

# Test Report

Report Number: L15117

Date: Aug 19, 2015

Issued by:

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

Test of one Vigilant Highbay With Ultra Clear Polycarbonate Lens  
Unit manufacturer: Dialight Corporation  
Unit model number: HE2NC4DN-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:** July 10, 2015 through July 16, 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

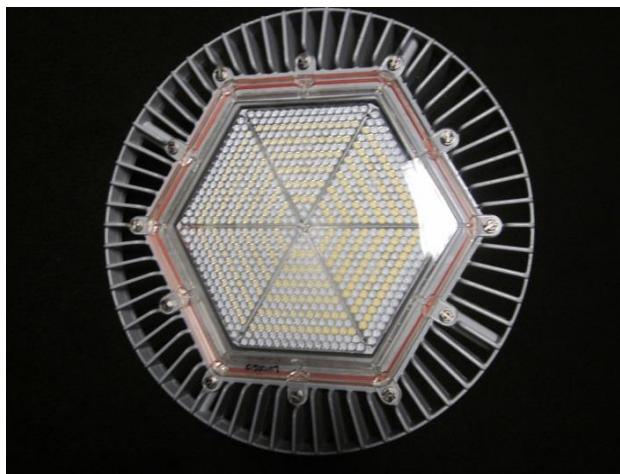
**Description of sample:**

Sample Number: L15117  
Manufacturer: Dialight Corporation  
Product Name: Vigilant Highbay  
Description: Vigilant Highbay With Ultra Clear Polycarbonate Lens  
Model Number: HE2NC4DN-xxx

## Report Summary

Sample number L15117  
Dialight unit model number HE2NC4DN-xxx

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	10830 (lumens)	10765 (lumens)
Electrical Power:	87.6 (W)	87.8 (W)
Luminous Efficacy:	123.6 (lumens/W)	122.7 (lumens/W)

### Electrical Measurements:

Input Power (120VAC): 87.6 (W)  
 Power Factor (120VAC): 0.996  
 Current ATHD % (120VAC): 10.26  
 Input Power (277VAC): 87.2 (W)  
 Power Factor (277VAC): 0.942  
 Current ATHD % (277VAC): 18.8

### Color Measurements:

Correlated Color Temperature (CCT): 4935  
 Color Rendering Index (CRI): 79.1  
 Chromaticity Coordinate (x): 0.347  
 Chromaticity Coordinate (y): 0.354  
 Chromaticity Coordinate (u'): 0.212  
 Chromaticity Coordinate (v'): 0.324  
 DUV: 0.00044

### Temperature Measurements:

In Situ LED Source Temperature: 50.8 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15117.  
Dialight unit model number HE2NC4DN-xxx

