

Test Report

Report Number: L14127

Date: Dec 9, 2014

Issued by:
Dialight Optics Laboratory
1501 Route 34 South, Farmingdale, NJ 07727

Test of one Vigilant Highbay Fixture With Glass Lens
Unit manufacturer: Dialight Corporation
Unit model number: HEGMN4PN-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: November 24, 2014 through December 4, 2014

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:

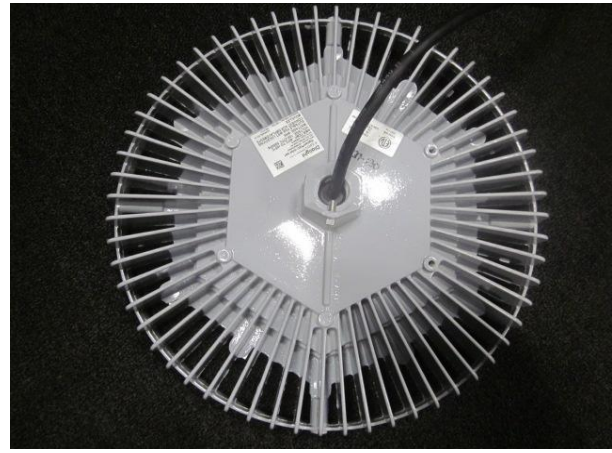
Sample Number: L14127
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay Fixture With Glass Lens
Model Number: HEGMN4PN-xxx

Report Summary

Sample number L14127

Dialight unit model number HEGMN4PN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	26440 (lumens)	26446 (lumens)
Electrical Power:	211.5 (W)	211.5 (W)
Luminous Efficacy:	125.0 (lumens/W)	125.0 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 211.5 (W)
 Power Factor (120VAC): 0.996
 Current ATHD % (120VAC): 5.515
 Input Power (277VAC): 205.0 (W)
 Power Factor (277VAC): 0.966
 Current ATHD % (277VAC): 11.81

Color Measurements:

Correlated Color Temperature (CCT): 3882
 Color Rendering Index (CRI): 73.7
 Chromaticity Coordinate (x): 0.3866
 Chromaticity Coordinate (y): 0.3828
 Chromaticity Coordinate (u'): 0.2267
 Chromaticity Coordinate (v'): 0.3367
 DUV: 0.001

Temperature Measurements:

In Situ LED Source Temperature: 58.6 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L14127.

Dialight unit model number HEGMN4PN-xxx

Test Conditions:

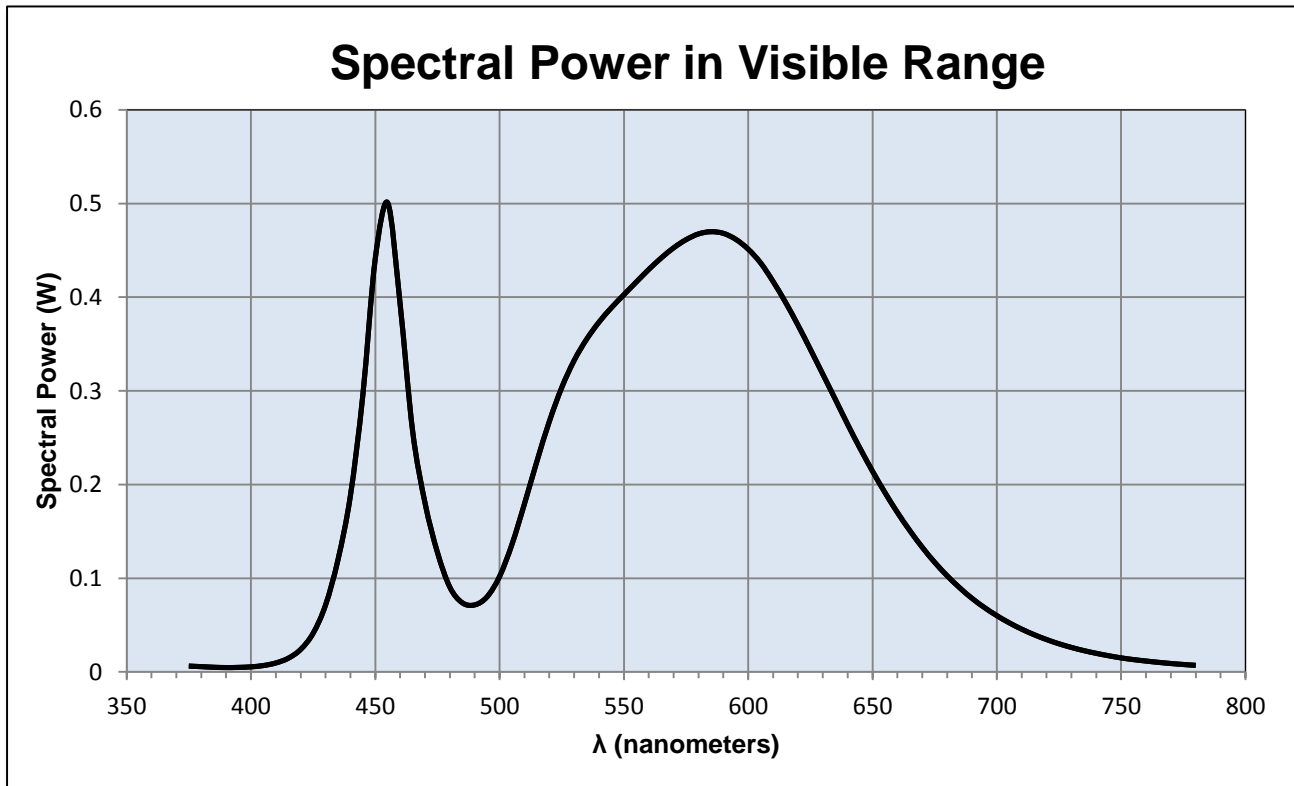
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
 Input Current: 1.765 (A)
 Input Power: 211.5 (W)
 Input Power Factor: 0.996
 Current ATHD: 5.515 (%)

