

Test Report

Report Number: L15123

Date: Oct 13, 2015

Issued by:

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

Test of one Vigilant Highbay
Unit manufacturer: Dialight Corporation
Unit model number: HEF2MC4DN-xxx

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: October 8, 2015 through October 12, 2015

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

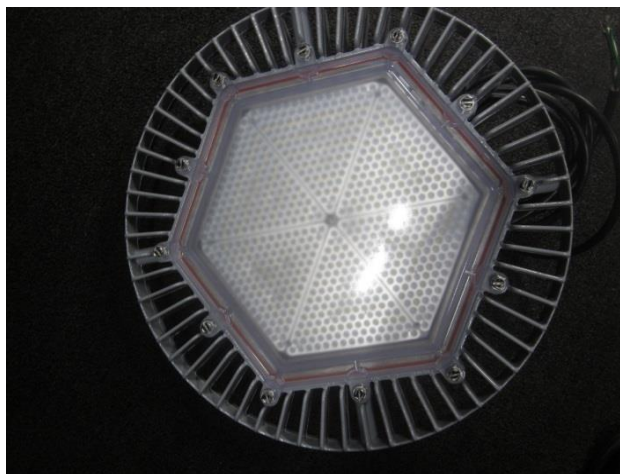
Description of sample:

Sample Number: L15123
Manufacturer: Dialight Corporation
Product Name: Vigilant
Description: Vigilant Highbay
Model Number: HEF2MC4DN-xxx

Report Summary

Sample number L15123
Dialight unit model number HEF2MC4DN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	9180 (lumens)	9054 (lumens)
Electrical Power:	88.8 (W)	89.0 (W)
Luminous Efficacy:	103.4 (lumens/W)	101.8 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 88.8 (W)
 Power Factor (120VAC): 0.991
 Current ATHD % (120VAC): 10.34
 Input Power (277VAC): 88.5 (W)
 Power Factor (277VAC): 0.945
 Current ATHD % (277VAC): 18.44

Color Measurements:

Correlated Color Temperature (CCT): 4989
 Color Rendering Index (CRI): 80.8
 Chromaticity Coordinate (x): 0.345
 Chromaticity Coordinate (y): 0.351
 Chromaticity Coordinate (u'): 0.212
 Chromaticity Coordinate (v'): 0.323
 DUV: 0.00027

Temperature Measurements:

In Situ LED Source Temperature: 46.1 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15123.

Dialight unit model number HEF2MC4DN-xxx

Test Conditions:

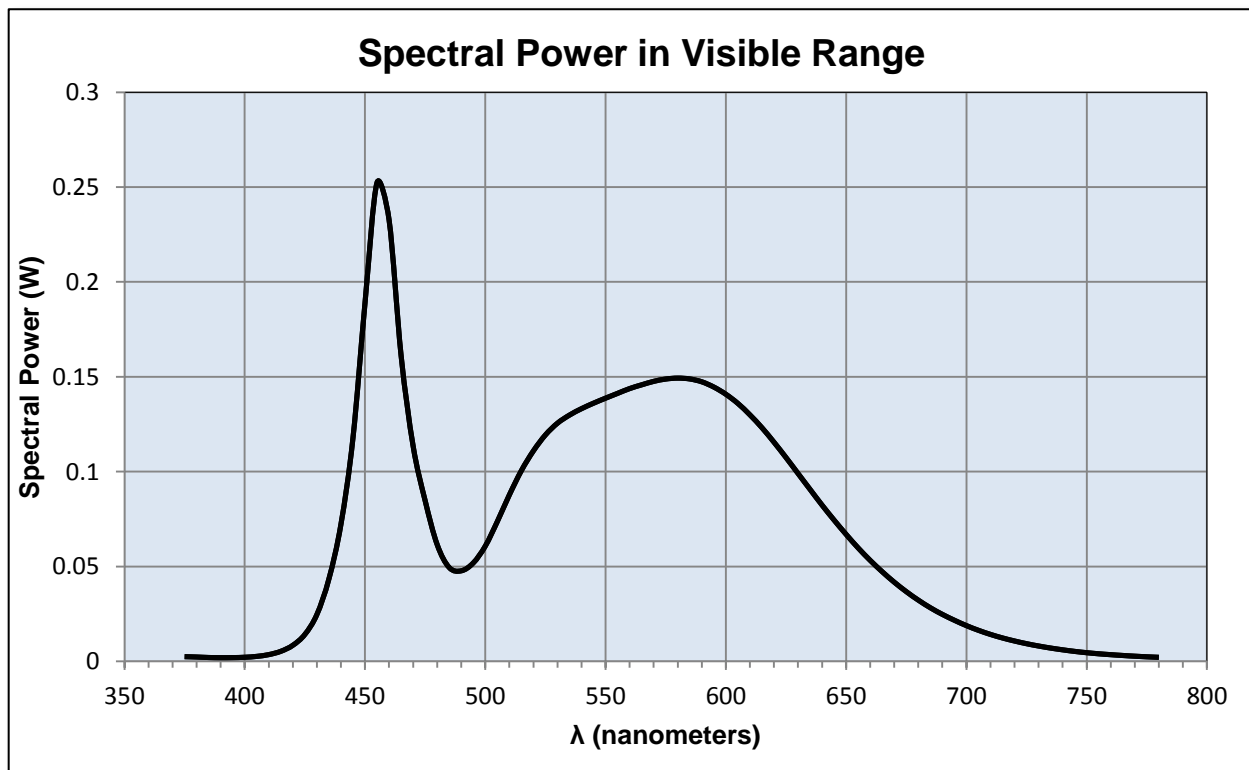
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
 Input Current: 0.744 (A)
 Input Power: 88.8 (W)
 Input Power Factor: 0.991
 Current ATHD: 10.34 (%)

