

Test Report

Report Number: L15011

Date: Mar 31, 2015

Issued by:

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

Test of one Vigilant Highbay With Polycarbonate Dome Lens
Unit manufacturer: Dialight Corporation
Unit model number: HELRC4DN-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: March 12, 2015 through March 30, 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

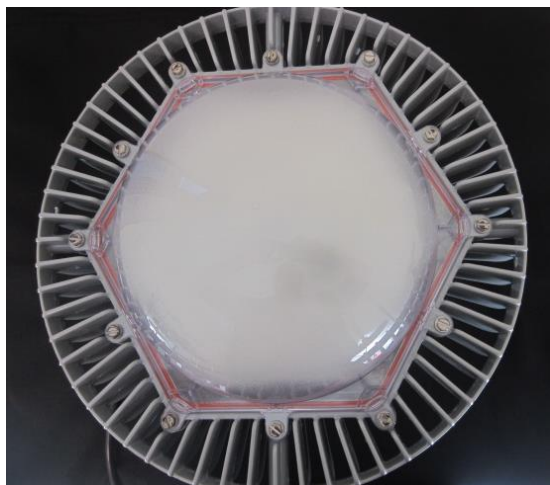
Description of sample:

Sample Number: L15011
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay With Polycarbonate Dome Lens
Model Number: HELRC4DN-xxx

Report Summary

Sample number L15011
Dialight unit model number HELRC4DN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	10060 (lumens)	10004 (lumens)
Electrical Power:	87.9 (W)	88.1 (W)
Luminous Efficacy:	114.4 (lumens/W)	113.6 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 87.9 (W)
 Power Factor (120VAC): 0.991
 Current ATHD % (120VAC): 9.517
 Input Power (277VAC): 87.2 (W)
 Power Factor (277VAC): 0.923
 Current ATHD % (277VAC): 16.61

Color Measurements:

Correlated Color Temperature (CCT): 4976
 Color Rendering Index (CRI): 78.9
 Chromaticity Coordinate (x): 0.346
 Chromaticity Coordinate (y): 0.354
 Chromaticity Coordinate (u'): 0.211
 Chromaticity Coordinate (v'): 0.324
 DUV: 0.00066

Temperature Measurements:

In Situ LED Source Temperature: 46.4 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15011.
Dialight unit model number HELRC4DN-xxx

Test Conditions:

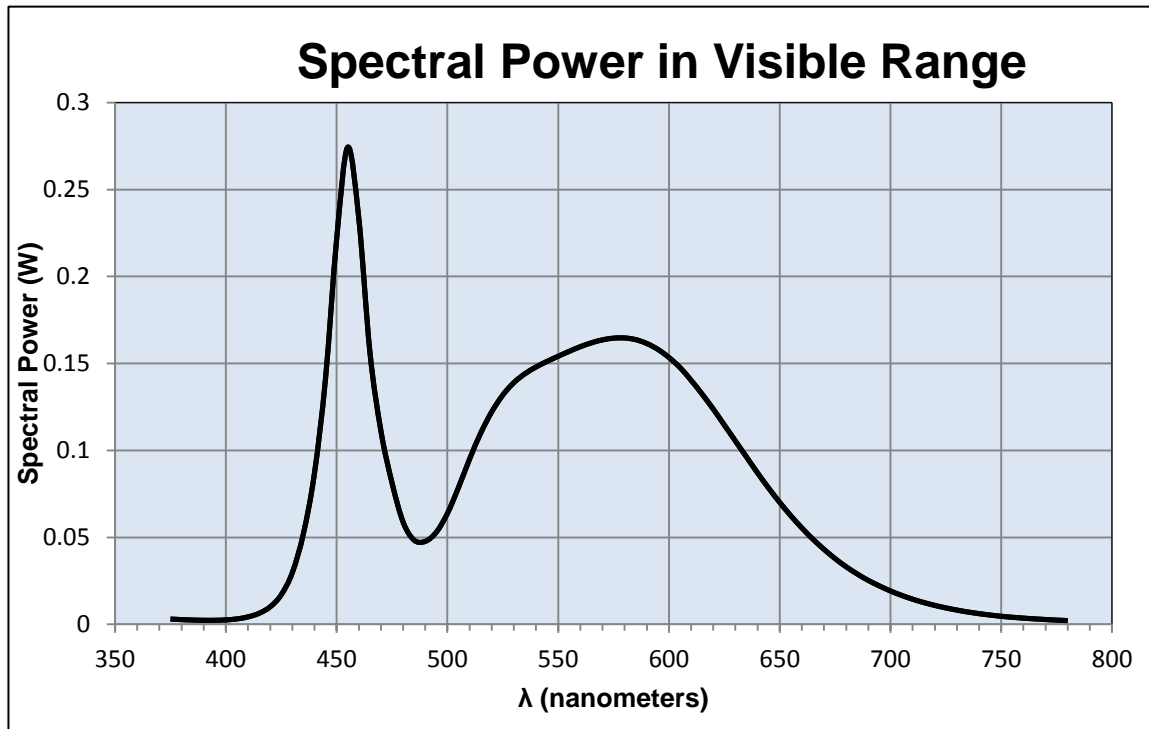
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 0.736 (A)
Input Power: 87.9 (W)
Input Power Factor: 0.991
Current ATHD: 9.517 (%)

