

Test Report

Report Number: L15005

Date: Feb 5, 2015

Issued by:

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

Test of one Vigilant High Bay With Polycarbonate Dome Lens
Unit manufacturer: Dialight Corporation
Unit model number: HELRN4DN-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 29, 2015 through February 2, 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

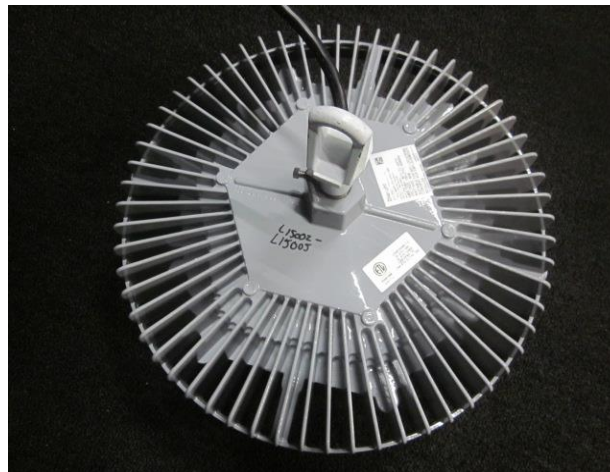
Description of sample:

Sample Number: L15005
Manufacturer: Dialight Corporation
Product Name: Vigilant High Bay
Description: Vigilant High Bay With Polycarbonate Dome Lens
Model Number: HELRN4DN-xxx

Report Summary

Sample number L15005
Dialight unit model number HELRN4DN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	10420 (lumens)	10100 (lumens)
Electrical Power:	89.7 (W)	89.9 (W)
Luminous Efficacy:	116.2 (lumens/W)	112.4 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 89.7 (W)
 Power Factor (120VAC): 0.991
 Current ATHD % (120VAC): 10.42
 Input Power (277VAC): 89.1 (W)
 Power Factor (277VAC): 0.928
 Current ATHD % (277VAC): 17.37

Color Measurements:

Correlated Color Temperature (CCT): 3880
 Color Rendering Index (CRI): 74.1
 Chromaticity Coordinate (x): 0.386
 Chromaticity Coordinate (y): 0.379
 Chromaticity Coordinate (u'): 0.228
 Chromaticity Coordinate (v'): 0.336
 DUV: 0.00025

Temperature Measurements:

In Situ LED Source Temperature: 43.1 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15005.
Dialight unit model number HELRN4DN-xxx

Test Conditions:

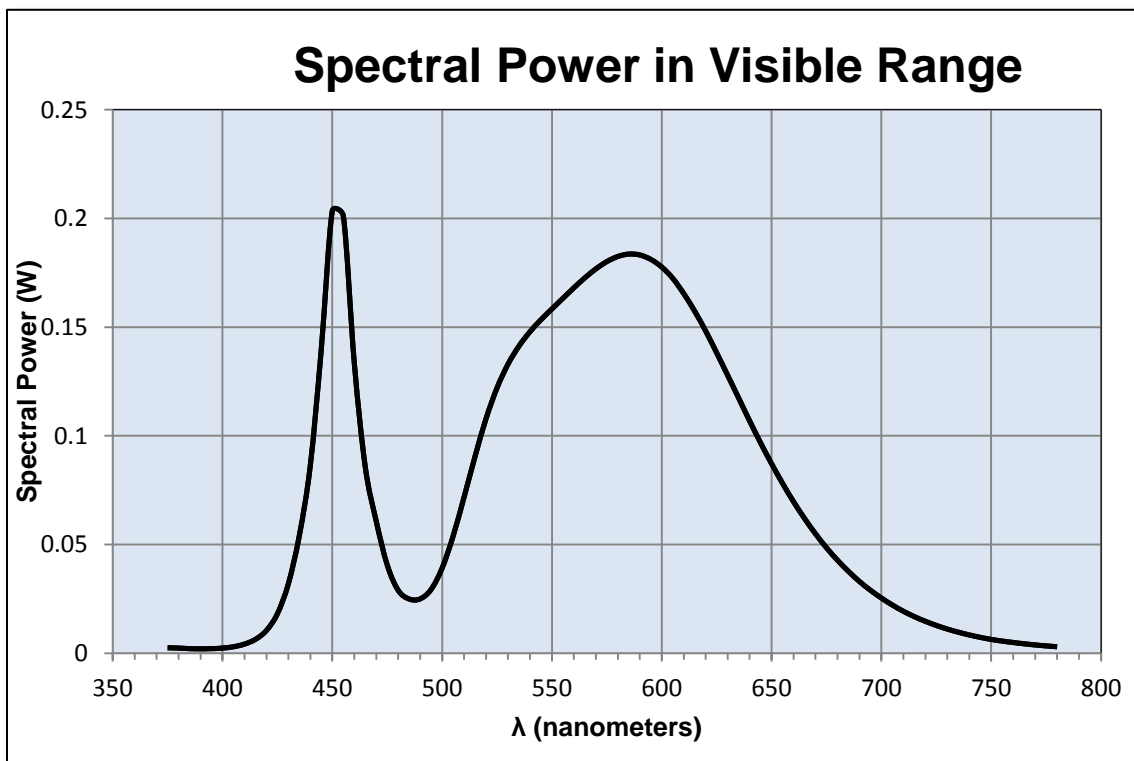
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 0.75 (A)
Input Power: 89.7 (W)
Input Power Factor: 0.991
Current ATHD: 10.42 (%)