Photometric measurements:

Luminous Flux: 26440 (lumens)
 Luminous Efficacy: 125.0 (lumens/W)
 Correlated Color Temperature (CCT): 3882 (K)
 CRI -Ra: 73.7
 CRI -R9: -19.1
 DUV: 0.001
 CIE Coordinate (x): 0.3866
 CIE Coordinate (y): 0.3828
 CIE Coordinate (u'): 0.2267
 CIE Coordinate (v'): 0.3367



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	0.225	655	0.191
380	0.006	520	0.267	660	0.170
385	0.005	525	0.304	665	0.151
390	0.005	530	0.332	670	0.133
395	0.005	535	0.355	675	0.117
400	0.005	540	0.373	680	0.103
405	0.007	545	0.389	685	0.090
410	0.01	550	0.403	690	0.079
415	0.015	555	0.416	695	0.069
420	0.024	560	0.430	700	0.060
425	0.041	565	0.442	705	0.052
430	0.071	570	0.453	710	0.046
435	0.12	575	0.461	715	0.040
440	0.188	580	0.467	720	0.035
445	0.295	585	0.470	725	0.030
450	0.441	590	0.468	730	0.026
455	0.501	595	0.462	735	0.023
460	0.392	600	0.451	740	0.020
465	0.258	605	0.437	745	0.017
470	0.18	610	0.417	750	0.015
475	0.128	615	0.395	755	0.013
480	0.09	620	0.370	760	0.012
485	0.074	625	0.344	765	0.010
490	0.072	630	0.318	770	0.009
495	0.08	635	0.291	775	0.008
500	0.102	640	0.264	780	0.007
505	0.136	645	0.239		
510	0.179	650	0.214		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L14127.
Dialight unit model number HEGMN4PN-xxx

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 1.785 (A)
Input Power: 211.5 (W)
Power Factor: 0.9967

Photometric measurements:

Absolute Luminous Flux: 26445.7 (lumens)
Luminous Efficacy: 125.0 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	22.5	45	67.5	ACROSS	OUTPUT LUMENS
0	10509	10509	10509	10509	10509	
5	10488	10481	10475	10479	10478	392
15	10444	10409	10399	10409	10414	2226
25	10838	10767	10772	10783	10804	4221
35	10745	10704	10705	10721	10740	6164
45	8387	8411	8395	8387	8454	6816
55	4037	4038	4042	4042	4109	4889
65	657	649	662	664	669	1596
75	16	14	15	16	16	142
85	0	0	0	0	0	1
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

