

Test Report

Report Number: L20037

Date: Jul 13, 2020

Issued by:

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

Test of one Vigilant High Output High Bay
Unit manufacturer: Dialight Corporation
Unit model number: H7x-7NN2-Nxxx-xxN

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: June 24, 2020 through July 8, 2020

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

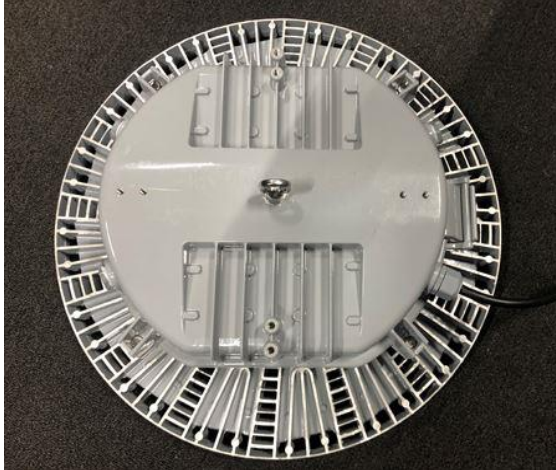
Description of sample:

Sample Number: L20037
Manufacturer: Dialight Corporation
Product Name: Vigilant High Output High Bay
Description: Vigilant High Output High Bay
Model Number: H7x-7NN2-Nxxx-xxN

Report Summary

Sample number L20037
Dialight unit model number H7x-7NN2-Nxxx-xxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	60740 (lumens)	60657 (lumens)
Electrical Power:	435.8 (W)	433.3 (W)
Luminous Efficacy:	139.4 (lumens/W)	140 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 435.8 (W)
Power Factor (120VAC): 0.996
Current ATHD % (120VAC): 5.045
Input Power (277VAC): 417.4 (W)
Power Factor (277VAC): 0.965
Current ATHD % (277VAC): 9.268

Color Measurements:

Correlated Color Temperature (CCT): 3964
Color Rendering Index (CRI): 83.7
Chromaticity Coordinate (x): 0.384
Chromaticity Coordinate (y): 0.383
Chromaticity Coordinate (u'): 0.225
Chromaticity Coordinate (v'): 0.337
DUV: 0.002

Temperature Measurements:

In Situ LED Source Temperature: 59.7 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L20037.

Dialight unit model number H7x-7NN2-Nxxx-xxN

Test Conditions:

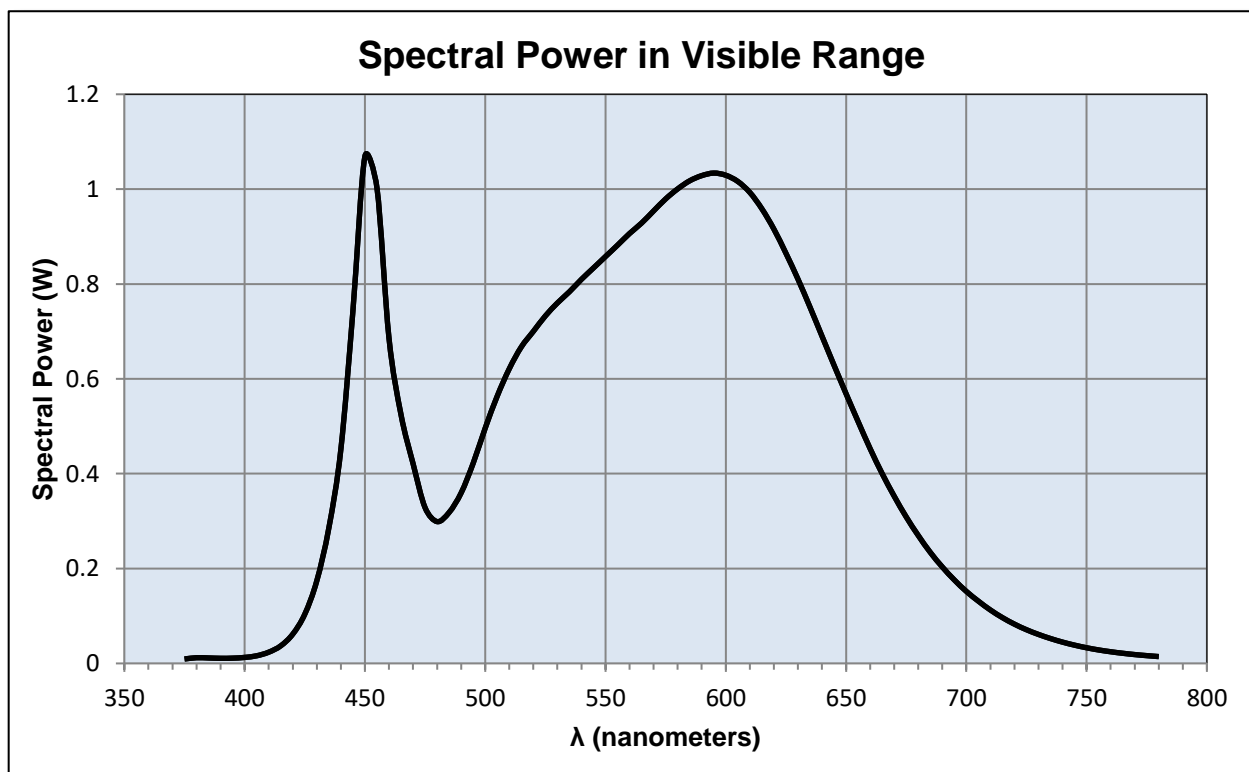
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 3.665 (A)
Input Power: 435.8 (W)
Input Power Factor: 0.996
Current ATHD: 5.045 (%)

Photometric measurements:

Luminous Flux: 60740 (lumens)
Luminous Efficacy: 139.4 (lumens/W)
Correlated Color Temperature (CCT): 3964 (K)
CRI -Ra: 83.7
CRI -R9: 14.8
DUV: 0.002
CIE Coordinate (x): 0.384
CIE Coordinate (y): 0.383
CIE Coordinate (u'): 0.225
CIE Coordinate (v'): 0.337



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	0.009	515	0.667	655	0.510
380	0.012	520	0.700	660	0.453
385	0.012	525	0.733	665	0.400
390	0.011	530	0.760	670	0.353
395	0.011	535	0.784	675	0.309
400	0.013	540	0.810	680	0.270
405	0.016	545	0.834	685	0.234
410	0.024	550	0.858	690	0.203
415	0.037	555	0.882	695	0.176
420	0.062	560	0.906	700	0.152
425	0.104	565	0.928	705	0.131
430	0.174	570	0.954	710	0.113
435	0.286	575	0.979	715	0.097
440	0.452	580	1.000	720	0.083
445	0.743	585	1.018	725	0.071
450	1.069	590	1.028	730	0.061
455	1.003	595	1.034	735	0.052
460	0.686	600	1.029	740	0.045
465	0.525	605	1.016	745	0.039
470	0.421	610	0.993	750	0.033
475	0.328	615	0.959	755	0.028
480	0.299	620	0.916	760	0.025
485	0.318	625	0.865	765	0.021
490	0.360	630	0.810	770	0.019
495	0.422	635	0.751	775	0.016
500	0.496	640	0.690	780	0.014
505	0.564	645	0.629		
510	0.621	650	0.569		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L20037.
Dialight unit model number H7x-7NN2-Nxxx-xxN

Electrical Measurements:

Input Voltage: 119.7 (VAC)
Input current: 3.637 (A)
Input Power: 433.3 (W)
Power Factor: 0.995

Photometric measurements:

Absolute Luminous Flux: 60657 (lumens)
Luminous Efficacy: 140.0 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	89066	89066	89066	89066	89066	
5	82024	82024	82024	82024	82024	3136
15	52190	52190	52190	52190	52190	13027
25	32859	32859	32859	32859	32859	15435
35	20809	20809	20809	20809	20809	13896
45	10959	10959	10959	10959	10959	10740
55	1478	1478	1478	1478	1478	3508
65	776	776	776	776	776	871
75	0	0	0	0	0	44
85	0	0	0	0	0	0
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	0