**Test Conditions:**

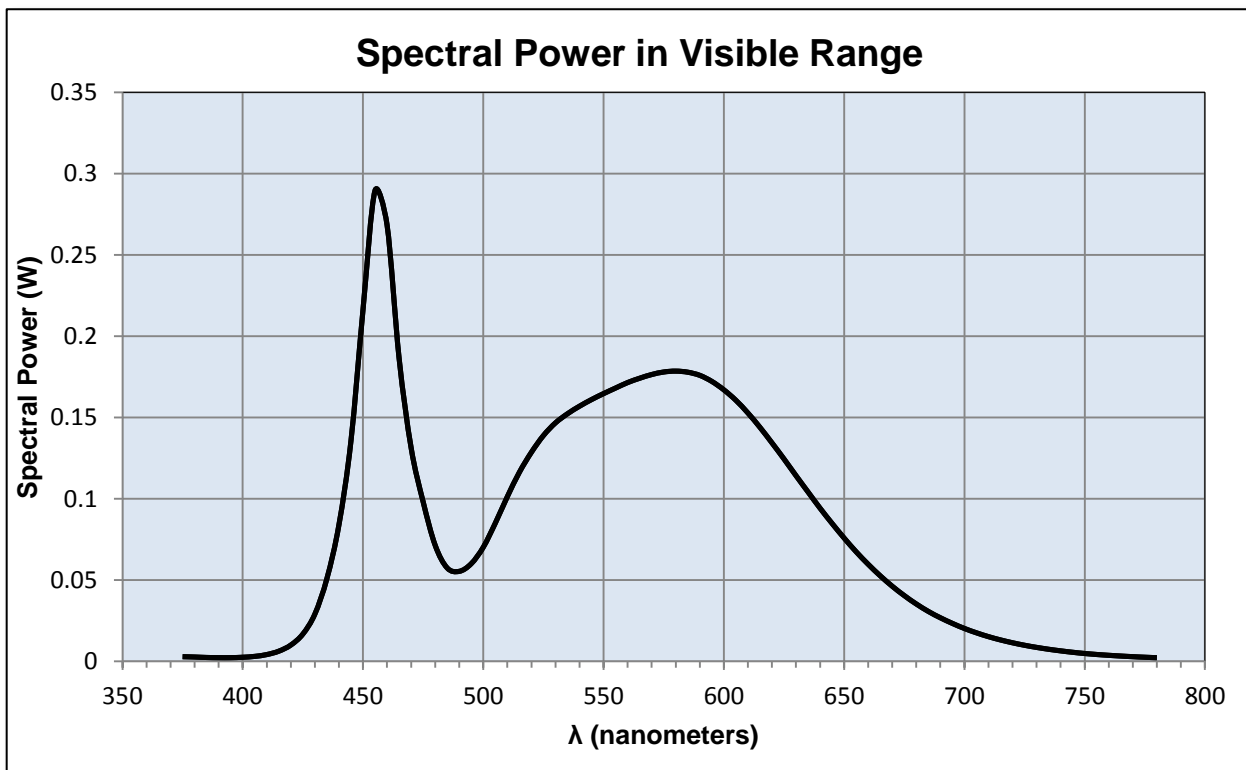
Ambient Temperature: 25 ± 1 (°C)

**Electrical Measurements:**

Input Voltage: 120 (VAC)  
Input Current: 0.732 (A)  
Input Power: 87.6 (W)  
Input Power Factor: 0.996  
Current ATHD: 10.26 (%)

**Photometric measurements:**

Luminous Flux: 10830 (lumens)  
Luminous Efficacy: 123.6 (lumens/W)  
Correlated Color Temperature (CCT): 4935 (K)  
CRI -Ra: 79.1  
CRI -R9: -4.4  
DUV: 0.00044  
CIE Coordinate (x): 0.347  
CIE Coordinate (y): 0.354  
CIE Coordinate (u'): 0.212  
CIE Coordinate (v'): 0.324



## 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	0.003	515	0.116	655	0.067
380	0.003	520	0.129	660	0.06
385	0.002	525	0.139	665	0.053
390	0.002	530	0.147	670	0.046
395	0.002	535	0.152	675	0.04
400	0.003	540	0.157	680	0.035
405	0.003	545	0.161	685	0.031
410	0.004	550	0.165	690	0.027
415	0.006	555	0.168	695	0.023
420	0.01	560	0.171	700	0.02
425	0.017	565	0.174	705	0.018
430	0.029	570	0.176	710	0.015
435	0.051	575	0.178	715	0.013
440	0.084	580	0.178	720	0.011
445	0.136	585	0.178	725	0.01
450	0.216	590	0.176	730	0.009
455	0.29	595	0.172	735	0.007
460	0.268	600	0.167	740	0.006
465	0.186	605	0.161	745	0.006
470	0.131	610	0.153	750	0.005
475	0.098	615	0.144	755	0.004
480	0.071	620	0.134	760	0.004
485	0.057	625	0.124	765	0.003
490	0.055	630	0.114	770	0.003
495	0.06	635	0.104	775	0.003
500	0.07	640	0.094	780	0.002
505	0.085	645	0.085		
510	0.101	650	0.076		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15117.  
Dialight unit model number HE2NC4DN-xxx

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 0.738 (A)  
Input Power: 87.8 (W)  
Power Factor: 0.99

### Photometric measurements:

Absolute Luminous Flux: 10765 (lumens)  
Luminous Efficacy: 122.7 (lumens/W)

### Intensity Summary:

<b>INTENSITY (CANDLEPOWER) SUMMARY</b>						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	15105	15105	15105	15105	15105	
5	13828	13828	13828	13828	13828	530
15	7763	7763	7763	7763	7763	2042
25	4499	4499	4499	4499	4499	2141
35	3406	3406	3406	3406	3406	2110
45	2606	2606	2606	2606	2606	2107
55	1088	1088	1088	1088	1088	1457
65	90	90	90	90	90	315
75	33	33	33	33	33	47
85	6	6	6	6	6	17
95	0	0	0	0	0	1
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

