

# Test Report

Report Number: L15085

Date: Jul 1, 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: HE2NC4KN-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 18, 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

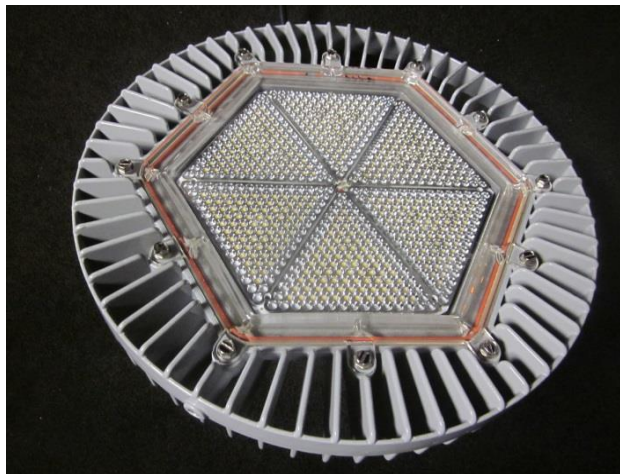
**Description of sample:**

Sample Number: L15085  
Manufacturer: Dialight Corporation  
Product Name: Vigilant Highbay  
Description: Vigilant Highbay With Ultra Clear Polycarbonate Lens  
Model Number: HE2NC4KN-xxx

## Report Summary

Sample number L15085  
Dialight unit model number HE2NC4KN-xxx

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	17729 (lumens)	17522 (lumens)
Electrical Power:	142.2 (W)	142.5 (W)
Luminous Efficacy:	124.7 (lumens/W)	123 (lumens/W)

### Electrical Measurements:

Input Power (120VAC): 142.2 (W)  
Power Factor (120VAC): 0.994  
Current ATHD % (120VAC): 8.131  
Input Power (277VAC): 139.7 (W)  
Power Factor (277VAC): 0.958  
Current ATHD % (277VAC): 13.36

### Color Measurements:

Correlated Color Temperature (CCT): 4927  
Color Rendering Index (CRI): 79.2  
Chromaticity Coordinate (x): 0.347  
Chromaticity Coordinate (y): 0.354  
Chromaticity Coordinate (u'): 0.212  
Chromaticity Coordinate (v'): 0.324  
DUV: 0.00027

### Temperature Measurements:

In Situ LED Source Temperature: 58.2 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15085.  
Dialight unit model number HE2NC4KN-xxx

### Test Conditions:

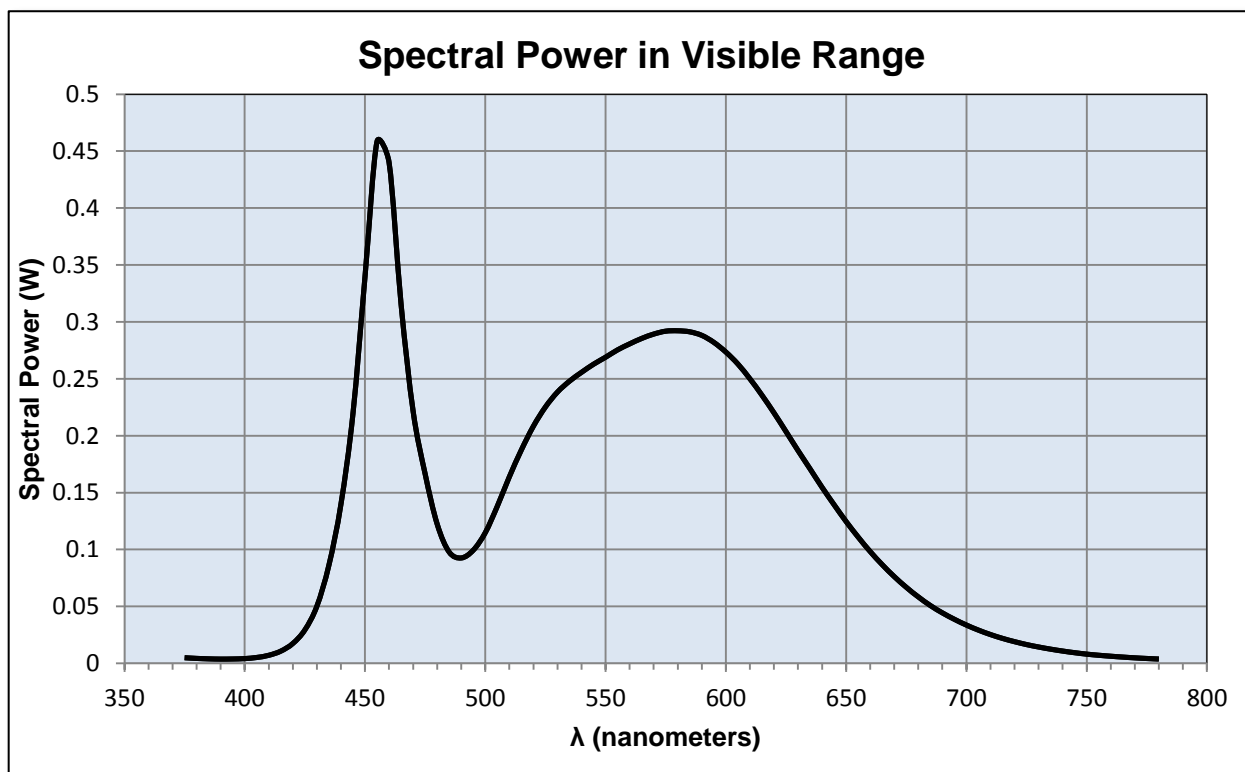
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input Current: 1.192 (A)  
Input Power: 142.2 (W)  
Input Power Factor: 0.994  
Current ATHD: 8.131 (%)