Photometric measurements:

Luminous Flux: 10420 (lumens)
Luminous Efficacy: 116.2 (lumens/W)
Correlated Color Temperature (CCT): 3880 (K)
CRI -Ra: 74.1
CRI -R9: -14.2
DUV: 0.00025
CIE Coordinate (x): 0.386
CIE Coordinate (y): 0.379
CIE Coordinate (u'): 0.228
CIE Coordinate (v'): 0.336



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	0.091	655	0.078
380	0.002	520	0.108	660	0.07
385	0.002	525	0.122	665	0.062
390	0.002	530	0.133	670	0.055
395	0.002	535	0.141	675	0.049
400	0.002	540	0.148	680	0.043
405	0.003	545	0.153	685	0.038
410	0.004	550	0.158	690	0.033
415	0.006	555	0.163	695	0.029
420	0.01	560	0.168	700	0.025
425	0.018	565	0.173	705	0.022
430	0.032	570	0.177	710	0.019
435	0.054	575	0.18	715	0.017
440	0.087	580	0.183	720	0.015
445	0.14	585	0.184	725	0.013
450	0.204	590	0.183	730	0.011
455	0.201	595	0.181	735	0.01
460	0.133	600	0.178	740	0.008
465	0.086	605	0.172	745	0.007
470	0.061	610	0.165	750	0.006
475	0.041	615	0.157	755	0.006
480	0.029	620	0.148	760	0.005
485	0.025	625	0.138	765	0.004
490	0.025	630	0.128	770	0.004
495	0.029	635	0.117	775	0.003
500	0.039	640	0.107	780	0.003
505	0.054	645	0.097		
510	0.072	650	0.087		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15005.
Dialight unit model number HELRN4DN-xxx

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.755 (A)
Input Power: 89.9 (W)
Power Factor: 0.99

Photometric measurements:

Absolute Luminous Flux: 10100 (lumens)
Luminous Efficacy: 112.4 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	3610	3610	3610	3610	3610	
5	3600	3601	3604	3606	3606	135
15	3537	3543	3559	3571	3573	763
25	3522	3538	3569	3601	3605	1411
35	3591	3607	3639	3683	3690	2058
45	3182	3190	3196	3225	3233	2484
55	1727	1726	1725	1740	1742	1981
65	517	513	511	514	519	849
75	143	141	141	140	143	247
85	63	61	62	63	61	88
95	44	41	42	46	43	56
105	14	11	12	15	14	26
115	0	0	0	0	0	2
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

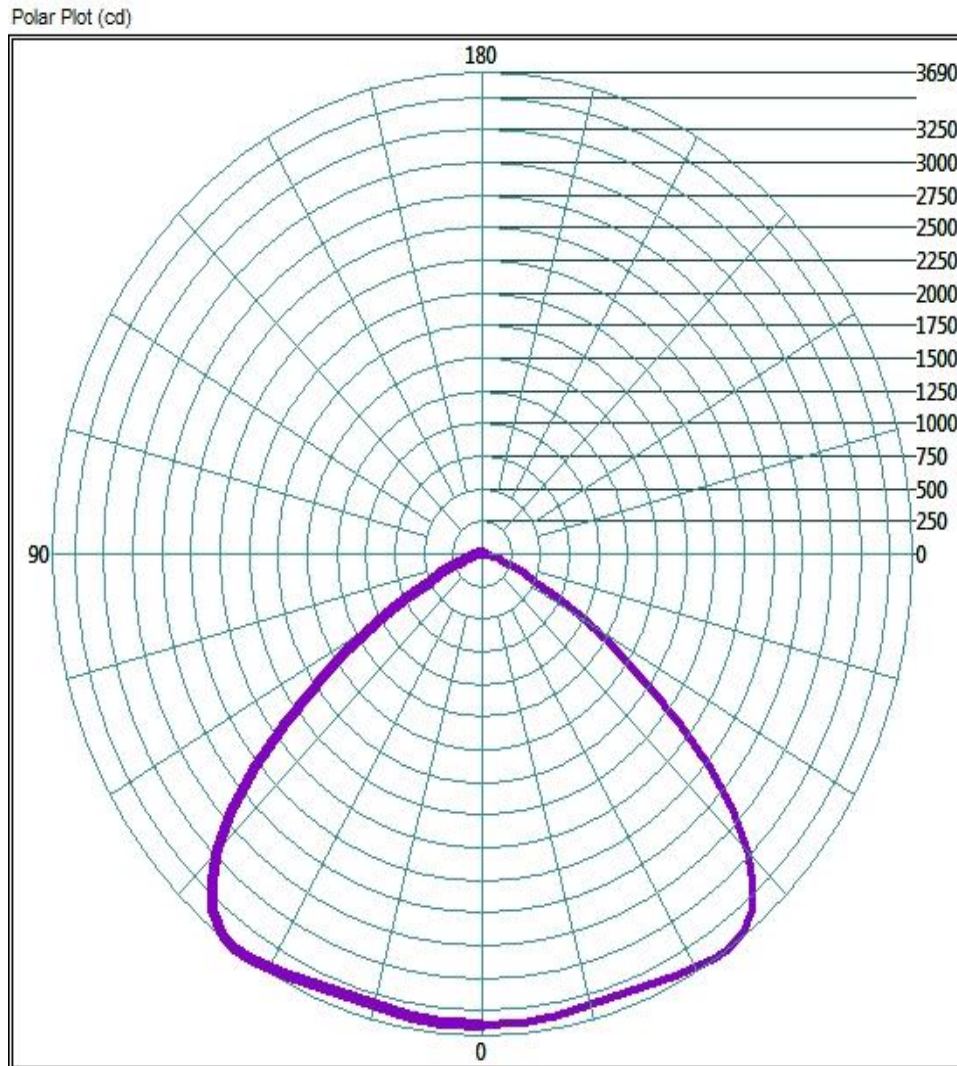
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	3259.16	32.3%
0-40	5597.1	55.4%
0-60	9378.32	92.9%
60-90	904.68	9.0%
0-90	10046.5	99.5%
90-180	68.32	0.7%
0-180	10100.12	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