Photometric measurements:

Luminous Flux: 10060 (lumens)
Luminous Efficacy: 114.4 (lumens/W)
Correlated Color Temperature (CCT): 4976 (K)
CRI -Ra: 78.9
CRI -R9: -4.8
DUV: 0.00066
CIE Coordinate (x): 0.346
CIE Coordinate (y): 0.354
CIE Coordinate (u'): 0.211
CIE Coordinate (v'): 0.324



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	0.11	655	0.062
380	0.003	520	0.122	660	0.055
385	0.002	525	0.132	665	0.049
390	0.002	530	0.139	670	0.043
395	0.002	535	0.144	675	0.038
400	0.003	540	0.148	680	0.033
405	0.003	545	0.151	685	0.029
410	0.004	550	0.154	690	0.025
415	0.006	555	0.157	695	0.022
420	0.01	560	0.16	700	0.019
425	0.017	565	0.162	705	0.017
430	0.03	570	0.164	710	0.014
435	0.052	575	0.165	715	0.013
440	0.087	580	0.165	720	0.011
445	0.142	585	0.164	725	0.009
450	0.221	590	0.161	730	0.008
455	0.274	595	0.158	735	0.007
460	0.233	600	0.153	740	0.006
465	0.157	605	0.148	745	0.005
470	0.111	610	0.14	750	0.005
475	0.081	615	0.132	755	0.004
480	0.059	620	0.124	760	0.004
485	0.048	625	0.115	765	0.003
490	0.048	630	0.105	770	0.003
495	0.053	635	0.096	775	0.002
500	0.064	640	0.087	780	0.002
505	0.079	645	0.078		
510	0.095	650	0.07		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15011.
Dialight unit model number HELRC4DN-xxx

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.732 (A)
Input Power: 88.1 (W)
Power Factor: 0.991

Photometric measurements:

Absolute Luminous Flux: 10004 (lumens)
Luminous Efficacy: 113.6 (lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	3586	3586	3586	3586	3586	
5	3579	3579	3579	3579	3579	134
15	3545	3545	3545	3545	3545	759
25	3665	3665	3665	3665	3665	1431
35	3976	3976	3976	3976	3976	2200
45	3420	3420	3420	3420	3420	2711
55	1421	1421	1421	1421	1421	1859
65	325	325	325	325	325	588
75	106	106	106	106	106	167
85	57	57	57	57	57	74
95	43	43	43	43	43	56
105	11	11	11	11	11	23
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

