

Test Report

Report Number: L15120

Date: Aug 20, 2015

Issued by:

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

Test of one Vigilant Highbay With Ultra Clear Polycarbonate Dome Lens
Unit manufacturer: Dialight Corporation
Unit model number: HELNC4GN-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: June 25, 2015 through July 21, 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

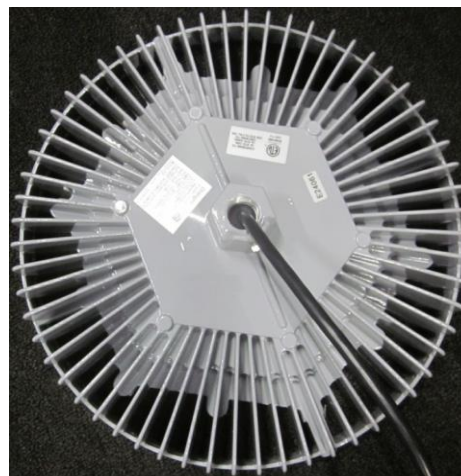
Description of sample:

Sample Number: L15120
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay With Ultra Clear Polycarbonate Dome Lens
Model Number: HELNC4GN-xxx

Report Summary

Sample number L15120
Dialight unit model number HELNC4GN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	13820 (lumens)	13534 (lumens)
Electrical Power:	112.7 (W)	112.9 (W)
Luminous Efficacy:	122.6 (lumens/W)	119.8 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 112.7 (W)
 Power Factor (120VAC): 0.997
 Current ATHD % (120VAC): 9.216
 Input Power (277VAC): 111.2 (W)
 Power Factor (277VAC): 0.954
 Current ATHD % (277VAC): 17.25

Color Measurements:

Correlated Color Temperature (CCT): 4973
 Color Rendering Index (CRI): 78.9
 Chromaticity Coordinate (x): 0.346
 Chromaticity Coordinate (y): 0.356
 Chromaticity Coordinate (u'): 0.211
 Chromaticity Coordinate (v'): 0.325
 DUV: 0.0016

Temperature Measurements:

In Situ LED Source Temperature: 52.4 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15120.
Dialight unit model number HELNC4GN-xxx

Test Conditions:

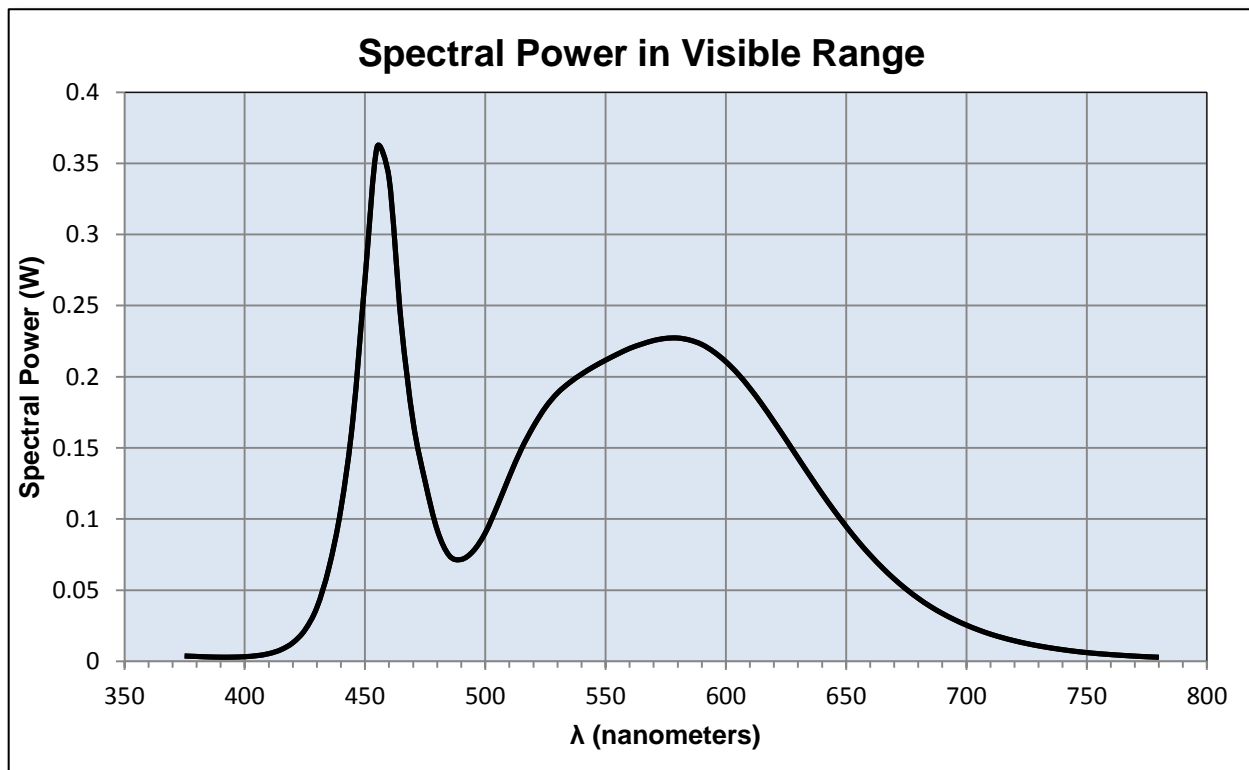
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 0.94 (A)
Input Power: 112.7 (W)
Input Power Factor: 0.997
Current ATHD: 9.216 (%)

