

Test Report

Report Number: L20033

Date: Jul 9, 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-4MND-Kxxx-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: July 7, 2020 through July 9, 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: L20033
Manufacturer: Dialight Corporation
Product Name: Vigilant High Output High Bay
Description: Vigilant High Output High Bay
Model Number: H7x-4MND-Kxxx-xxN

Report Summary

Sample number L20033
Dialight unit model number H7x-4MND-Kxxx-xxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	41460 (lumens)	41572 (lumens)
Electrical Power:	307.7 (W)	308.2 (W)
Luminous Efficacy:	134.8 (lumens/W)	134.9 (lumens/W)

Electrical Measurements:

Input Power (480VAC): 307.7 (W)
Power Factor (480VAC): 0.981
Current ATHD % (480VAC): 11.78
Input Power (347VAC): 307.5 (W)
Power Factor (347VAC): 0.994
Current ATHD % (347VAC): 11.35

Color Measurements:

Correlated Color Temperature (CCT): 3929
Color Rendering Index (CRI): 84
Chromaticity Coordinate (x): 0.385
Chromaticity Coordinate (y): 0.382
Chromaticity Coordinate (u'): 0.226
Chromaticity Coordinate (v'): 0.336
DUV: 0.0014

Temperature Measurements:

In Situ LED Source Temperature: 59.6 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L20033.

Dialight unit model number H7x-4MND-Kxxx-xxN

Test Conditions:

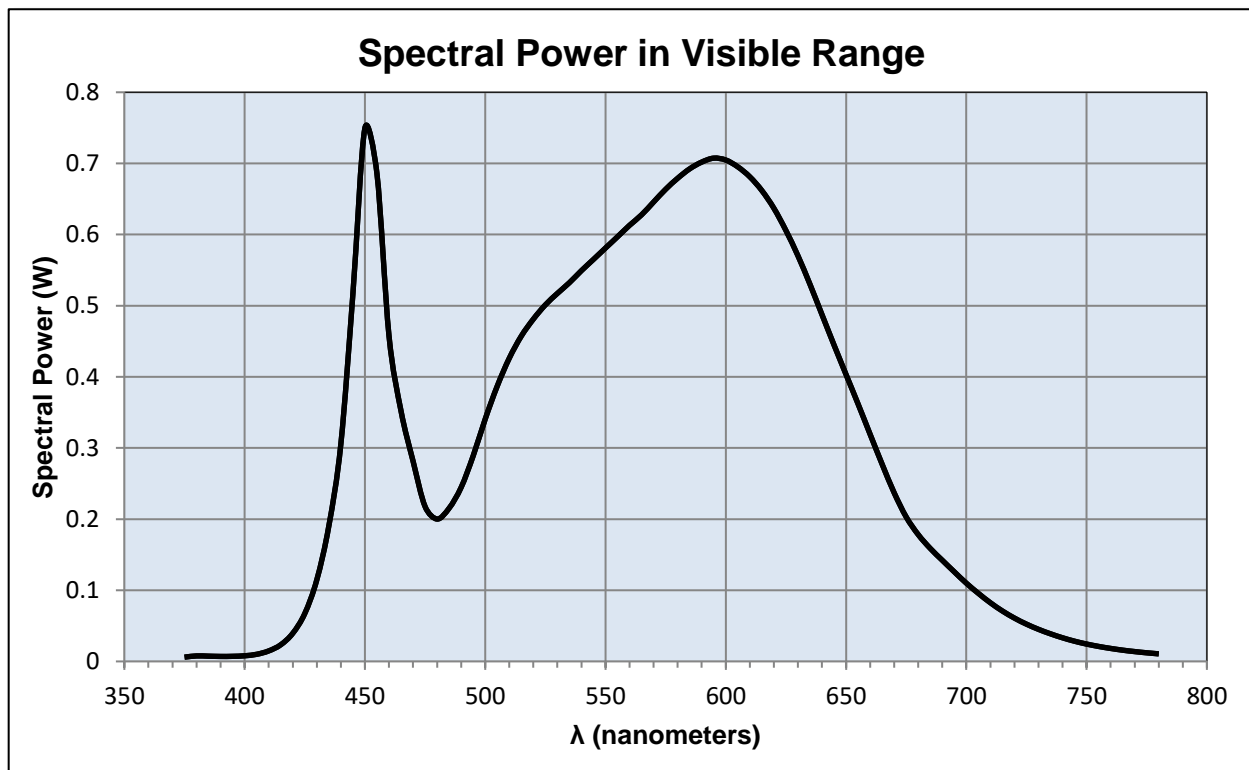
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 480 (VAC)
Input Current: 0.653 (A)
Input Power: 307.7 (W)
Input Power Factor: 0.981
Current ATHD: 11.78 (%)

Photometric measurements:

Luminous Flux: 41460 (lumens)
Luminous Efficacy: 134.8 (lumens/W)
Correlated Color Temperature (CCT): 3929 (K)
CRI -Ra: 84
CRI -R9: 16
DUV: 0.0014
CIE Coordinate (x): 0.385
CIE Coordinate (y): 0.382
CIE Coordinate (u'): 0.226
CIE Coordinate (v'): 0.336



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	0.006	515	0.457	655	0.362
380	0.008	520	0.481	660	0.319
385	0.007	525	0.501	665	0.277
390	0.007	530	0.517	670	0.237
395	0.007	535	0.532	675	0.203
400	0.008	540	0.549	680	0.178
405	0.010	545	0.565	685	0.159
410	0.015	550	0.581	690	0.142
415	0.023	555	0.597	695	0.126
420	0.040	560	0.613	700	0.110
425	0.067	565	0.628	705	0.096
430	0.115	570	0.646	710	0.082
435	0.190	575	0.664	715	0.071
440	0.306	580	0.679	720	0.061
445	0.516	585	0.692	725	0.052
450	0.750	590	0.702	730	0.045
455	0.686	595	0.707	735	0.039
460	0.458	600	0.705	740	0.033
465	0.352	605	0.695	745	0.028
470	0.282	610	0.681	750	0.024
475	0.218	615	0.662	755	0.021
480	0.200	620	0.637	760	0.018
485	0.215	625	0.606	765	0.016
490	0.245	630	0.570	770	0.014
495	0.289	635	0.530	775	0.012
500	0.341	640	0.487	780	0.011
505	0.387	645	0.445		
510	0.426	650	0.403		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L20033.
Dialight unit model number H7x-4MND-Kxxx-xxN

Electrical Measurements:

Input Voltage: 480 (VAC)
Input current: 0.661 (A)
Input Power: 308.2 (W)
Power Factor: 0.972

Photometric measurements:

Absolute Luminous Flux: 41572 (lumens)
Luminous Efficacy: 134.9 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	16357	16357	16357	16357	16357	
5	16274	16274	16274	16274	16274	608
15	16388	16388	16388	16388	16388	3472
25	19342	19342	19342	19342	19342	7187
35	22428	22428	22428	22428	22428	12328
45	13160	13160	13160	13160	13160	12755
55	1936	1936	1936	1936	1936	4397
65	195	195	195	195	195	772
75	22	22	22	22	22	50
85	0	0	0	0	0	2
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

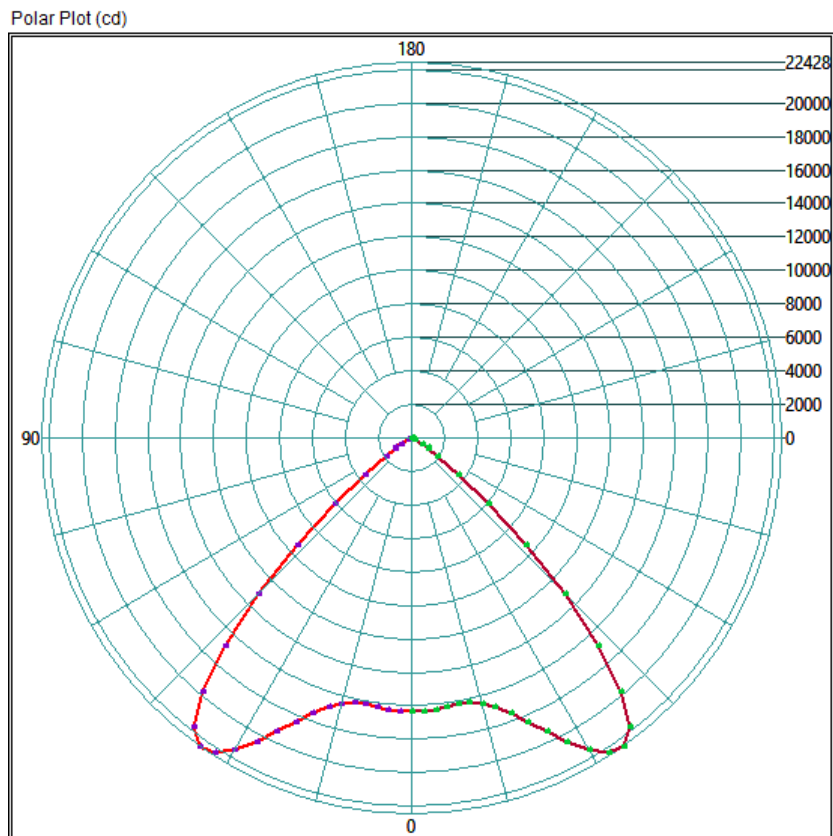
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	16794.08	40.4%
0-40	30693.76	73.8%
0-60	41296.64	99.3%
60-90	553.44	1.3%
0-90	41571.84	100.0%
90-180	0	0.0%
0-180	41571.84	100.0%

Test Results: Goniometer

Results continued from previous page.