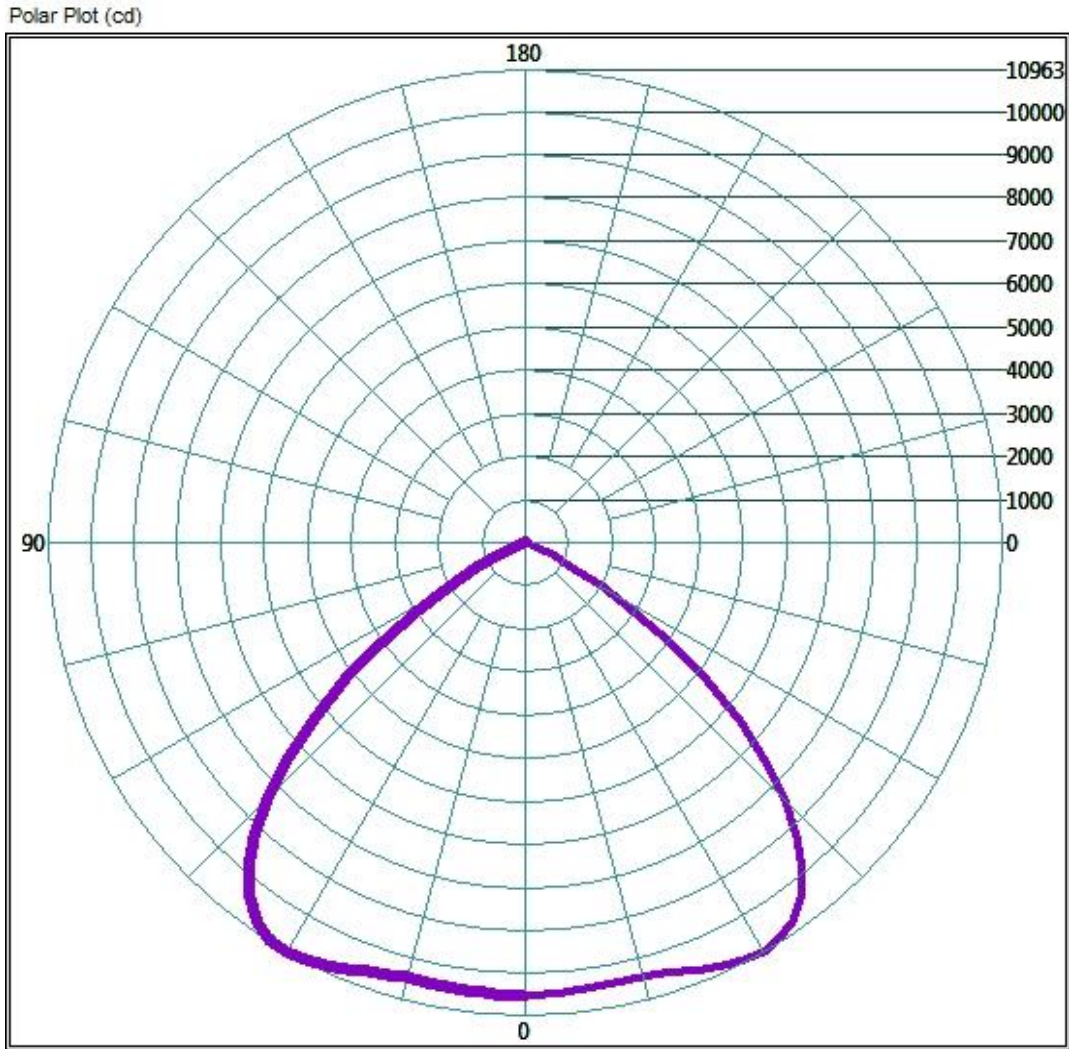
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	9713.4	36.7%
0-40	16481.22	62.3%
0-60	25846.56	97.7%
60-90	1062.86	4.0%
0-90	26445.72	100.0%
90-180	0	0.0%
0-180	26445.72	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

