

Test Report

Report Number: L15084

Date: Jul 1, 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: HELNC4KN-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 17, 2015 through June 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

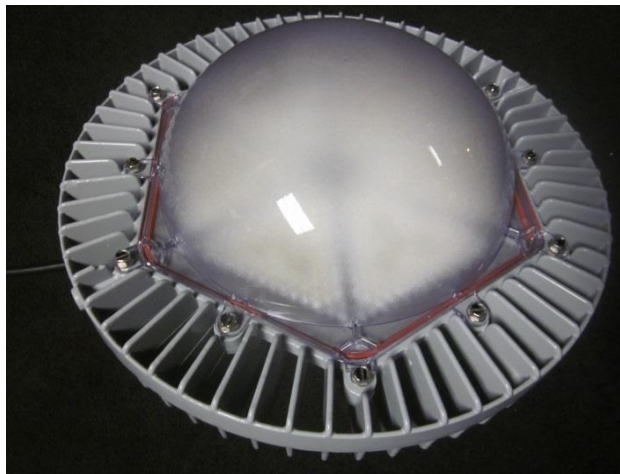
Description of sample:

Sample Number: L15084
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay With Polycarbonate Dome Lens
Model Number: HELNC4KN-xxx

Report Summary

Sample number L15084
Dialight unit model number HELNC4KN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	16800 (lumens)	16406 (lumens)
Electrical Power:	142.1 (W)	142.6 (W)
Luminous Efficacy:	118.2 (lumens/W)	115 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 142.1 (W)
 Power Factor (120VAC): 0.994
 Current ATHD % (120VAC): 8.115
 Input Power (277VAC): 139.7 (W)
 Power Factor (277VAC): 0.958
 Current ATHD % (277VAC): 13.31

Color Measurements:

Correlated Color Temperature (CCT): 5033
 Color Rendering Index (CRI): 80.6
 Chromaticity Coordinate (x): 0.344
 Chromaticity Coordinate (y): 0.349
 Chromaticity Coordinate (u'): 0.212
 Chromaticity Coordinate (v'): 0.322
 DUV: 0.00082

Temperature Measurements:

In Situ LED Source Temperature: 58.9 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15084.
Dialight unit model number HELNC4KN-xxx

Test Conditions:

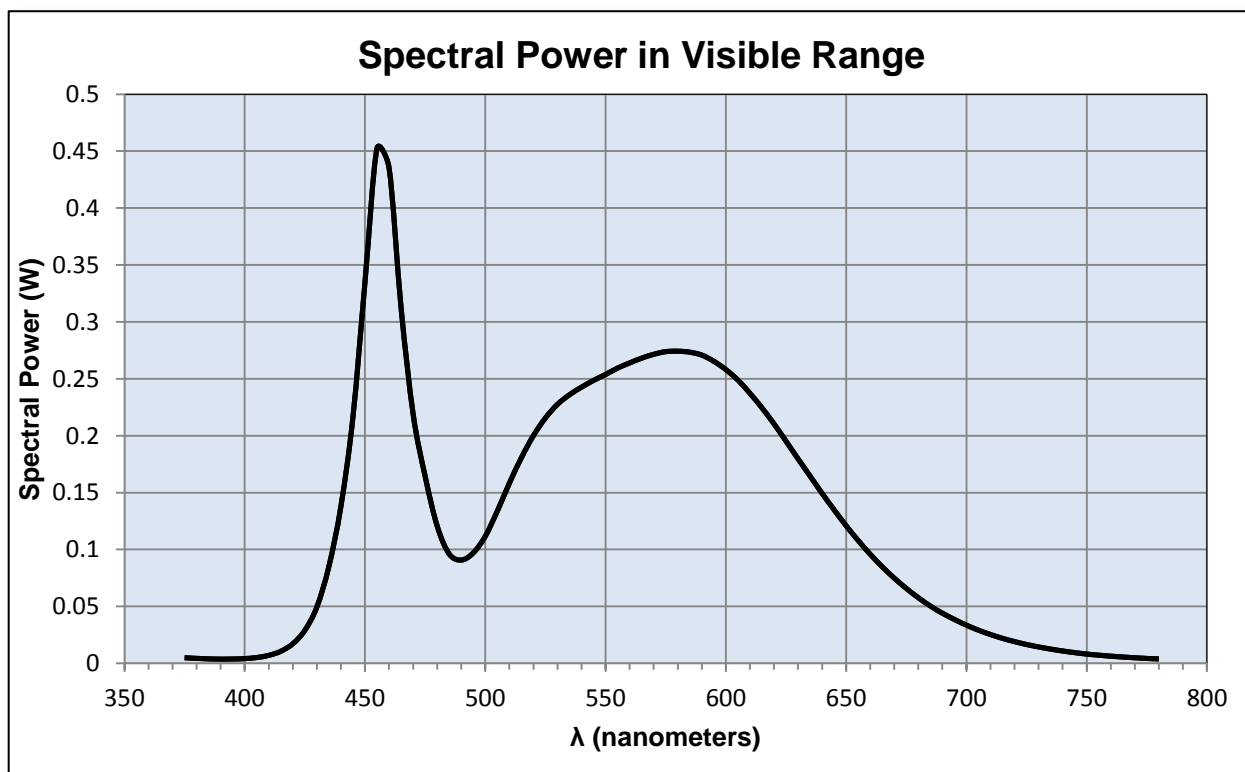
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 1.191 (A)
Input Power: 142.1 (W)
Input Power Factor: 0.994
Current ATHD: 8.115 (%)

