

Test Report

Report Number: L20065

Date: Sep 25, 2020

Issued by:

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

Test of one Vigilant Bulkhead
Unit manufacturer: Dialight Corporation
Unit model number: BHx4UC23xxxxxN

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: September 24, 2020 through September 25, 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

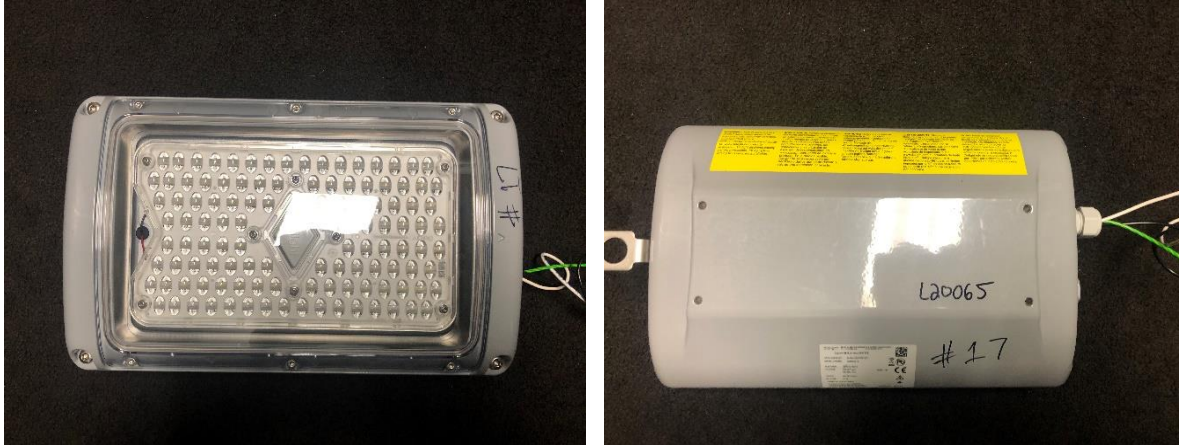
Description of sample:

Sample Number: L20065
Manufacturer: Dialight Corporation
Product Name: BH CL W CW 3klm
Description: Vigilant Bulkhead
Model Number: BHx4UC23xxxxxN

Report Summary

Sample number L20065
Dialight unit model number BHx4UC23xxxxxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	3124 (lumens)	3093 (lumens)
Electrical Power:	21.5 (W)	21.2 (W)
Luminous Efficacy:	145.4 (lumens/W)	146.1 (lumens/W)

Electrical Measurements:

Input Power (240VAC): 21.5 (W)
Power Factor (240VAC): 0.943
Current ATHD % (240VAC): 13.1
Input Power (120VAC): 21.2 (W)
Power Factor (120VAC): 0.996
Current ATHD % (120VAC): 14.05

Color Measurements:

Correlated Color Temperature (CCT): 5078
Color Rendering Index (CRI): 82.3
Chromaticity Coordinate (x): 0.343
Chromaticity Coordinate (y): 0.352
Chromaticity Coordinate (u'): 0.21
Chromaticity Coordinate (v'): 0.323
DUV: 0.00085

Temperature Measurements:

In Situ LED Source Temperature: 37.0 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L20065.

Dialight unit model number BHx4UC23xxxxxN

Test Conditions:

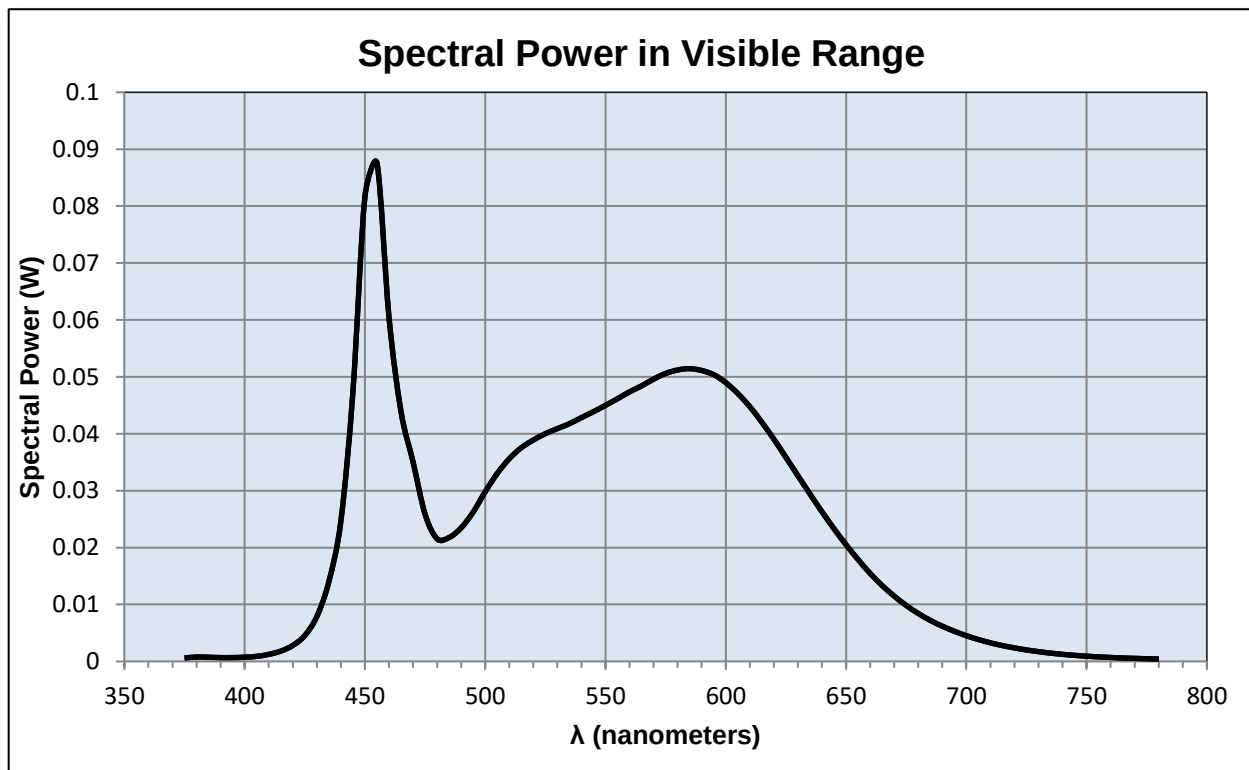
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 240 (VAC)
Input Current: 0.095 (A)
Input Power: 21.5 (W)
Input Power Factor: 0.943
Current ATHD: 13.1 (%)

Photometric measurements:

Luminous Flux: 3124 (lumens)
Luminous Efficacy: 145.4 (lumens/W)
Correlated Color Temperature (CCT): 5078 (K)
CRI -Ra: 82.3
CRI -R9: -1.3
DUV: 0.00085
CIE Coordinate (x): 0.343
CIE Coordinate (y): 0.352
CIE Coordinate (u'): 0.21
CIE Coordinate (v'): 0.323



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	0.001	515	0.038	655	0.018
380	0.001	520	0.039	660	0.015
385	0.001	525	0.040	665	0.013
390	0.001	530	0.041	670	0.011
395	0.001	535	0.042	675	0.010
400	0.001	540	0.043	680	0.008
405	0.001	545	0.044	685	0.007
410	0.001	550	0.045	690	0.006
415	0.002	555	0.046	695	0.005
420	0.003	560	0.047	700	0.005
425	0.005	565	0.048	705	0.004
430	0.008	570	0.050	710	0.003
435	0.014	575	0.051	715	0.003
440	0.025	580	0.051	720	0.002
445	0.047	585	0.051	725	0.002
450	0.082	590	0.051	730	0.002
455	0.088	595	0.050	735	0.001
460	0.061	600	0.049	740	0.001
465	0.044	605	0.047	745	0.001
470	0.035	610	0.045	750	0.001
475	0.026	615	0.042	755	0.001
480	0.022	620	0.039	760	0.001
485	0.022	625	0.036	765	0.001
490	0.023	630	0.033	770	0.001
495	0.026	635	0.029	775	0.000
500	0.030	640	0.026	780	0.000
505	0.033	645	0.023		
510	0.036	650	0.021		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L20065.
Dialight unit model number BHx4UC23xxxxxN