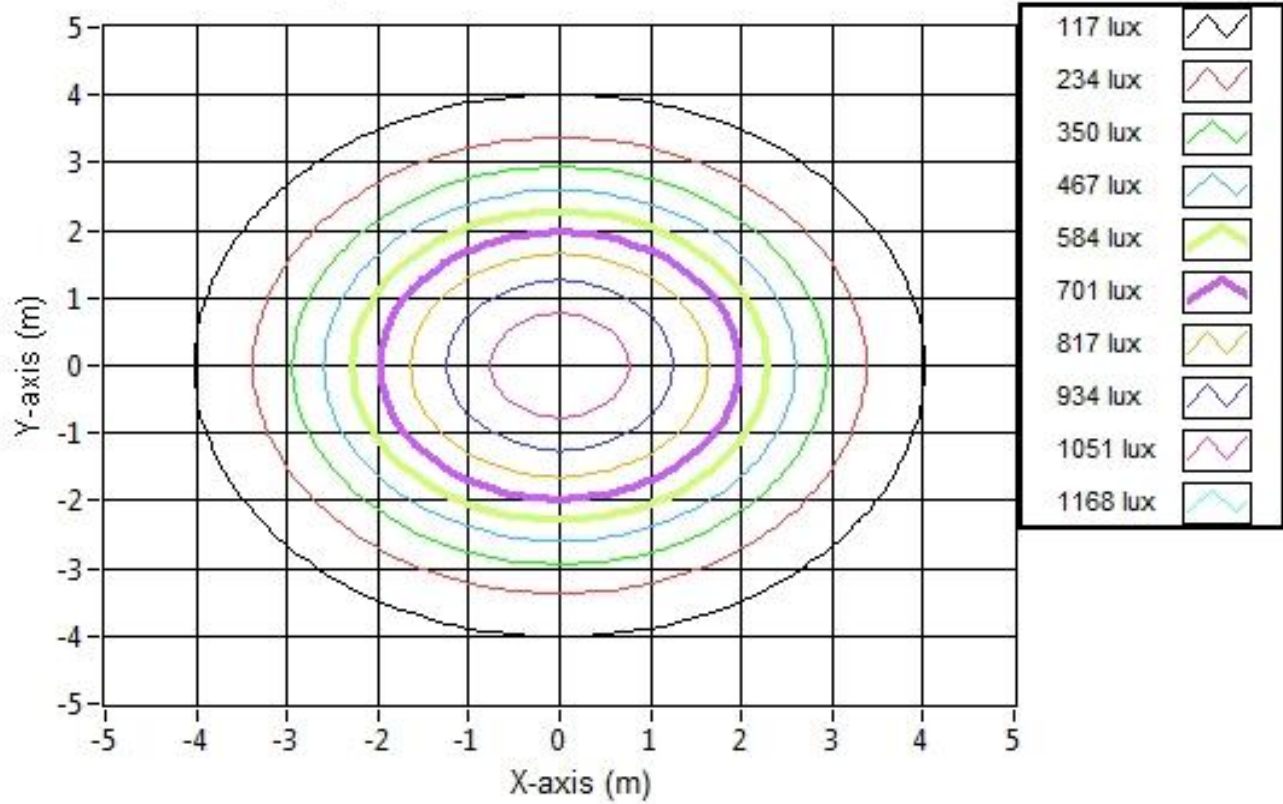


Test Results: Goniometer

Results continued from previous page.

Illuminance Plots:

Illuminance Contour Graph



Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone Width (m)	Projected Illuminance (lux)
3.048	7.91	7.97	1131.1
6.096	15.82	15.94	282.8
9.144	23.73	23.90	125.7
12.192	31.64	31.87	70.7
15.24	39.55	39.84	45.2
18.288	47.47	47.81	31.4
21.336	55.38	55.78	23.1
24.384	63.29	63.75	17.7
27.432	71.20	71.71	14.0
30.48	79.11	79.68	11.3

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L14127.

Dialight unit model number HEGMN4PN-xxx

LED identified as Nichia part number Nichia NT2L757DT.

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

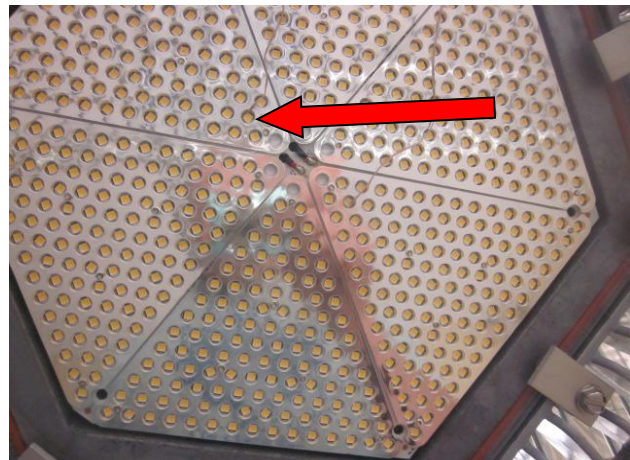
Ambient Temperature: $25^{\circ} \pm 1^{\circ}$ (°C)

Ambient temperature at time of measurement: 25.9 (°C)

Relative humidity at time of measurement: 21%

Results:

Measured LED source temperature: 58.6 (°C)



Equipment Used:

Equipment Name	Model Number	Calibration Due Date
Omega TC	Dpi8	3/7/2015
Fluke 8808A Digit Multimeter	8808A	4/7/2015
YOKOGAWA Digital Power Meter	760401	4/7/2015
LSI Standard Lamps	#30279	4/17/2015
LSI High Speed Mirror Goniometer	6240T	-
Instrument System Spectrometer	CAS140B-151	-
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System 1.5 Meter Sphere	ISP1500	-
Volttech Power Analyzer	PM1000+	4/17/2015
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	445703	-
Extech Hygro-Thermometer	445703	-
Fluke 52II Thermometer	52II Thermometer	3/6/2015
Volttech Power Analyzer	PM1000+	4/17/2015
Tenma AC Power Source	72-7675	-
BK Precision	1715A	-
TDK-Lambda	GEN1500W	-
Fluke 8808A Digit Multimeter	8808A	4/14/2015
TPI Digital Thermometer 343	343	4/17/2015
TPI Digital Thermometer 343	343	4/17/2015

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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Approved Signatory