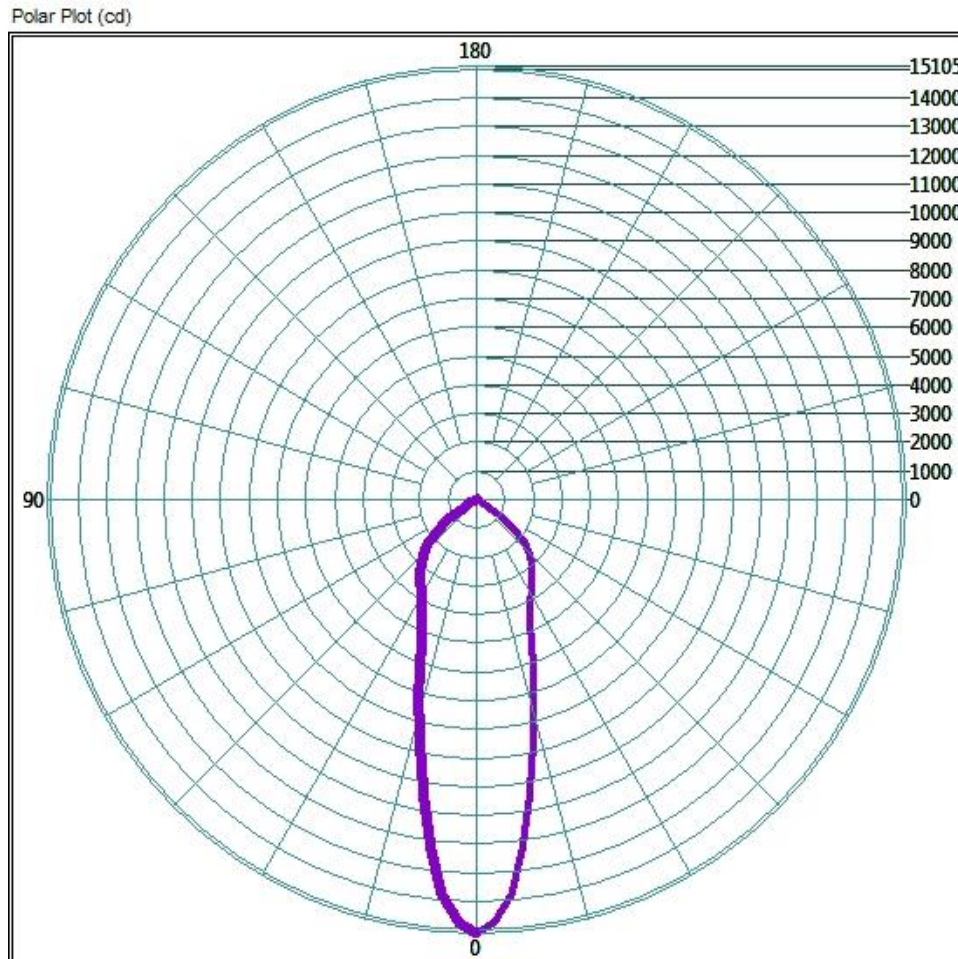
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	5757.12	53.5%
0-40	7897.76	73.4%
0-60	10634.24	98.8%
60-90	220.8	2.1%
0-90	10765.44	100.0%
90-180	0	0.0%
0-180	10765.44	100.0%

## Test Results: Goniometer

Results continued from previous page.