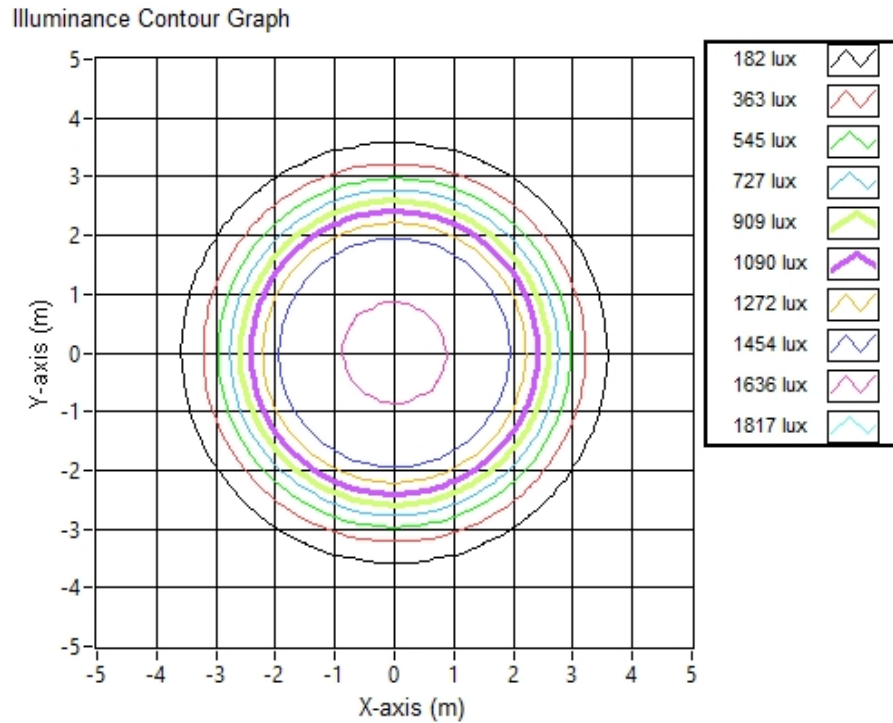
Polar Plot:



Test Results: Goniometer

Results continued from previous page.

Illuminance Plot:



Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone	Projected Illuminance (lux)
3.048	6.87	6.87	1760.7
6.096	13.75	13.75	440.2
9.144	20.62	20.62	195.6
12.192	27.49	27.49	110.0
15.24	34.37	34.37	70.4
18.288	41.24	41.24	48.9
21.336	48.12	48.12	35.9
24.384	54.99	54.99	27.5
27.432	61.86	61.86	21.7
30.48	68.74	68.74	17.6

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L20033.

Dialight unit model number H7x-4MND-Kxxx-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:

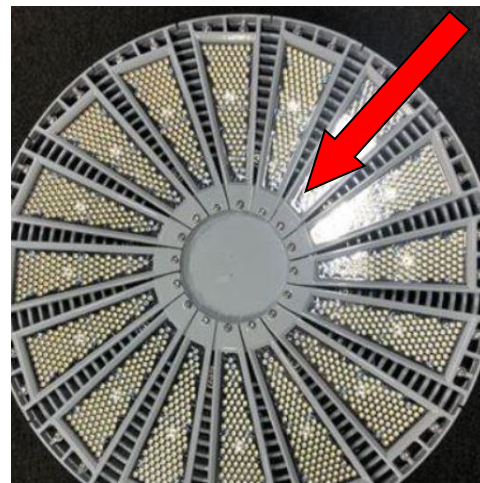
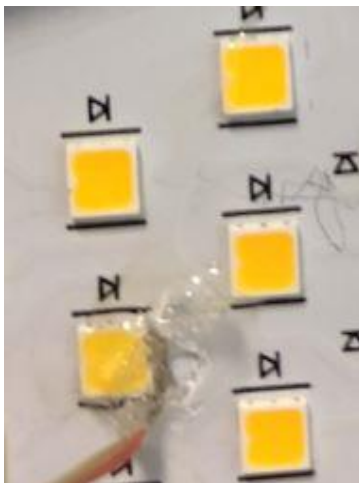
Maximum Power at Indicated Current:	0.27	(W)
Maximum Source Temperature:	120.4	(°C)

Test Conditions:

Temperature Measurement Location:	See Photographs Below
Ambient Temperature:	25° ± 5' (°C)
Ambient temperature at time of measurement:	23.9 (°C)
Relative humidity at time of measurement:	40%

Results:

Measured LED source temperature: 59.6 (°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.

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Optical Engineer
Approved Signatory