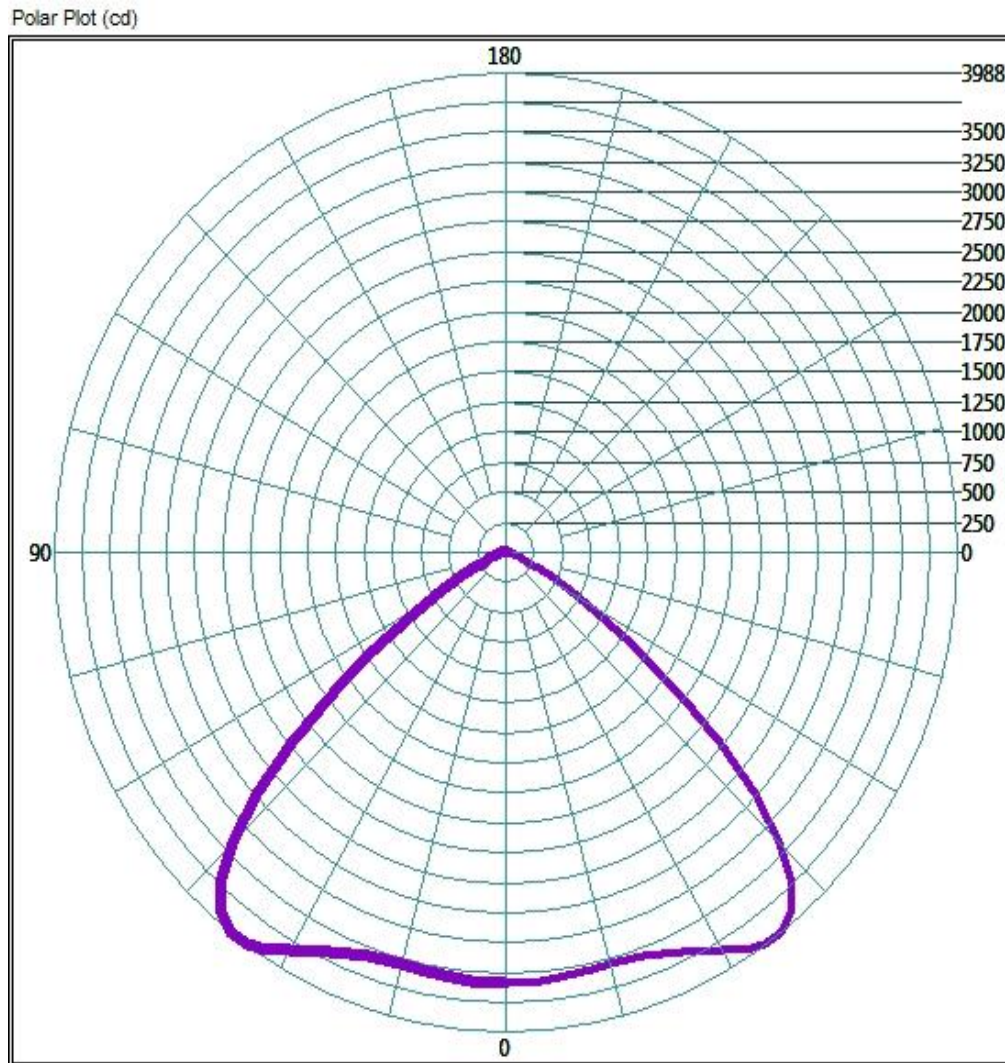
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	3321.76	33.2%
0-40	5879.36	58.8%
0-60	9486.88	94.8%
60-90	628.32	6.3%
0-90	9952.8	99.5%
90-180	66.08	0.7%
0-180	10003.84	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