Electrical Measurements:

Input Voltage: 240.1 (VAC)
Input current: 0.094 (A)
Input Power: 21.2 (W)
Power Factor: 0.94

Photometric measurements:

Absolute Luminous Flux: 3093 (lumens)
Luminous Efficacy: 146.1 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	25	45	72.5	ACROSS	OUTPUT LUMENS
0	858	858	858	858	858	
5	804	807	821	841	861	32
15	662	690	746	820	881	180
25	485	552	672	822	927	318
35	348	429	581	847	1016	420
45	283	351	463	871	1173	498
55	259	288	322	810	1584	550
65	184	172	158	554	2723	565
75	18	28	37	126	1759	462
85	0	0	0	0	20	68
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

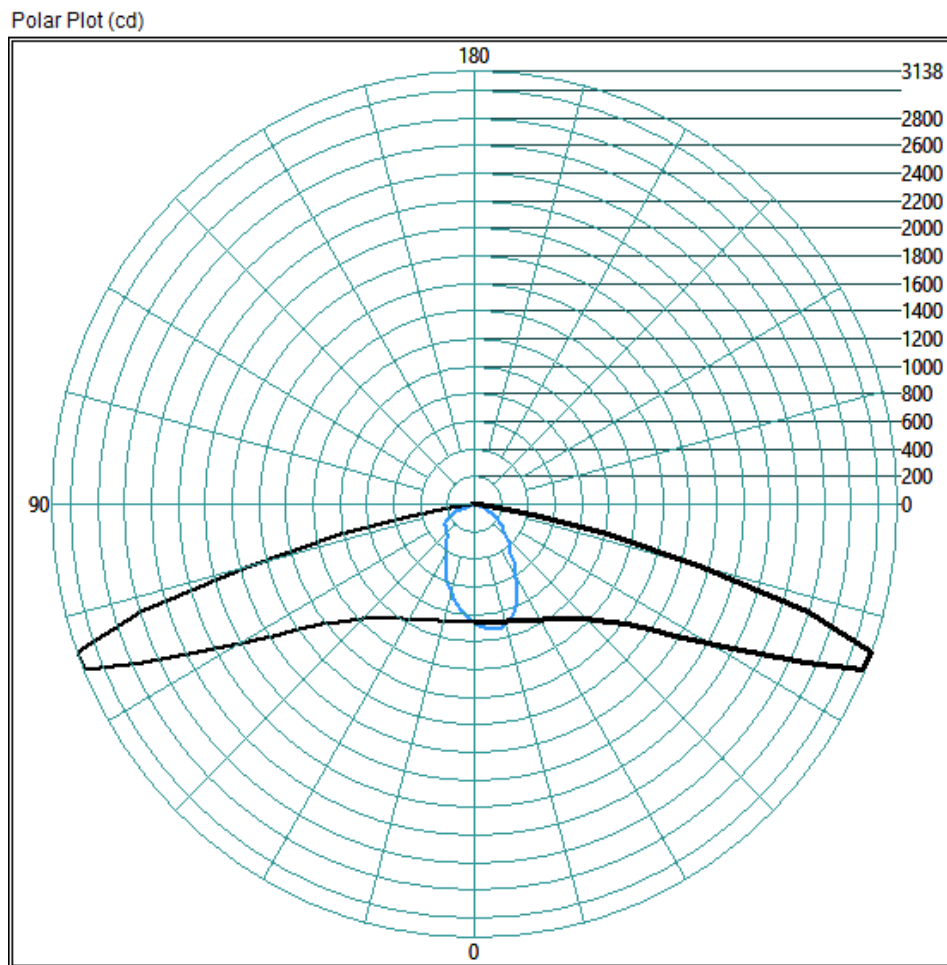
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	728.63	23.6%
0-40	1190.38	38.5%
0-60	2277.83	73.6%
60-90	955.41	30.9%
0-90	3093.2	100.0%
90-180	0	0.0%
0-180	3093.2	100.0%

Test Results: Goniometer

Results continued from previous page.

