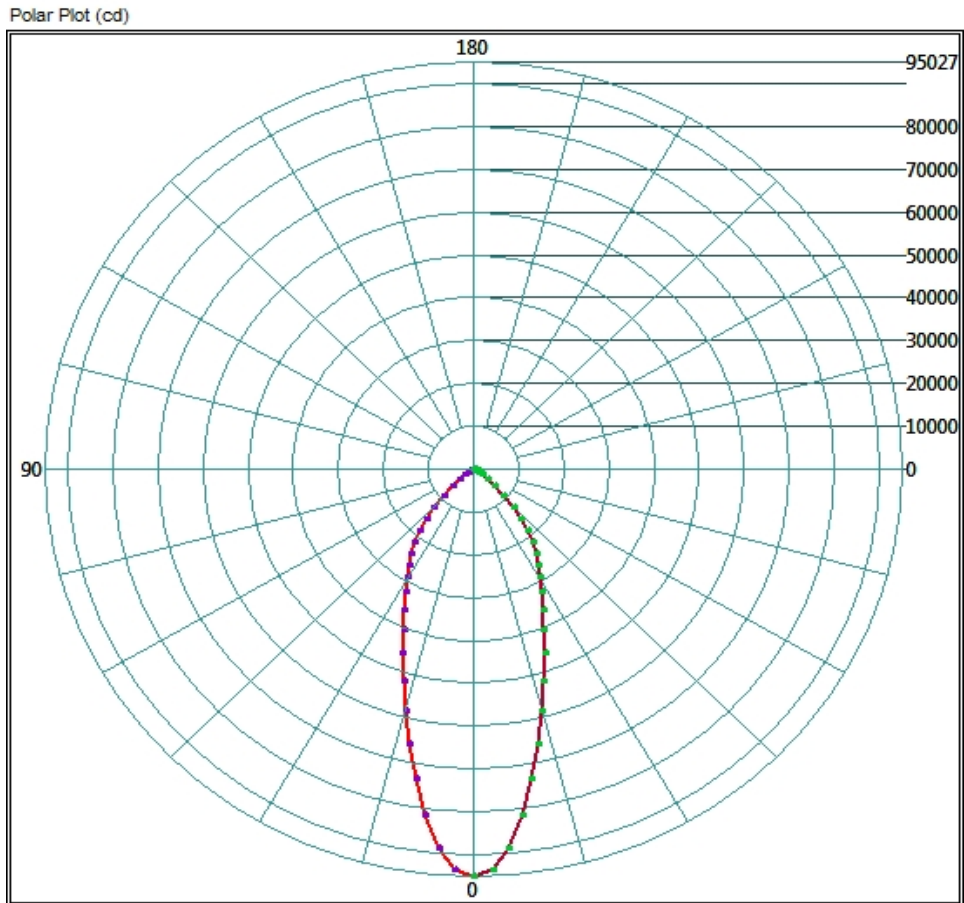
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	42917.44	62.5%
0-40	57454.56	83.7%
0-60	67841.12	98.8%
60-90	1125.28	1.6%
0-90	68664.8	100.0%
90-180	0	0.0%
0-180	68664.8	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