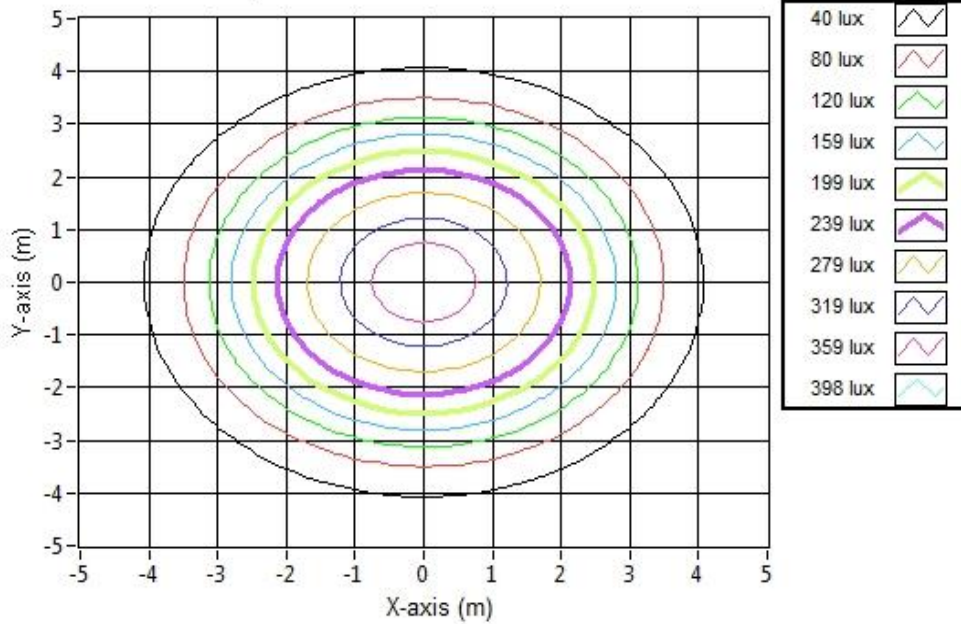


Test Results: Goniometer

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	8.14	8.14	386.0
6.096	16.28	16.28	96.5
9.144	24.41	24.41	42.9
12.192	32.55	32.55	24.1
15.24	40.69	40.69	15.4
18.288	48.83	48.83	10.7
21.336	56.97	56.97	7.9
24.384	65.11	65.11	6.0
27.432	73.24	73.24	4.8
30.48	81.38	81.38	3.9

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15011.
Dialight unit model number HELRC4DN-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:

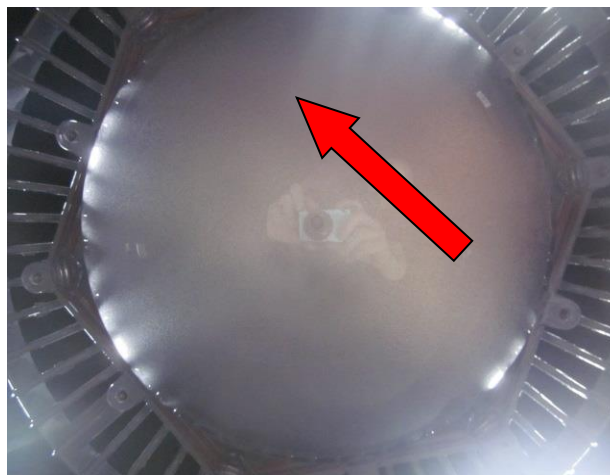
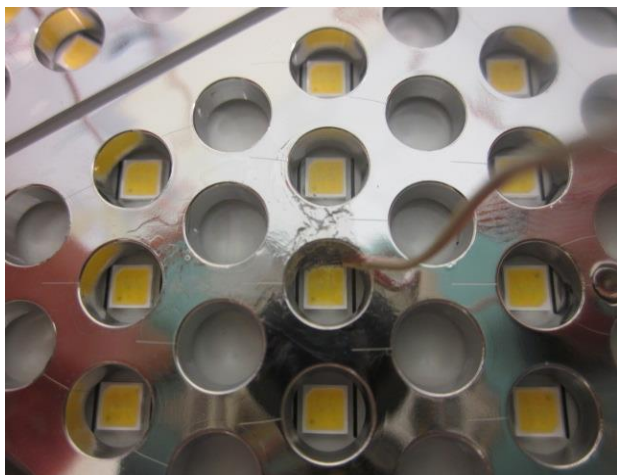
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 1^{\circ}$ (°C)
Ambient temperature at time of measurement: 24 (°C)
Relative humidity at time of measurement: 10%

Results:

Measured LED source temperature: 46.4 (°C)



Equipment Used:

Equipment Name	Model Number
Omega TC	Dpi8
Fluke 8808A Digit Multimeter	8808A
YOKOGAWA Digital Power Meter	760401
LSI Standard Lamps	#30279
LSI High Speed Mirror Goniometer	6240T
Instrument System Spectrometer	CAS140B-151
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
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	445703
Extech Hygro-Thermometer	445703
Fluke 52II Thermometer	52II Thermometer
Volttech Power Analyzer	PM1000+
Tenma AC Power Source	72-7675
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

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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 Optical Engineer
 Approved Signatory