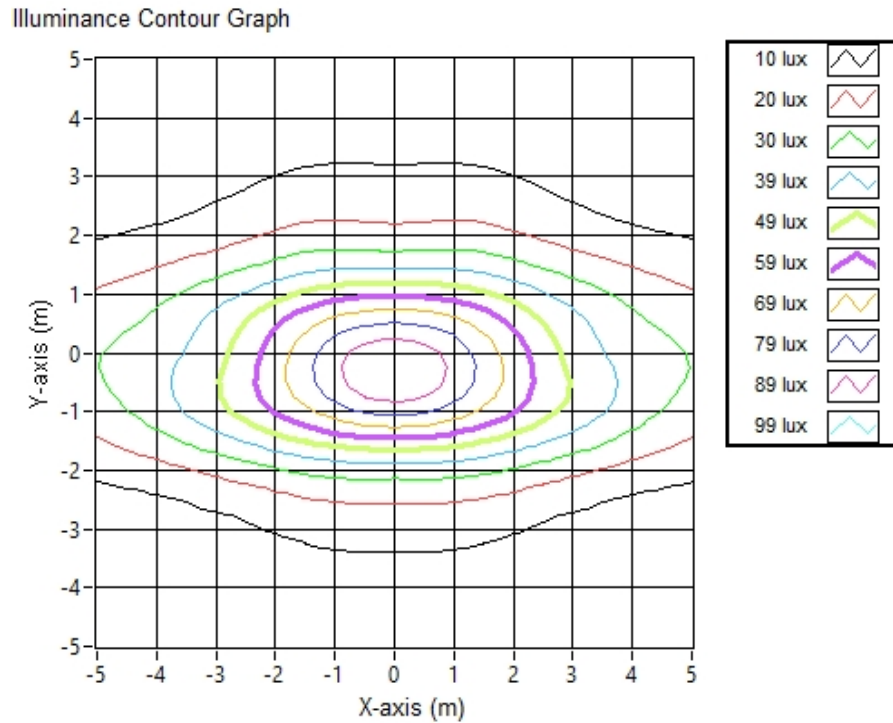
Polar Plot:



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	4.10	36.43	92.3
6.096	8.19	72.86	23.1
9.144	12.29	109.28	10.3
12.192	16.38	145.71	5.8
15.124	20.32	180.75	3.7
18.288	24.57	218.57	2.6
21.336	28.67	255.00	1.9
24.384	32.76	291.42	1.4
27.432	36.86	327.85	1.1
30.48	40.95	364.28	0.9

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L20065.

Dialight unit model number BHx4UC23xxxxxN

LED identified as SOUL part number STW8C12C-E0.

LED drive current (as indicated by customer): 87.5 (mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If):	200	(mA)
Maximum Rated Power Dissipation:	0.6	(W)
Maximum Junction Temp. (Tj):	125	(°C)
Thermal Resistance (Rth):	7.5	(°C/W)

Derived Specifications:

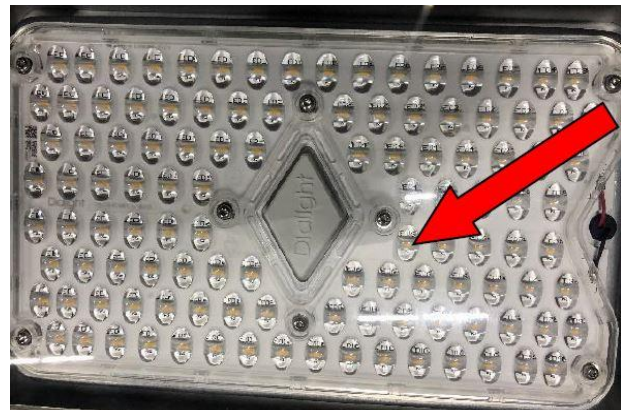
Maximum Power at Indicated Current:	0.263	(W)
Maximum Source Temperature:	123	(°C)

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: 37 (°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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