

# Test Report

Report Number: L15012

Date: Apr 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: HE2RC4DN-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:** February 17, 2015 through March 27, 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

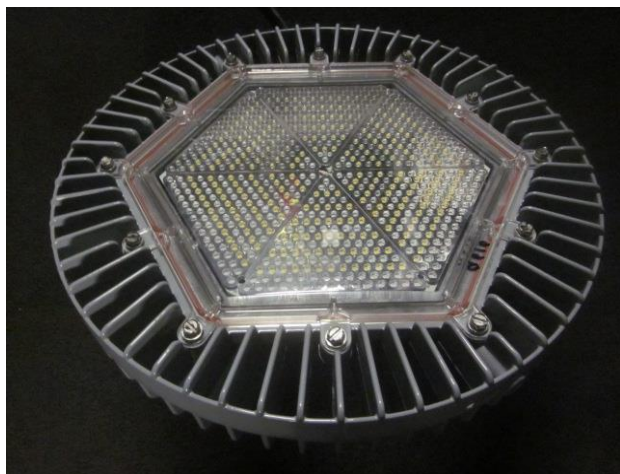
**Description of sample:**

Sample Number: L15012  
Manufacturer: Dialight Corporation  
Product Name: Vigilant Highbay  
Description: Vigilant Highbay With Ultra Clear Polycarbonate Lens  
Model Number: HE2RC4DN-xxx

## Report Summary

Sample number L15012  
Dialight unit model number HE2RC4DN-xxx

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	10590 (lumens)	10523 (lumens)
Electrical Power:	88.0 (W)	88.1 (W)
Luminous Efficacy:	120.5 (lumens/W)	119.4 (lumens/W)

### Electrical Measurements:

Input Power (120VAC): 88.0 (W)  
 Power Factor (120VAC): 0.992  
 Current ATHD % (120VAC): 9.456  
 Input Power (277VAC): 87.3 (W)  
 Power Factor (277VAC): 0.923  
 Current ATHD % (277VAC): 16.55

### Color Measurements:

Correlated Color Temperature (CCT): 4903  
 Color Rendering Index (CRI): 77.8  
 Chromaticity Coordinate (x): 0.348  
 Chromaticity Coordinate (y): 0.357  
 Chromaticity Coordinate (u'): 0.212  
 Chromaticity Coordinate (v'): 0.488  
 DUV: 0.0014

### Temperature Measurements:

In Situ LED Source Temperature: 46.2 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15012.  
Dialight unit model number HE2RC4DN-xxx