Photometric measurements:

Luminous Flux: 13820 (lumens)
Luminous Efficacy: 122.6 (lumens/W)
Correlated Color Temperature (CCT): 4973 (K)
CRI -Ra: 78.9
CRI -R9: -7.1
DUV: 0.0016
CIE Coordinate (x): 0.346
CIE Coordinate (y): 0.356
CIE Coordinate (u'): 0.211
CIE Coordinate (v'): 0.325



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	0.004	515	0.149	655	0.084
380	0.003	520	0.165	660	0.075
385	0.003	525	0.178	665	0.066
390	0.003	530	0.189	670	0.058
395	0.003	535	0.196	675	0.051
400	0.003	540	0.202	680	0.044
405	0.004	545	0.207	685	0.039
410	0.005	550	0.212	690	0.034
415	0.008	555	0.216	695	0.029
420	0.013	560	0.22	700	0.025
425	0.022	565	0.223	705	0.022
430	0.038	570	0.225	710	0.019
435	0.066	575	0.227	715	0.017
440	0.107	580	0.227	720	0.014
445	0.17	585	0.226	725	0.013
450	0.269	590	0.223	730	0.011
455	0.361	595	0.218	735	0.009
460	0.34	600	0.211	740	0.008
465	0.238	605	0.202	745	0.007
470	0.168	610	0.192	750	0.006
475	0.126	615	0.181	755	0.005
480	0.092	620	0.168	760	0.005
485	0.074	625	0.156	765	0.004
490	0.072	630	0.143	770	0.004
495	0.078	635	0.13	775	0.003
500	0.09	640	0.118	780	0.003
505	0.109	645	0.106		
510	0.13	650	0.095		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15120.
Dialight unit model number HELNC4GN-xxx

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.944 (A)
Input Power: 112.9 (W)
Power Factor: 0.993

Photometric measurements:

Absolute Luminous Flux: 13534 (lumens)
Luminous Efficacy: 119.8 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	11895	11895	11895	11895	11895	
5	11358	11358	11358	11358	11358	430
15	8340	8340	8340	8340	8340	1996
25	5667	5667	5667	5667	5667	2572
35	4181	4181	4181	4181	4181	2635
45	3087	3087	3087	3087	3087	2518
55	1716	1716	1716	1716	1716	1911
65	594	594	594	594	594	907
75	236	236	236	236	236	340
85	147	147	147	147	147	186
95	0	0	0	0	0	38
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

