Dialight
OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Report

Report Number: L15002 Date: Jan 23, 2015

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

Test of one Vigilant Higbay With Glass Lens
Unit manufacturer: Dialight Corporation
Unit model number: HEGRN4DN-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: January 23, 2015 through January 23, 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: L15002
Manufacturer: Dialight Corporation
Product Name: Vigilant High Bay
Description: Vigilant Higbay With Glass Lens
Model Number: HEGRN4DN-xxx

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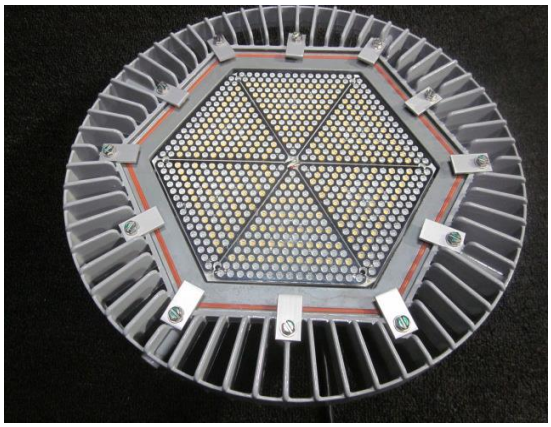
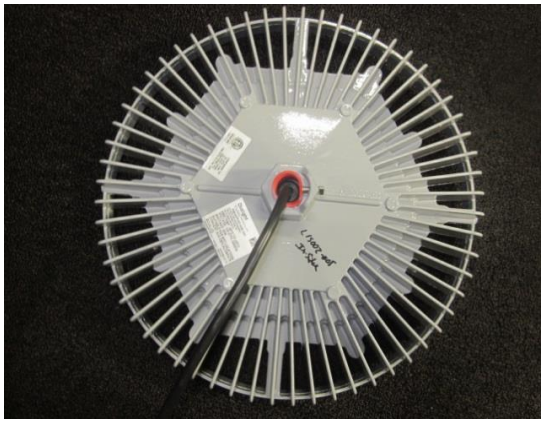
Report Summary

Sample number L15002
Dialight unit model number HEGRN4DN-xxx

Photograph(s) of sample:





*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere		Goniophotometer	
Luminous Flux:	11210	(lumens)	11114	(lumens)
Electrical Power:	89.9	(W)	89.9	(W)
Luminous Efficacy:	124.7	(lumens/W)	123.7	(lumens/W)

Electrical Measurements:

Input Power (120VAC):	89.9	(W)
Power Factor (120VAC):	0.991	
Current ATHD % (120VAC):	10.504	
Input Power (277VAC):	89.1	(W)
Power Factor (277VAC):	0.926	
Current ATHD % (277VAC):	17.423	

Color Measurements:

Correlated Color Temperature (CCT):	3878
Color Rendering Index (CRI):	72.8
Chromaticity Coordinate (x):	0.3866
Chromaticity Coordinate (y):	0.3823
Chromaticity Coordinate (u'):	0.2269
Chromaticity Coordinate (v'):	0.3366
DUV:	0.00084

Temperature Measurements:

In Situ LED Source Temperature:	39.9	(°C)

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Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15002.
Dialight unit model number HEGRN4DN-xxx

Test Conditions:

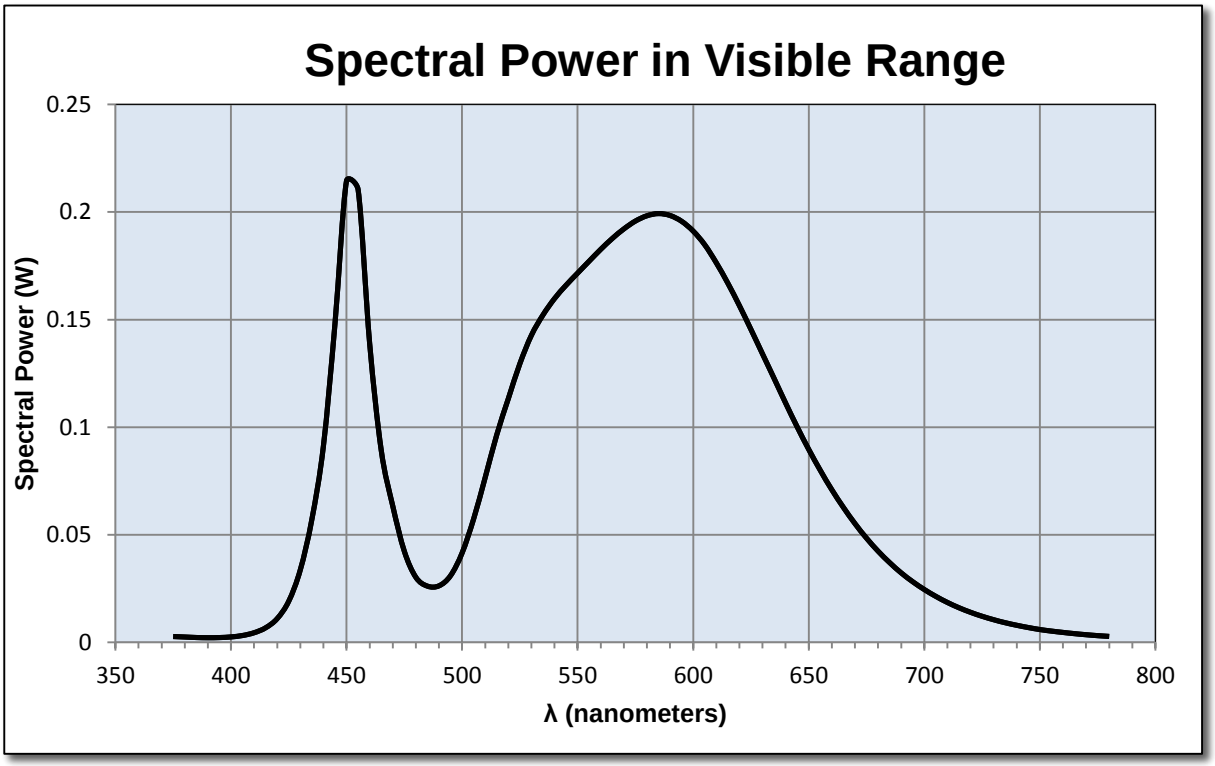
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	0.7549	(A)
Input Power:	89.9	(W)
Input Power Factor:	0.991	
Current ATHD:	10.504	(%)

Photometric measurements:

Luminous Flux:	11210	(lumens)
Luminous Efficacy:	124.7	(lumens/W)
Correlated Color Temperature (CCT):	3878	(K)
CRI -Ra:	72.8	
CRI -R9:	-21.1	
DUV:	0.00084	
CIE Coordinate (x):	0.3866	
CIE Coordinate (y):	0.3823	
CIE Coordinate (u'):	0.2269	
CIE Coordinate (v'):	0.3366	



Test Results: Integrating Sphere

Results continued from previous page.

Tabulated Spectral Power in Visible Range:

λ(nm)	(W/nm)	λ(nm)	(W/nm)	λ(nm)	(W/nm)
375	0.003	515	0.096	655	0.080
380	0.002	520	0.113	660	0.071
385	0.002	525	0.130	665	0.063
390	0.002	530	0.143	670	0.055
395	0.002	535	0.152	675	0.048
400	0.003	540	0.160	680	0.042
405	0.003	545	0.166	685	0.037
410	0.004	550	0.172	690	0.032
415	0.007	555	0.177	695	0.028
420	0.011	560	0.183	700	0.025
425	0.019	565	0.188	705	0.021
430	0.034	570	0.192	710	0.019
435	0.057	575	0.196	715	0.016
440	0.091	580	0.198	720	0.014
445	0.148	585	0.199	725	0.012
450	0.215	590	0.198	730	0.011
455	0.21	595	0.196	735	0.009
460	0.139	600	0.191	740	0.008
465	0.089	605	0.185	745	0.007
470	0.063	610	0.176	750	0.006
475	0.042	615	0.167	755	0.005
480	0.03	620	0.157	760	0.005
485	0.026	625	0.145	765	0.004
490	0.026	630	0.134	770	0.004
495	0.031	635	0.123	775	0.003
500	0.042	640	0.111	780	0.003
505	0.057	645	0.100		
510	0.077	650	0.090		

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Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15002.
Dialight unit model number HEGRN4DN-xxx

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	0.7549	(A)
Input Power:	89.9	(W)
Power Factor:	0.9904	

Photometric measurements:

Absolute Luminous Flux:	11114.1	(lumens)
Luminous Efficacy:	123.7	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	22.5	45	67.5	ACROSS	OUTPUT LUMENS
0	4349	4349	4349	4349	4349	
5	4327	4326	4328	4326	4327	162
15	4179	4170	4166	4170	4179	904
25	4129	4103	4070	4103	4129	1639
35	4443	4406	4374	4406	4443	2451
45	4330	4347	4315	4347	4330	3269
55	1547	1539	1487	1539	1547	2318
65	63	60	56	60	63	356
75	5	5	5	5	5	14
85	0	0	0	0	0	0
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	

