

Test Report

Report Number: L20043

Date: Aug 6, 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-4MN2-Rxxx-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 30, 2020 through July 30, 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

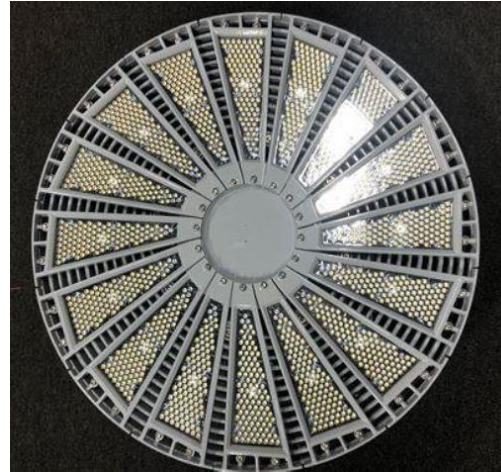
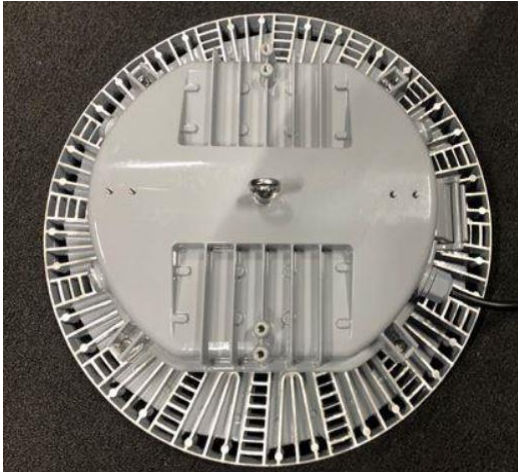
Description of sample:

Sample Number: L20043
Manufacturer: Dialight Corporation
Product Name: PC, Medium, NW, 120-277V, 72k
Description: Vigilant High Output High Bay
Model Number: H7x-4MN2-Rxxx-xxN

Report Summary

Sample number L20043
Dialight unit model number H7x-4MN2-Rxxx-xxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	62380 (lumens)	63577 (lumens)
Electrical Power:	506.7 (W)	502.7 (W)
Luminous Efficacy:	123.1 (lumens/W)	126.5 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 506.7 (W)
Power Factor (120VAC): 0.996
Current ATHD % (120VAC): 4.66
Input Power (277VAC): 484.7 (W)
Power Factor (277VAC): 0.967
Current ATHD % (277VAC): 9.53

Color Measurements:

Correlated Color Temperature (CCT): 4024
Color Rendering Index (CRI): 83.92
Chromaticity Coordinate (x): 0.380
Chromaticity Coordinate (y): 0.380
Chromaticity Coordinate (u'): 0.224
Chromaticity Coordinate (v'): 0.335
DUV: 0.0015

Temperature Measurements:

In Situ LED Source Temperature: 59.9 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L20043.

Dialight unit model number H7x-4MN2-Rxxx-xxN

Test Conditions:

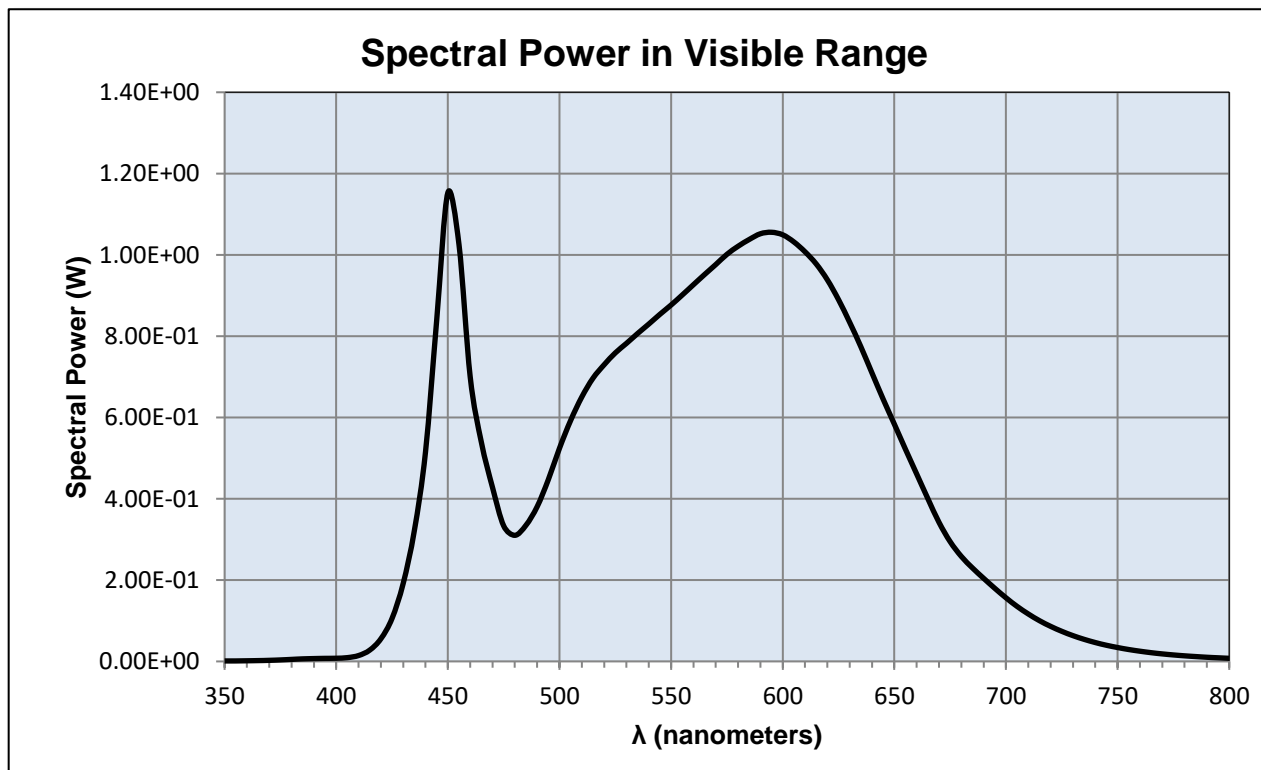
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 4.215 (A)
Input Power: 506.7 (W)
Input Power Factor: 0.996
Current ATHD: 4.66 (%)

Photometric measurements:

Luminous Flux: 62380 (lumens)
Luminous Efficacy: 123.1 (lumens/W)
Correlated Color Temperature (CCT): 4024 (K)
CRI -Ra: 83.92
CRI -R9: 15.19
DUV: 0.0015
CIE Coordinate (x): 0.380
CIE Coordinate (y): 0.380
CIE Coordinate (u'): 0.224
CIE Coordinate (v'): 0.335



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)	$\lambda(\text{nm})$	(W/nm)
350	0.00119	490	0.38068	630	0.83407	770	0.01852
355	0.00123	495	0.44704	635	0.77404	775	0.01598
360	0.00162	500	0.52431	640	0.70926	780	0.01377
365	0.00202	505	0.59281	645	0.64497	785	0.01196
370	0.00268	510	0.65047	650	0.58363	790	0.01027
375	0.00368	515	0.69666	655	0.52167	795	0.00891
380	0.00501	520	0.72978	660	0.46108	800	0.00770
385	0.00630	525	0.75889	665	0.40051		
390	0.00701	530	0.78232	670	0.34214		
395	0.00755	535	0.80663	675	0.29451		
400	0.00784	540	0.82987	680	0.25832		
405	0.00933	545	0.85385	685	0.22986		
410	0.01447	550	0.87675	690	0.20437		
415	0.02774	555	0.90133	695	0.17982		
420	0.05561	560	0.92666	700	0.15653		
425	0.10573	565	0.95179	705	0.13529		
430	0.19199	570	0.97622	710	0.11673		
435	0.32189	575	1.00136	715	0.10026		
440	0.51583	580	1.02123	720	0.08625		
445	0.83893	585	1.03795	725	0.07408		
450	1.15293	590	1.05202	730	0.06343		
455	1.02465	595	1.05567	735	0.05435		
460	0.70059	600	1.04939	740	0.04649		
465	0.53940	605	1.03187	745	0.03978		
470	0.42815	610	1.00753	750	0.03419		
475	0.33358	615	0.97773	755	0.02930		
480	0.31020	620	0.93862	760	0.02516		
485	0.33501	625	0.88980	765	0.02155		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L20043.
Dialight unit model number H7x-4MN2-Rxxx-xxN

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 4.213 (A)
Input Power: 502.7 (W)
Power Factor: 0.996

Photometric measurements:

Absolute Luminous Flux: 63577 (lumens)
Luminous Efficacy: 126.5 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	25210	25210	25210	25210	25210	
5	25091	25091	25091	25091	25091	938
15	25327	25327	25327	25327	25327	5361
25	29862	29862	29862	29862	29862	11106
35	34057	34057	34057	34057	34057	18868
45	19788	19788	19788	19788	19788	19161
55	3173	3173	3173	3173	3173	6850
65	323	323	323	323	323	1206
75	38	38	38	38	38	83
85	0	0	0	0	0	4
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	1	1	1	1	1	0
180	0	0	0	0	0	0