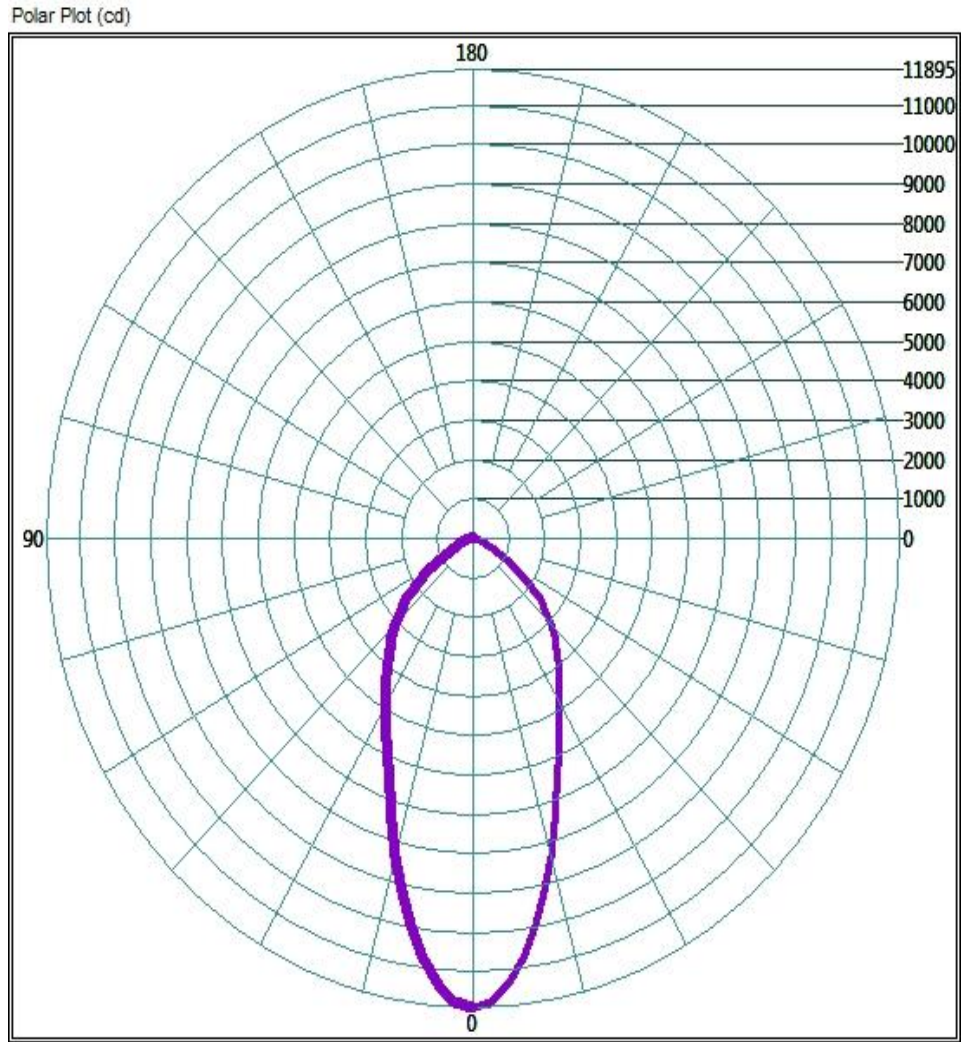
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	6316.16	46.7%
0-40	8927.36	66.0%
0-60	12627.68	93.3%
60-90	1156.16	8.5%
0-90	13533.6	100.0%
90-180	0	0.0%
0-180	13533.6	100.0%

Test Results: Goniometer

Results continued from previous page.