Photometric measurements:

Luminous Flux: 16800 (lumens)
Luminous Efficacy: 118.2 (lumens/W)
Correlated Color Temperature (CCT): 5033 (K)
CRI -Ra: 80.6
CRI -R9: 1.5
DUV: 0.00082
CIE Coordinate (x): 0.344
CIE Coordinate (y): 0.349
CIE Coordinate (u'): 0.212
CIE Coordinate (v'): 0.322



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	0.005	515	0.181	655	0.108
380	0.004	520	0.2	660	0.096
385	0.004	525	0.216	665	0.085
390	0.004	530	0.228	670	0.075
395	0.004	535	0.236	675	0.066
400	0.004	540	0.243	680	0.058
405	0.005	545	0.249	685	0.05
410	0.007	550	0.254	690	0.044
415	0.011	555	0.259	695	0.039
420	0.017	560	0.264	700	0.034
425	0.029	565	0.268	705	0.029
430	0.05	570	0.271	710	0.025
435	0.085	575	0.274	715	0.022
440	0.138	580	0.274	720	0.019
445	0.217	585	0.273	725	0.017
450	0.335	590	0.271	730	0.014
455	0.453	595	0.265	735	0.013
460	0.435	600	0.258	740	0.011
465	0.312	605	0.249	745	0.009
470	0.219	610	0.237	750	0.008
475	0.164	615	0.224	755	0.007
480	0.121	620	0.21	760	0.006
485	0.096	625	0.195	765	0.006
490	0.091	630	0.18	770	0.005
495	0.097	635	0.165	775	0.004
500	0.112	640	0.149	780	0.004
505	0.134	645	0.135		
510	0.158	650	0.121		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15084.
Dialight unit model number HELNC4KN-xxx

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 1.19 (A)
Input Power: 142.6 (W)
Power Factor: 0.994

Photometric measurements:

Absolute Luminous Flux: 16406 (lumens)
Luminous Efficacy: 115.0 (lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	15198	15198	15198	15198	15198	
5	14506	14506	14506	14506	14506	549
15	10574	10574	10574	10574	10574	2539
25	7075	7075	7075	7075	7075	3230
35	5160	5160	5160	5160	5160	3266
45	3718	3718	3718	3718	3718	3068
55	1960	1960	1960	1960	1960	2235
65	637	637	637	637	637	1001
75	213	213	213	213	213	337
85	114	114	114	114	114	152
95	0	0	0	0	0	29
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

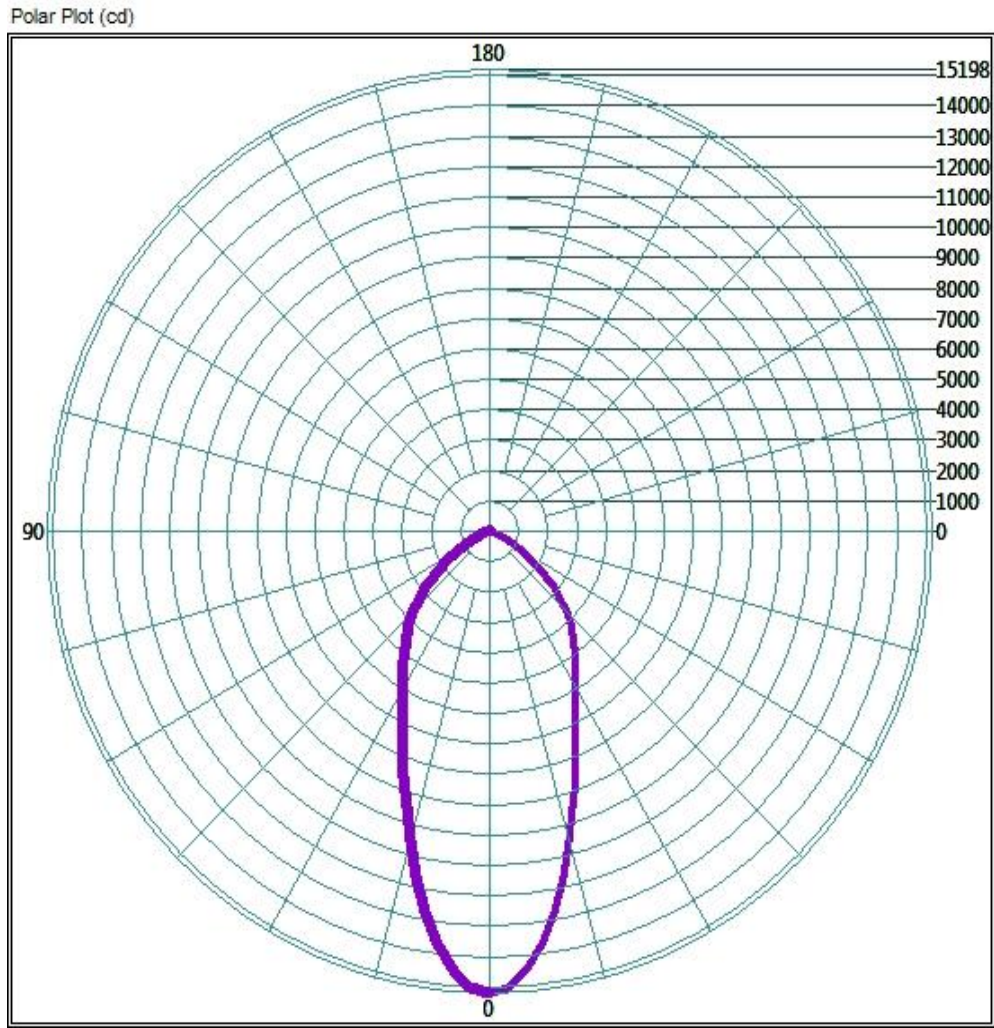
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	7955.84	48.5%
0-40	11171.68	68.1%
0-60	15519.2	94.6%
60-90	1164.16	7.1%
0-90	16406.08	100.0%
90-180	0	0.0%
0-180	16406.08	100.0%