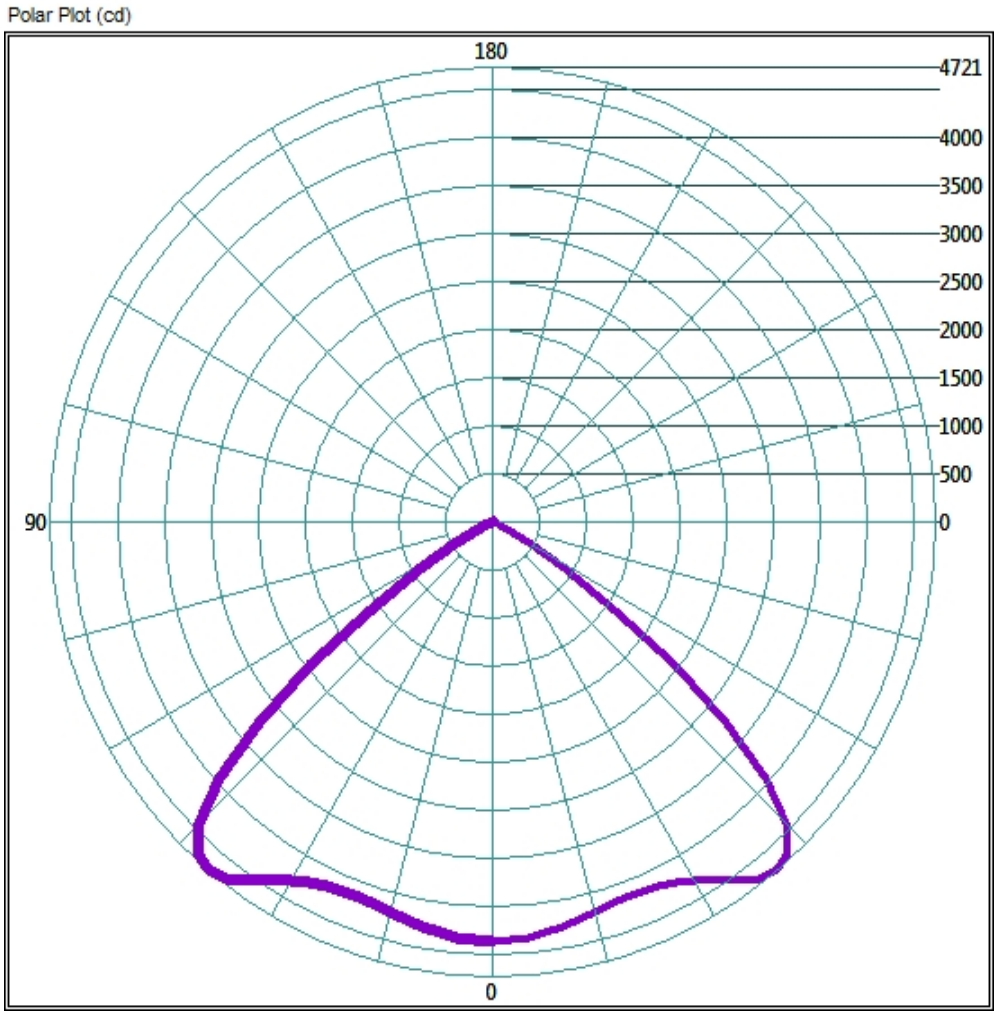
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	3814.9	34.3%
0-40	6734.44	60.6%
0-60	11044.08	99.4%
60-90	169.78	1.5%
0-90	11114.34	100.0%
90-180	0	0.0%
0-180	11114.34	100.0%

Test Results: Goniometer

Results continued from previous page.