Photometric measurements:

Luminous Flux: 9180 (lumens)
 Luminous Efficacy: 103.4 (lumens/W)
 Correlated Color Temperature (CCT): 4989 (K)
 CRI -Ra: 80.8
 CRI -R9: 3.3
 DUV: 0.00027
 CIE Coordinate (x): 0.345
 CIE Coordinate (y): 0.351
 CIE Coordinate (u'): 0.212
 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	0.002	515	0.101	655	0.06
380	0.002	520	0.111	660	0.053
385	0.002	525	0.119	665	0.047
390	0.002	530	0.126	670	0.042
395	0.002	535	0.13	675	0.037
400	0.002	540	0.133	680	0.032
405	0.003	545	0.136	685	0.028
410	0.004	550	0.139	690	0.025
415	0.005	555	0.141	695	0.022
420	0.008	560	0.144	700	0.019
425	0.014	565	0.146	705	0.016
430	0.025	570	0.148	710	0.014
435	0.043	575	0.149	715	0.012
440	0.072	580	0.149	720	0.011
445	0.118	585	0.149	725	0.009
450	0.189	590	0.147	730	0.008
455	0.252	595	0.145	735	0.007
460	0.233	600	0.141	740	0.006
465	0.161	605	0.136	745	0.005
470	0.113	610	0.13	750	0.005
475	0.085	615	0.123	755	0.004
480	0.062	620	0.116	760	0.004
485	0.049	625	0.107	765	0.003
490	0.048	630	0.099	770	0.003
495	0.052	635	0.091	775	0.002
500	0.061	640	0.082	780	0.002
505	0.074	645	0.074		
510	0.088	650	0.067		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15123.
Dialight unit model number HEF2MC4DN-xxx

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.745 (A)
Input Power: 89.0 (W)
Power Factor: 0.991

Photometric measurements:

Absolute Luminous Flux: 9054 (lumens)
Luminous Efficacy: 101.8 (lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	3768	3768	3768	3768	3768	
5	3777	3777	3777	3777	3777	141
15	3810	3810	3810	3810	3810	812
25	3738	3738	3738	3738	3738	1502
35	3222	3222	3222	3222	3222	1958
45	2261	2261	2261	2261	2261	1897
55	1285	1285	1285	1285	1285	1386
65	641	641	641	641	641	816
75	272	272	272	272	272	409
85	45	45	45	45	45	130
95	0	0	0	0	0	4
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