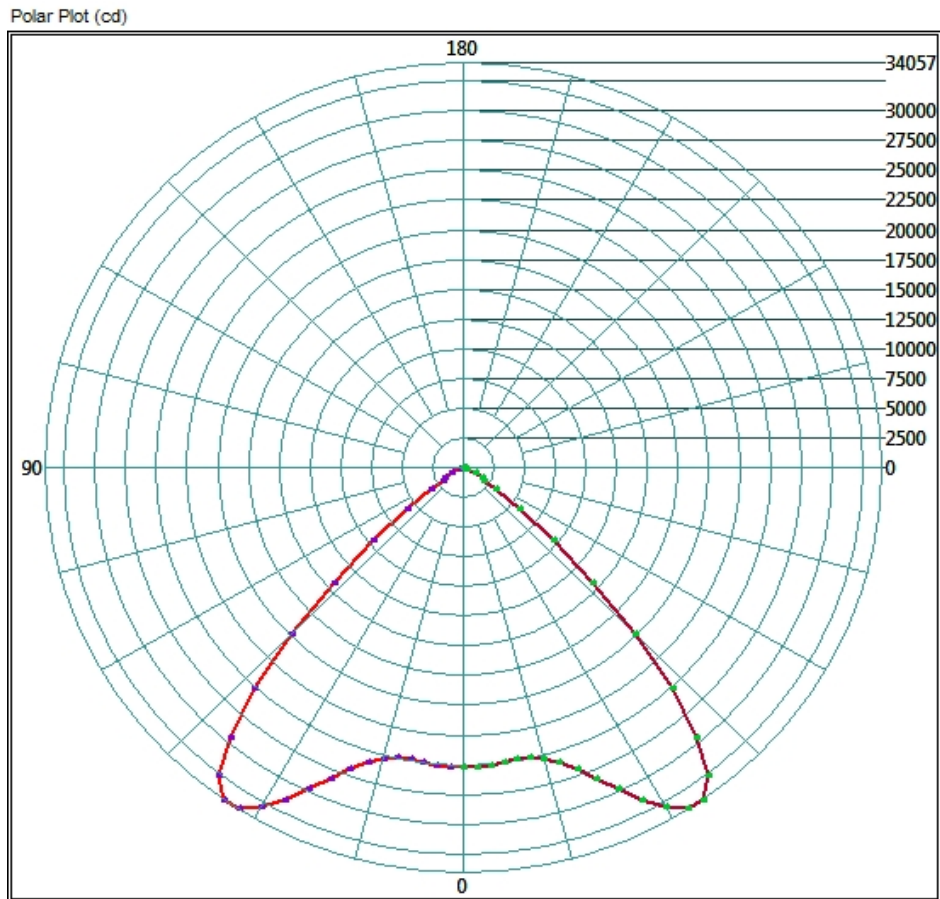
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	25908.32	40.8%
0-40	46946.72	73.8%
0-60	63155.84	99.3%
60-90	834.24	1.3%
0-90	63576.64	100.0%
90-180	0	0.0%
0-180	63576.64	100.0%

Test Results: Goniometer

Results continued from previous page.

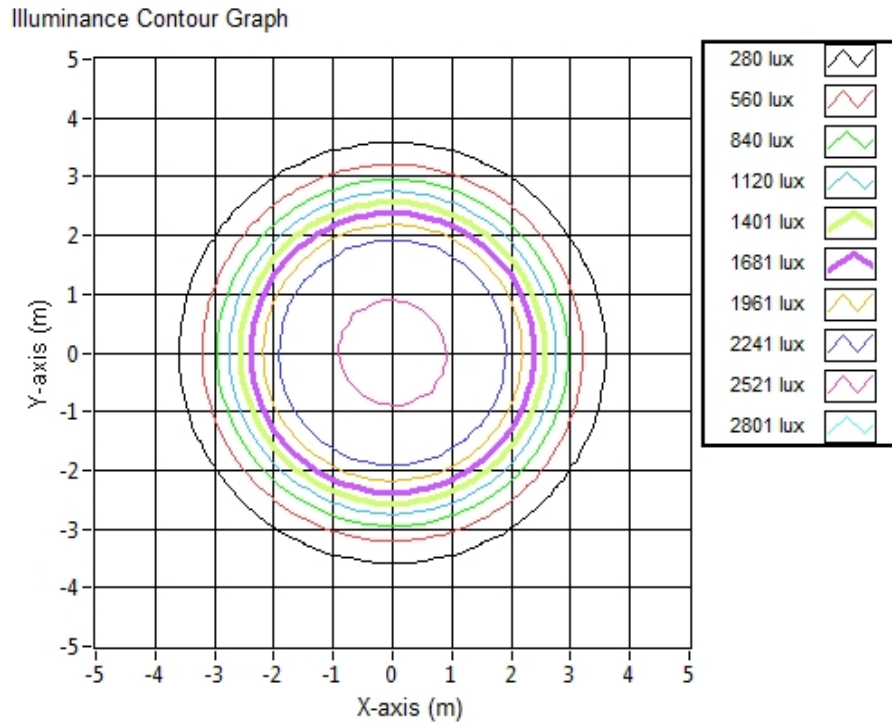
Polar Plot:



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	6.86	6.86	2713.6
6.096	13.73	13.73	678.4
9.144	20.59	20.59	301.5
12.192	27.46	27.46	169.6
15.24	34.32	34.32	108.5
18.288	41.18	41.18	75.4
21.336	48.05	48.05	55.4
24.384	54.91	54.91	42.4
27.432	61.78	61.78	33.5
30.48	68.64	68.64	27.1

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L20043.

Dialight unit model number H7x-4MN2-Rxxx-xxN

LED identified as Seoul Semi part number SAW8C22BNZ.

LED drive current (as indicated by customer): 52 (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:

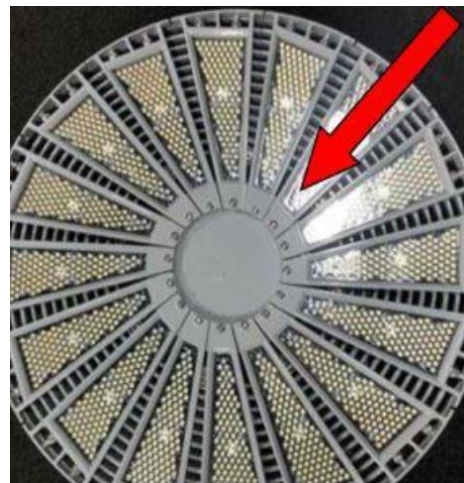
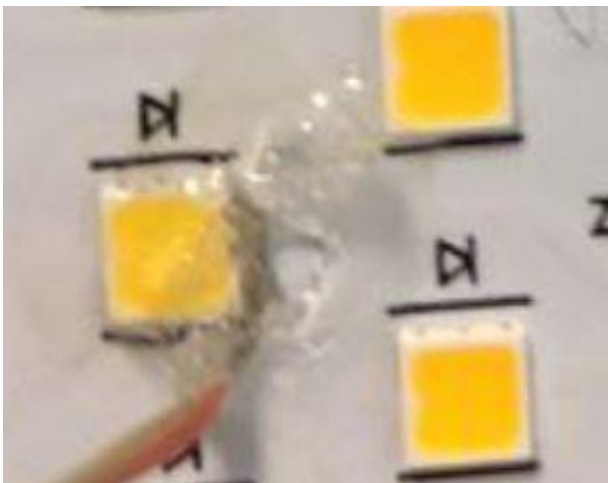
Maximum Power at Indicated Current:	0.312	(W)
Maximum Source Temperature:	119.7	(°C)

Test Conditions:

Temperature Measurement Location:	See Photographs Below
Ambient Temperature:	25° ± 5' (°C)
Ambient temperature at time of measurement:	24 (°C)
Relative humidity at time of measurement:	49%

Results:

Measured LED source temperature: 59.9 (°C)



Equipment Used:

Equipment Name	Model Number
Omega TC	DPi8
YOKOGAWA Digital Power Meter	11/26/3981
LSI High Speed Mirror Goniometer	6240T
Elgar AC Power Supply	CW1251P
Sorensen DC Power Supply	XHR150-7
Dialight Confirmation Sample	HB1N4N
Dialight Confirmation Sample	HB1N4J
Fuke 8808A Digit Multimeter	8808A
Step-Up Transformer	
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
ITL Osram Calibraton lamps for Goniometer	J9a8
Fuke 971 Humdity Meter	8/28/1902
GwINSTEK DC Power Supply	GEP172679
Dialight Confirmation Sample	1/0/1900
Labsphere calibration lamp for 2M sphere	SCL-1400
Labshere 2M sphere	Illumia Plus 2600-1
Labshere Controller	PM-150-140
Labshere Spectrameter- CDS 2600 Spectrometer	CDS-2600
Xitron Power Analyzer	9/1/1907
LED Bulb for Electrical Confirmation Test-Gold Sample	Monte Carlo
LED Bulb for Electrical Confirmation Test-Gold Sample	Monte Carlo
LED Bulb for Electrical Confirmation Test-Gold Sample	Monte Carlo

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