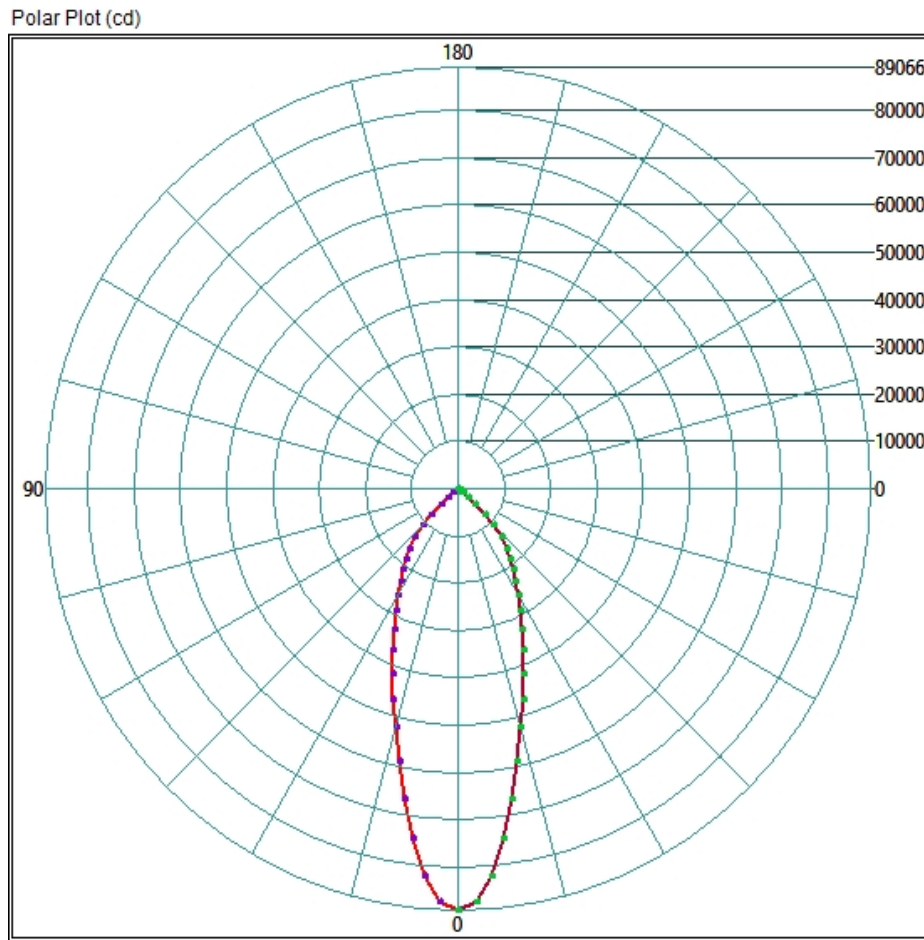
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	38820.16	64.0%
0-40	51528	85.0%
0-60	60192.16	99.2%
60-90	681.12	1.1%
0-90	60656.8	100.0%
90-180	0	0.0%
0-180	60656.8	100.0%

Test Results: Goniometer

Results continued from previous page.