### Photometric measurements:

Luminous Flux: 17729 (lumens)  
Luminous Efficacy: 124.7 (lumens/W)  
Correlated Color Temperature (CCT): 4927 (K)  
CRI -Ra: 79.2  
CRI -R9: -3.8  
DUV: 0.00027  
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	0.005	515	0.187	655	0.111
380	0.004	520	0.208	660	0.098
385	0.004	525	0.225	665	0.087
390	0.004	530	0.238	670	0.076
395	0.004	535	0.248	675	0.067
400	0.004	540	0.256	680	0.058
405	0.005	545	0.263	685	0.051
410	0.007	550	0.269	690	0.044
415	0.011	555	0.275	695	0.039
420	0.017	560	0.281	700	0.034
425	0.029	565	0.285	705	0.029
430	0.05	570	0.289	710	0.025
435	0.086	575	0.292	715	0.022
440	0.14	580	0.292	720	0.019
445	0.219	585	0.291	725	0.017
450	0.34	590	0.288	730	0.014
455	0.458	595	0.282	735	0.012
460	0.44	600	0.273	740	0.011
465	0.315	605	0.263	745	0.009
470	0.221	610	0.25	750	0.008
475	0.166	615	0.236	755	0.007
480	0.122	620	0.22	760	0.006
485	0.098	625	0.204	765	0.006
490	0.093	630	0.187	770	0.005
495	0.099	635	0.171	775	0.004
500	0.115	640	0.155	780	0.004
505	0.138	645	0.139		
510	0.164	650	0.125		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15085.  
Dialight unit model number HE2NC4KN-xxx

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 1.19 (A)  
Input Power: 142.5 (W)  
Power Factor: 0.994

### Photometric measurements:

Absolute Luminous Flux: 17522 (lumens)  
Luminous Efficacy: 123.0 (lumens/W)

### Intensity Summary:

<b>INTENSITY (CANDLEPOWER) SUMMARY</b>						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	23563	23563	23563	23563	23563	
5	21620	21620	21620	21620	21620	828
15	12507	12507	12507	12507	12507	3254
25	7490	7490	7490	7490	7490	3525
35	5722	5722	5722	5722	5722	3539
45	4266	4266	4266	4266	4266	3498
55	1661	1661	1661	1661	1661	2289
65	159	159	159	159	159	486
75	51	51	51	51	51	76
85	9	9	9	9	9	26
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