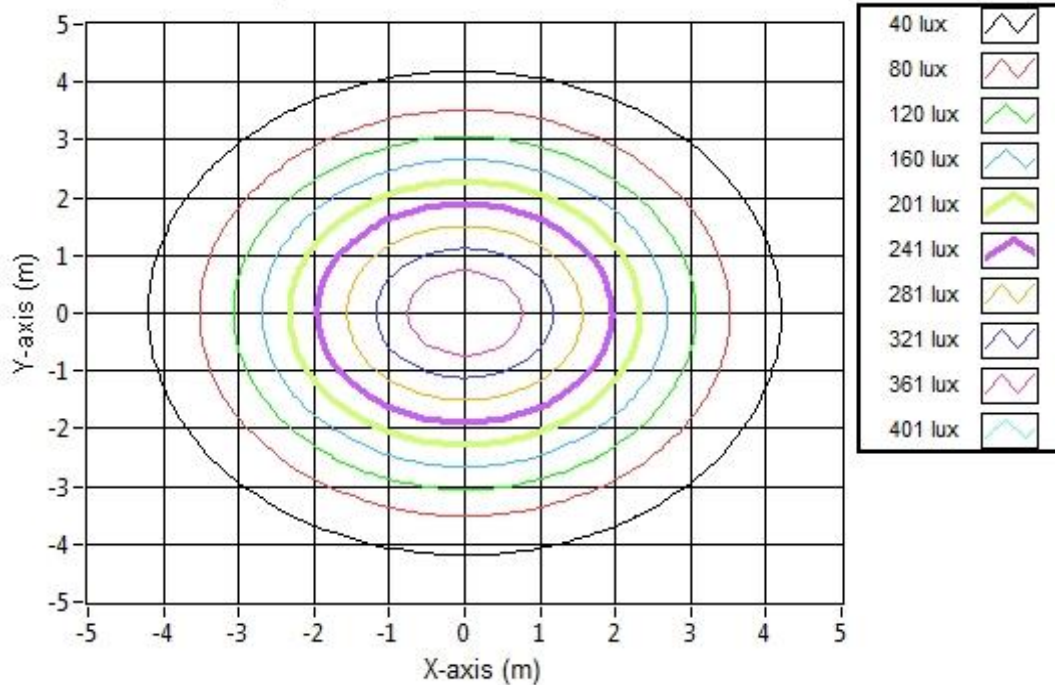


Test Results: Goniometer

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	8.56	8.59	388.6
6.096	17.11	17.17	97.2
9.144	25.67	25.76	43.2
12.192	34.22	34.34	24.3
15.24	42.78	42.93	15.5
18.288	51.34	51.52	10.8
21.336	59.89	60.10	7.9
24.384	68.45	68.69	6.1
27.432	77.00	77.27	4.8
30.48	85.56	85.86	3.9

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15005.
Dialight unit model number HELRN4DN-xxx

LED identified as Nichia part number NICHIA 757.

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: 25.5 (°C)
Relative humidity at time of measurement: 10%

Results:

Measured LED source temperature: 43.1 (°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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 Optical Engineer
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