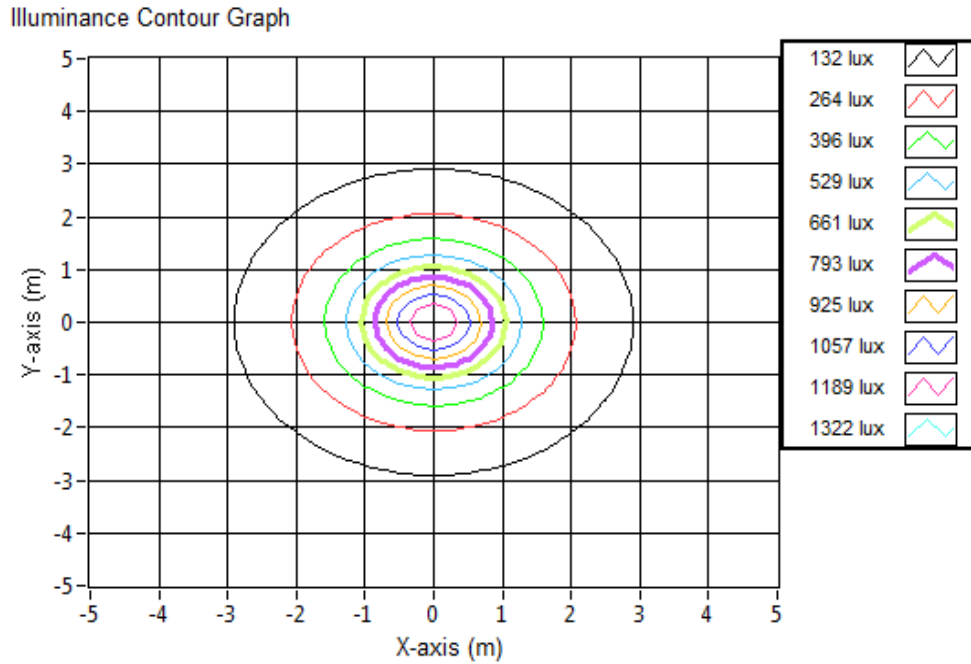
Polar Plot:



Test Results: Goniometer

Results continued from previous page.

Illuminance Plot:



Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone Width (m)	Projected Illuminance (lux)
3.048	2.68	2.68	1280.3
6.096	5.36	5.36	320.1
9.144	8.03	8.03	142.3
12.192	10.71	10.71	80.0
15.24	13.39	13.39	51.2
18.288	16.07	16.07	35.6
21.336	18.74	18.74	26.1
24.384	21.42	21.42	20.0
27.432	24.10	24.10	15.8
30.48	26.78	26.78	12.8

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15120.
Dialight unit model number HELNC4GN-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:

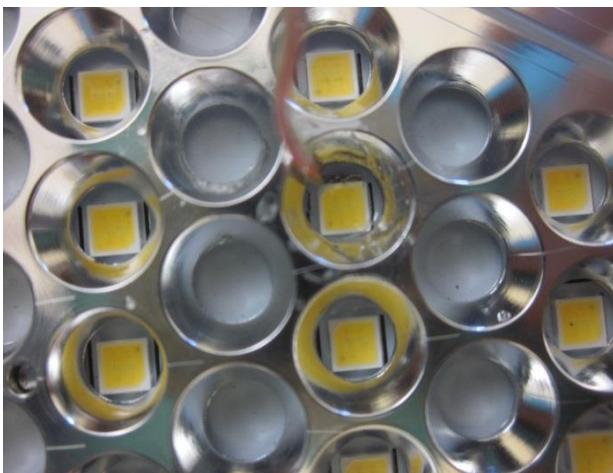
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 1^{\circ}$ (°C)
Ambient temperature at time of measurement: 25.6 (°C)
Relative humidity at time of measurement: 30%

Results:

Measured LED source temperature: 52.4 (°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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