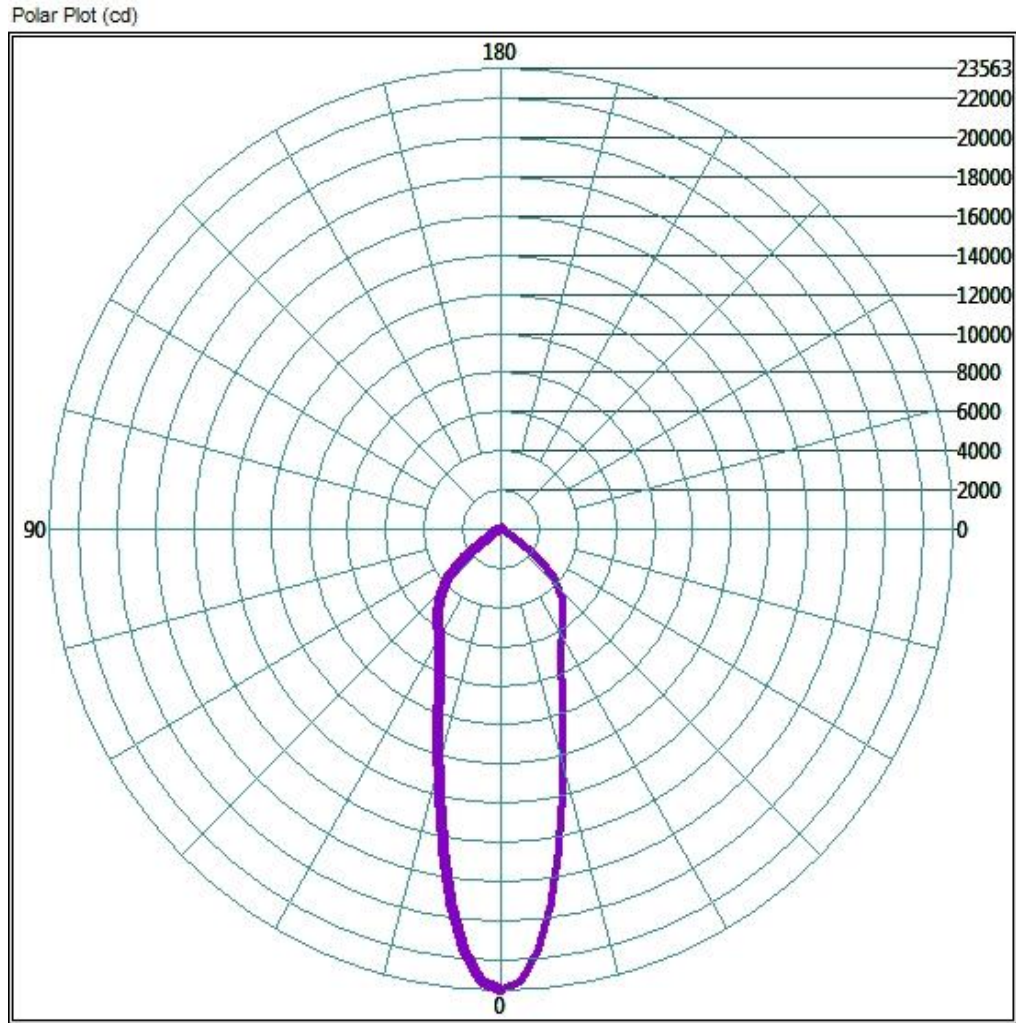
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	9356.48	53.4%
0-40	12944.32	73.9%
0-60	17307.84	98.8%
60-90	349.28	2.0%
0-90	17521.44	100.0%
90-180	0	0.0%
0-180	17521.44	100.0%

## Test Results: Goniometer

Results continued from previous page.