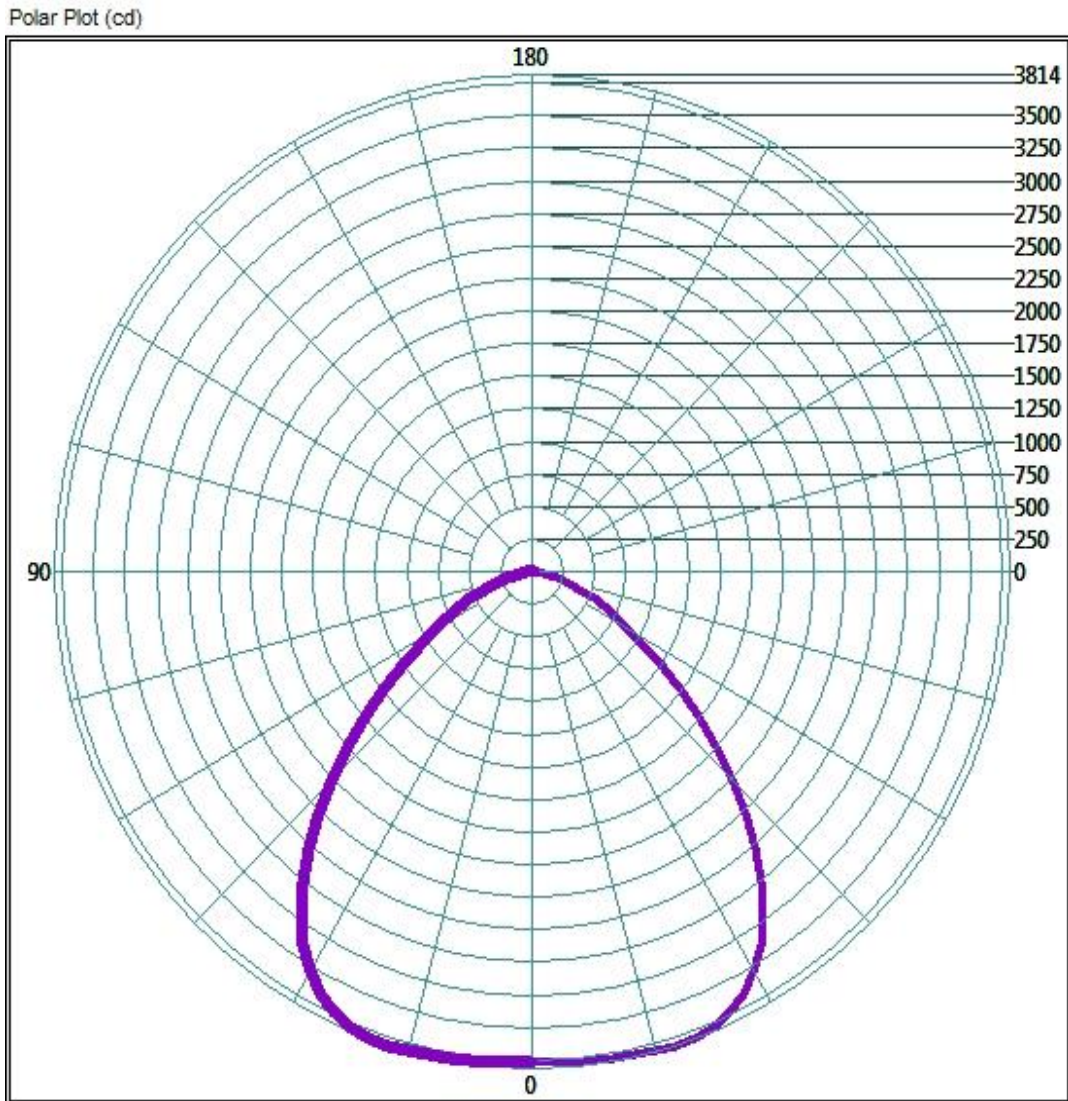
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	3404.32	37.6%
0-40	5403.36	59.7%
0-60	8164.8	90.2%
60-90	1107.2	12.2%
0-90	9054.08	100.0%
90-180	0	0.0%
0-180	9054.08	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