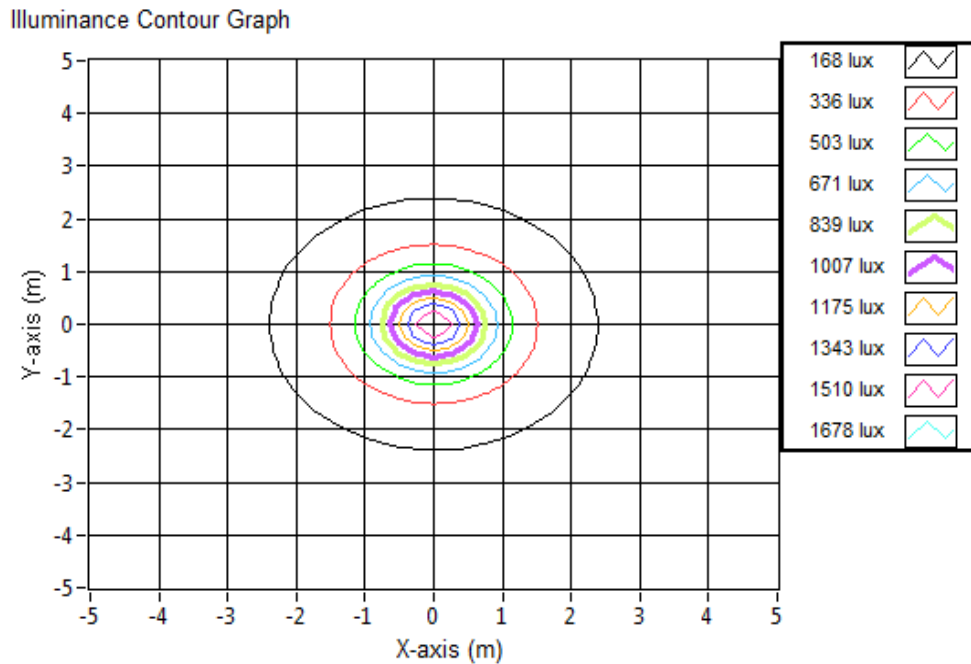
### Polar Plot:



## 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	1.69	1.69	1625.9
6.096	3.38	3.38	406.5
9.144	5.07	5.07	180.7
12.192	6.76	6.76	101.6
15.24	8.44	8.44	65.0
18.288	10.13	10.13	45.2
21.336	11.82	11.82	33.2
24.384	13.51	13.51	25.4
27.432	15.20	15.20	20.1
30.48	16.89	16.89	16.3



## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15117.  
Dialight unit model number HE2NC4DN-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:

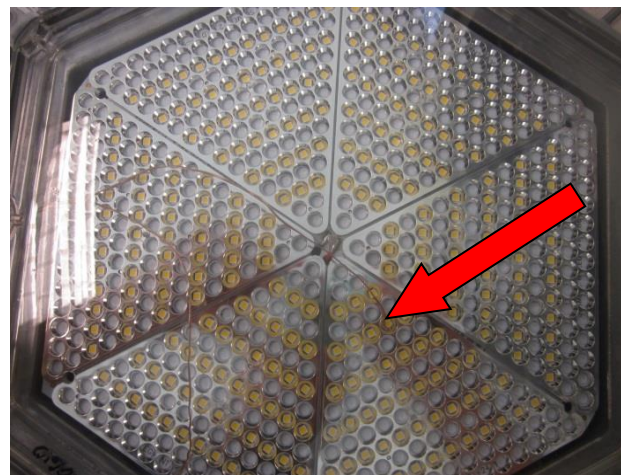
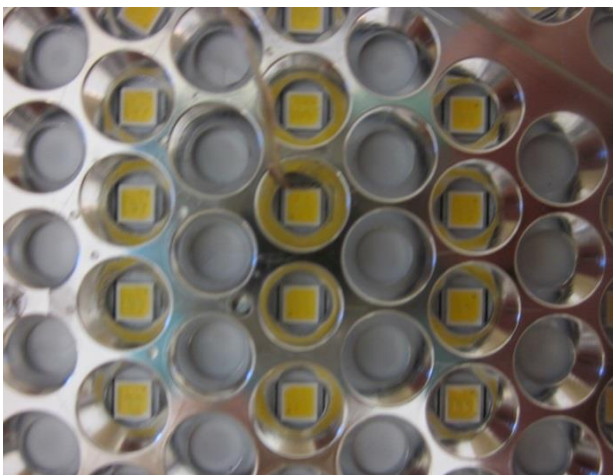
Maximum Power at Indicated Current: 0.35 (W)  
Maximum Source Temperature: 113.7 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 1^{\circ}$  (°C)  
Ambient temperature at time of measurement: 25.9 (°C)  
Relative humidity at time of measurement: 35%

### Results:

**Measured LED source temperature: 50.8 (°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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 Approved Signatory