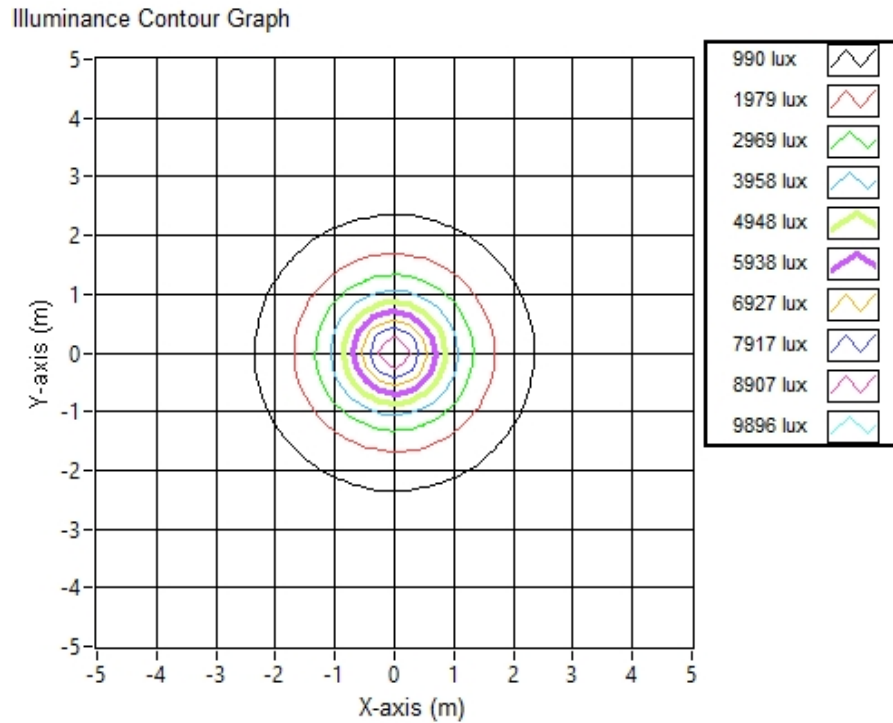
Polar Plot:



Test Results: Goniometer

Results continued from previous page.

Illuminance Plot:



Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone	Projected Illuminance (lux)
3.048	2.04	2.04	9587.0
6.096	4.09	4.09	2396.7
9.144	6.13	6.13	1065.2
12.192	8.18	8.18	599.2
15.24	10.22	10.22	383.5
18.288	12.27	12.27	266.3
21.336	14.31	14.31	195.7
24.384	16.36	16.36	149.8
27.432	18.40	18.40	118.4
30.48	20.45	20.45	95.9

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L20037.

Dialight unit model number H7x-7NN2-Nxxx-xxN

LED identified as Seoul Semi part number SAW8C22BNZ.

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

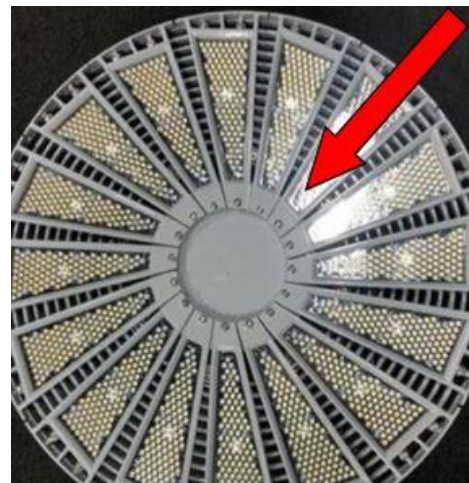
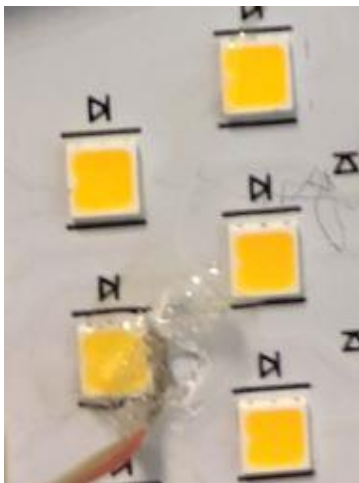
Maximum Power at Indicated Current:	0.27	(W)
Maximum Source Temperature:	120.4	(°C)

Test Conditions:

Temperature Measurement Location:	See Photographs Below
Ambient Temperature:	25° ± 5' (°C)
Ambient temperature at time of measurement:	23.8 (°C)
Relative humidity at time of measurement:	39%

Results:

Measured LED source temperature: 59.7 (°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.

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