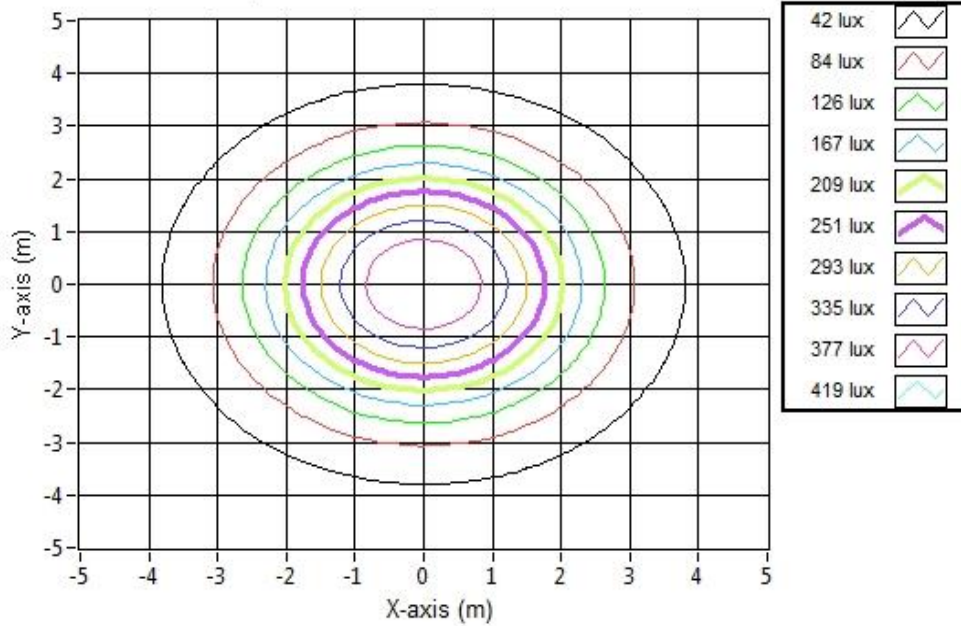


Test Results: Goniometer

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	6.92	6.92	405.6
6.096	13.84	13.84	101.4
9.144	20.76	20.76	45.1
12.192	27.68	27.68	25.4
15.24	34.60	34.60	16.2
18.288	41.52	41.52	11.3
21.336	48.45	48.45	8.3
24.384	55.37	55.37	6.3
27.432	62.29	62.29	5.0
30.48	69.21	69.21	4.1

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15123.
Dialight unit model number HEF2MC4DN-xxx

LED identified as Nichia part number NT2W757DT.

LED drive current (as indicated by customer): 100 (mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If): 300 (mA)
Maximum Rated Power Dissipation: 1.05 (W)
Maximum Junction Temp. (Tj): 120 (°C)
Thermal Resistance (Rth): 18 (°C/W)

Derived Specifications:

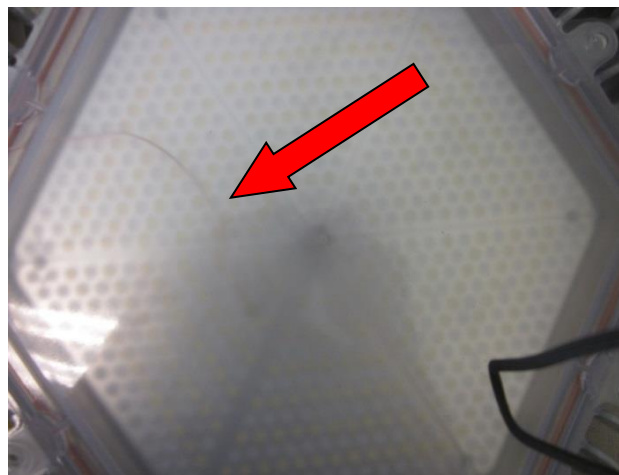
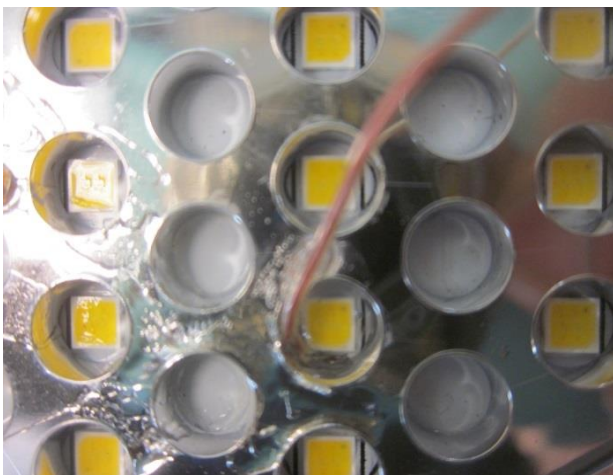
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 1^{\circ}$ (°C)
Ambient temperature at time of measurement: 25.9 (°C)
Relative humidity at time of measurement: 26%

Results:

Measured LED source temperature: 46.1 (°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
Volttech Power Analyzer	PM1000+
Delta Elektronika DC Power Supply	SM.300-5
Elgar AC Power Supply	CW1251P
Instek AC Power Supply	APS-9501
Sorensen DC Power Supply	XHR150-7
Extech Hygro-Thermometer	4/16/3120
Extech Hygro-Thermometer	4/16/3120
Fluke 52II Thermometer	52II Thermometer
Volttech Power Analyzer	PM1000+
BK Precision	1715A
TDK-Lambda	GEN1500W
Fluke 8808A Digit Multimeter	8808A
TPI Digital Thermometer 343	TPI 343
TPI Digital Thermometer 343	TPI 343
Step-Up Transformer	
Omega TC	Dpi8-C24
Agilent True RMS OLED Multimeter	U1273A
Adaptive Power Systems AC Power Supply	FC-210
Xitron Power Analyzer	XT2640

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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