Test Results: Goniometer

Results continued from previous page.

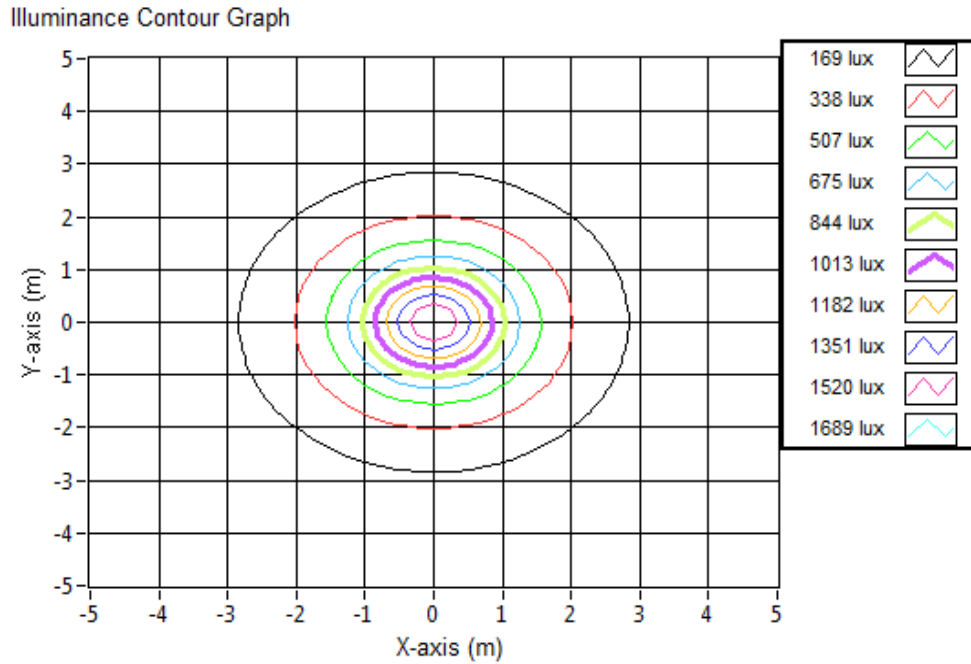
Polar Plot:



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	2.61	2.61	1635.8
6.096	5.21	5.21	409.0
9.144	7.82	7.82	181.8
12.192	10.43	10.43	102.2
15.24	13.04	13.04	65.4
18.288	15.64	15.64	45.4
21.336	18.25	18.25	33.4
24.384	20.86	20.86	25.6
27.432	23.47	23.47	20.2
30.48	26.07	26.07	16.4

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15084.
Dialight unit model number HELNC4KN-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:

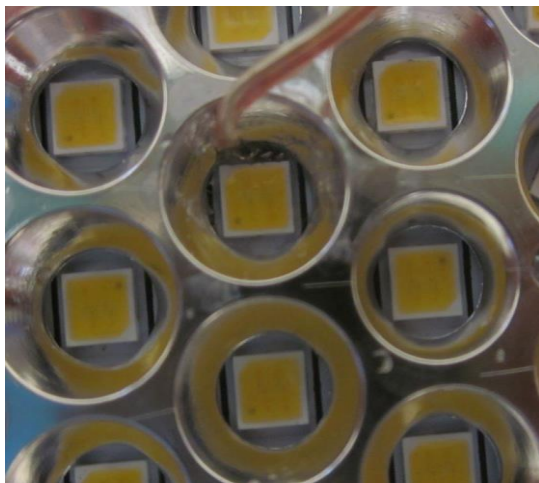
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 1^{\circ}$ (°C)
Ambient temperature at time of measurement: 25.5 (°C)
Relative humidity at time of measurement: 20%

Results:

Measured LED source temperature: 58.9 (°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

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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