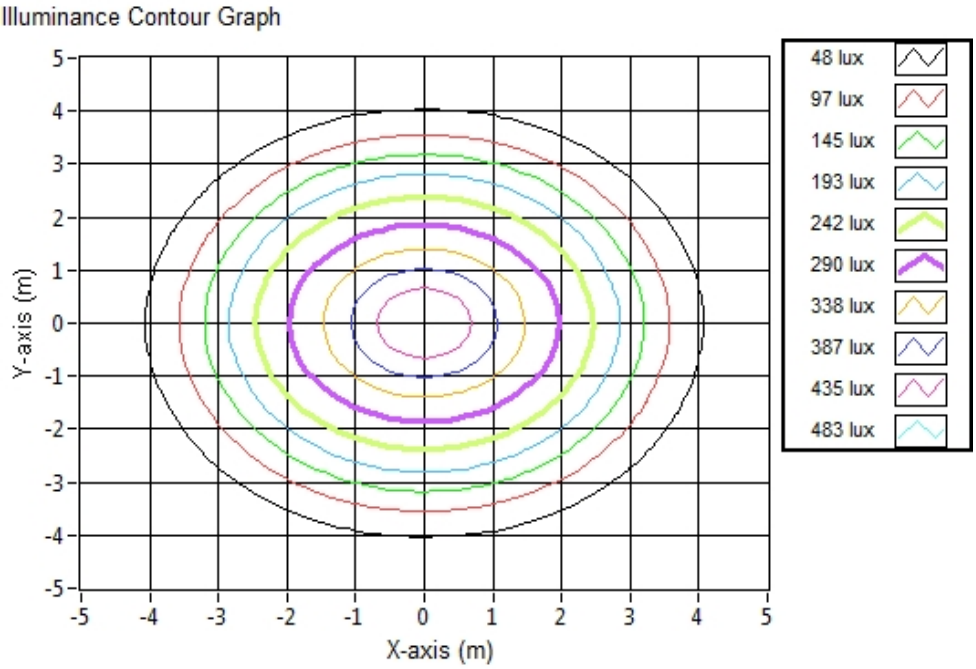
Polar Polt:



Test Results: Goniometer

Results continued from previous page.

Illuminance Plots:



Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone Width (m)	Projected Illuminance (lux)
3.048	8.06	8.17	468.2
6.096	16.12	16.34	117.0
9.144	24.18	24.51	52.0
12.192	32.25	32.69	29.3
15.24	40.31	40.86	18.7
18.288	48.37	49.03	13.0
21.336	56.43	57.20	9.6
24.384	64.49	65.37	7.3
27.432	72.55	73.54	5.8
30.48	80.61	81.71	4.7

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15002.
Dialight unit model number HEGRN4DN-xxx

LED identified as Nichia part number 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:

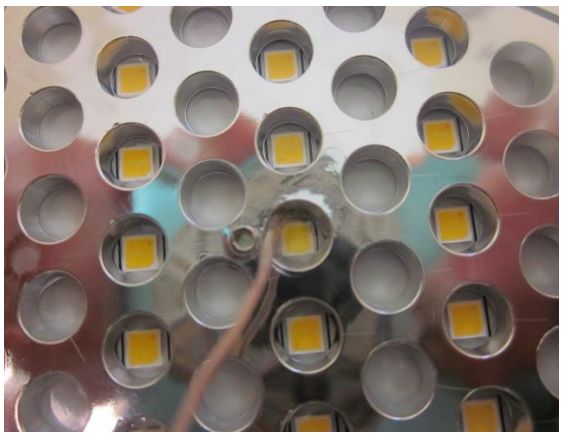
Maximum Power at Indicated Current:	0.35	(W)
Maximum Source Temperature:	113.7	(°C)

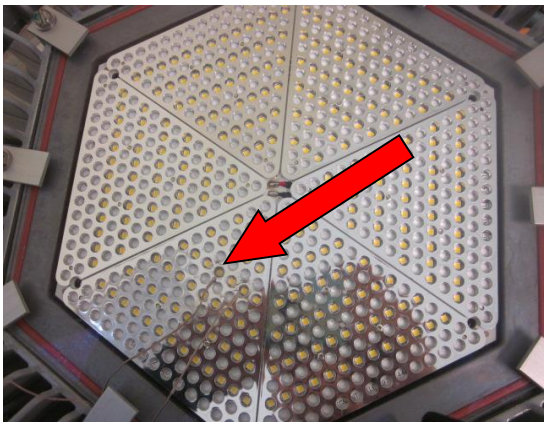
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 1°	(°C)
Ambient temperature at time of measurement:	25.4	(°C)
Relative humidity at time of measurement:	10%	

Results:

Measured LED source temperature:	39.9	(°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 Precison	1715A	-
TDK-Lambda	GEN1500W	-
Fluke 8808A Digit Multimeter	8808A	4/14/2015
TPI Digitial Thermometer 343	343	4/17/2015
TPI Digitial 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.

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.

Test Report Issued By:

Richard Huegi
Dialight Optics Laboratory
Senior Optical Engineering Technician
Lighting Division

Test Report Reviewed and Approved By:

Vishnu Shastry
Dialight Optics Laboratory
Optical Engineer
Approved Signatory