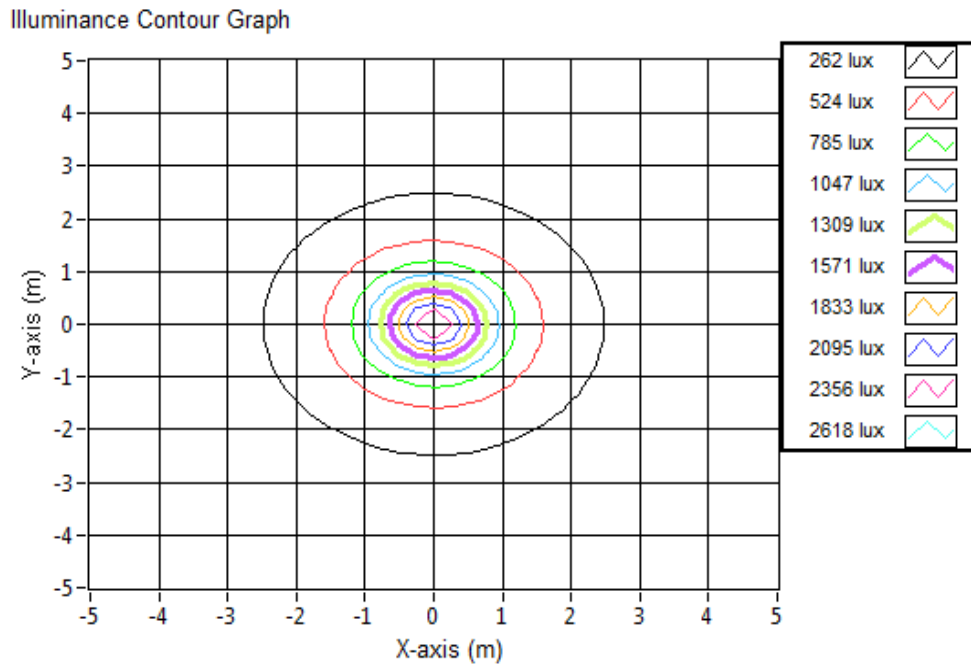
### Polar Plot:



## 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	1.76	1.76	2536.3
6.096	3.52	3.52	634.1
9.144	5.28	5.28	281.8
12.192	7.04	7.04	158.5
15.24	8.80	8.80	101.5
18.288	10.56	10.56	70.5
21.336	12.32	12.32	51.8
24.384	14.08	14.08	39.6
27.432	15.84	15.84	31.3
30.48	17.60	17.60	25.4

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15085.  
Dialight unit model number HE2NC4KN-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:

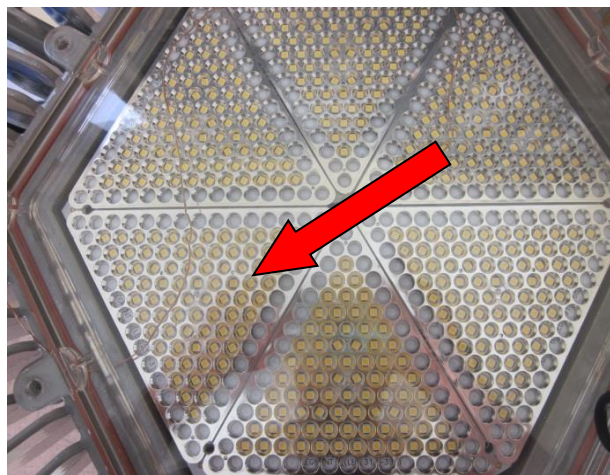
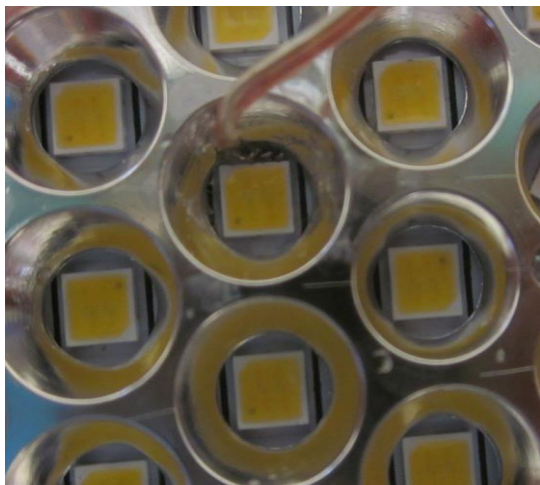
Maximum Power at Indicated Current: 0.35 (W)  
Maximum Source Temperature: 113.7 (°C)

### 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: 30%

### Results:

Measured LED source temperature: 58.2 (°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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 Approved Signatory