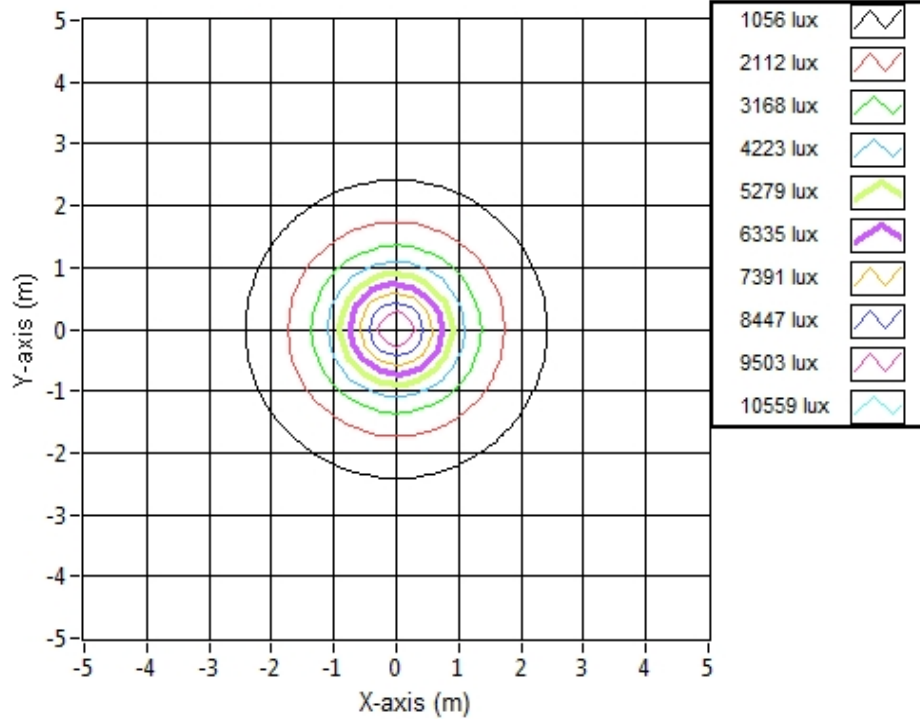


Test Results: Goniometer

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	2.13	2.13	10228.6
6.096	4.26	4.26	2557.2
9.144	6.39	6.39	1136.5
12.192	8.53	8.53	639.3
15.24	10.66	10.66	409.1
18.288	12.79	12.79	284.1
21.336	14.92	14.92	208.7
24.384	17.05	17.05	159.8
27.432	19.18	19.18	126.3
30.48	21.32	21.32	102.3

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L18060.
Dialight unit model number H6U-7NC4-Rxx-xxxx

LED identified as Seoul part number SAW8C22B.

LED drive current (as indicated by customer): 51 (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:

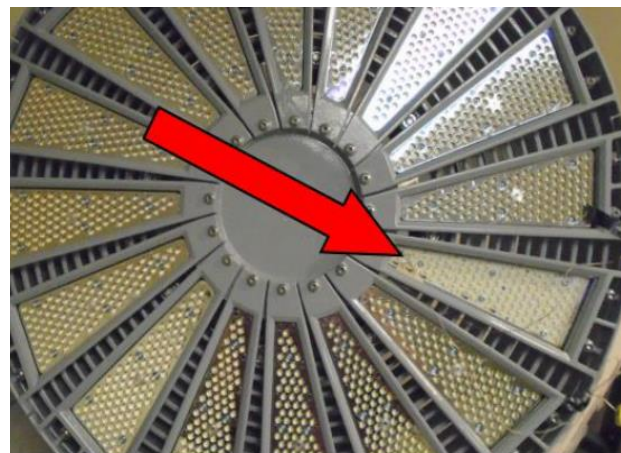
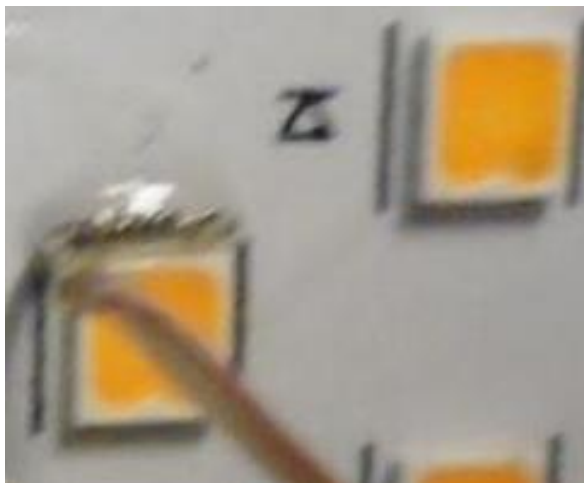
Maximum Power at Indicated Current: 0.306 (W)
Maximum Source Temperature: 119.8 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 5^{\circ}$ (°C)
Ambient temperature at time of measurement: 24.2 (°C)
Relative humidity at time of measurement: 59%

Results:

Measured LED source temperature: 59 (°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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Dialight Optics Laboratory
Optical Engineer
Approved Signatory