### Test Conditions:

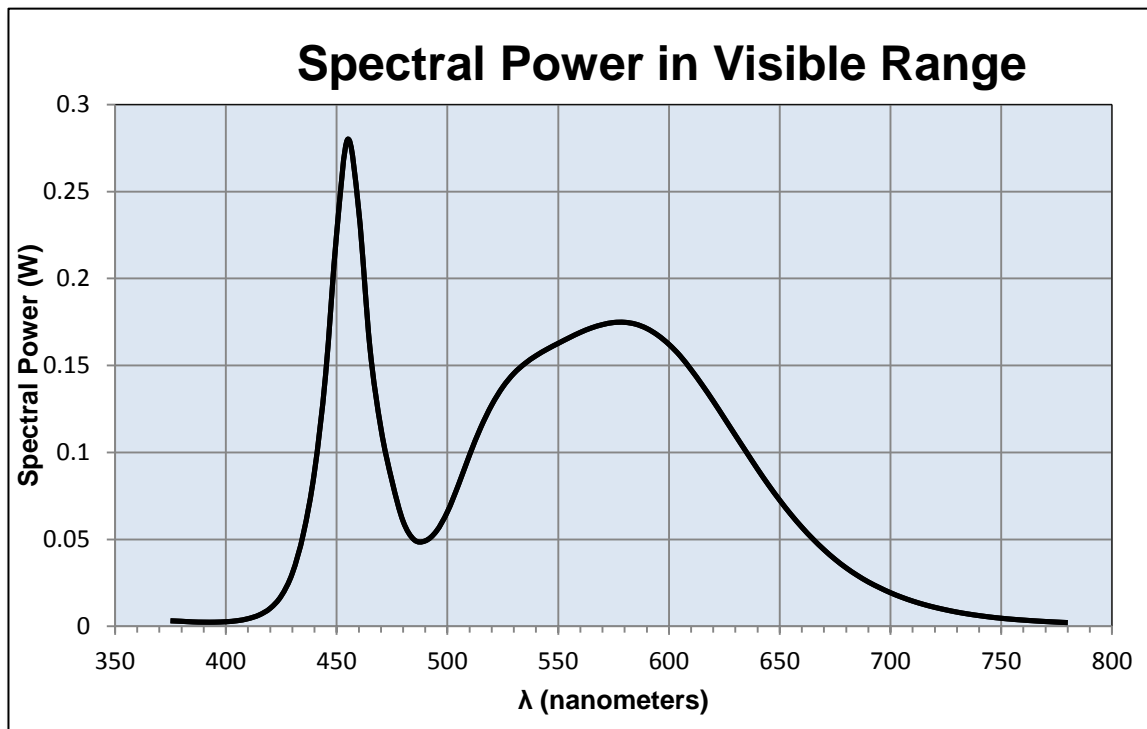
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input Current: 0.739 (A)  
Input Power: 88.0 (W)  
Input Power Factor: 0.992  
Current ATHD: 9.456 (%)

### Photometric measurements:

Luminous Flux: 10590 (lumens)  
Luminous Efficacy: 120.5 (lumens/W)  
Correlated Color Temperature (CCT): 4903 (K)  
CRI -Ra: 77.8  
CRI -R9: -9.1  
DUV: 0.0014  
CIE Coordinate (x): 0.348  
CIE Coordinate (y): 0.357  
CIE Coordinate (u'): 0.212  
CIE Coordinate (v'): 0.488



## 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	0.114	655	0.064
380	0.003	520	0.127	660	0.057
385	0.003	525	0.138	665	0.05
390	0.002	530	0.145	670	0.044
395	0.002	535	0.151	675	0.038
400	0.003	540	0.156	680	0.034
405	0.003	545	0.159	685	0.029
410	0.004	550	0.163	690	0.026
415	0.006	555	0.166	695	0.022
420	0.01	560	0.169	700	0.019
425	0.017	565	0.172	705	0.017
430	0.031	570	0.173	710	0.015
435	0.053	575	0.175	715	0.013
440	0.089	580	0.175	720	0.011
445	0.144	585	0.174	725	0.009
450	0.226	590	0.171	730	0.008
455	0.28	595	0.167	735	0.007
460	0.239	600	0.162	740	0.006
465	0.161	605	0.156	745	0.005
470	0.114	610	0.148	750	0.005
475	0.083	615	0.139	755	0.004
480	0.06	620	0.129	760	0.004
485	0.05	625	0.12	765	0.003
490	0.049	630	0.11	770	0.003
495	0.055	635	0.1	775	0.002
500	0.066	640	0.09	780	0.002
505	0.081	645	0.081		
510	0.099	650	0.072		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15012.  
Dialight unit model number HE2RC4DN-xxx

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 0.737 (A)  
Input Power: 88.1 (W)  
Power Factor: 0.991

### Photometric measurements:

Absolute Luminous Flux: 10523 (lumens)  
Luminous Efficacy: 119.4 (lumens/W)

### Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	4030	4030	4030	4030	4030	
5	4114	4114	4114	4114	4114	153
15	3974	3974	3974	3974	3974	861
25	4070	4070	4070	4070	4070	1592
35	4690	4690	4690	4690	4690	2528
45	4178	4178	4178	4178	4178	3319
55	975	975	975	975	975	1839
65	58	58	58	58	58	203
75	14	14	14	14	14	25
85	0	0	0	0	0	4
95	0	0	0	0	0	0
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

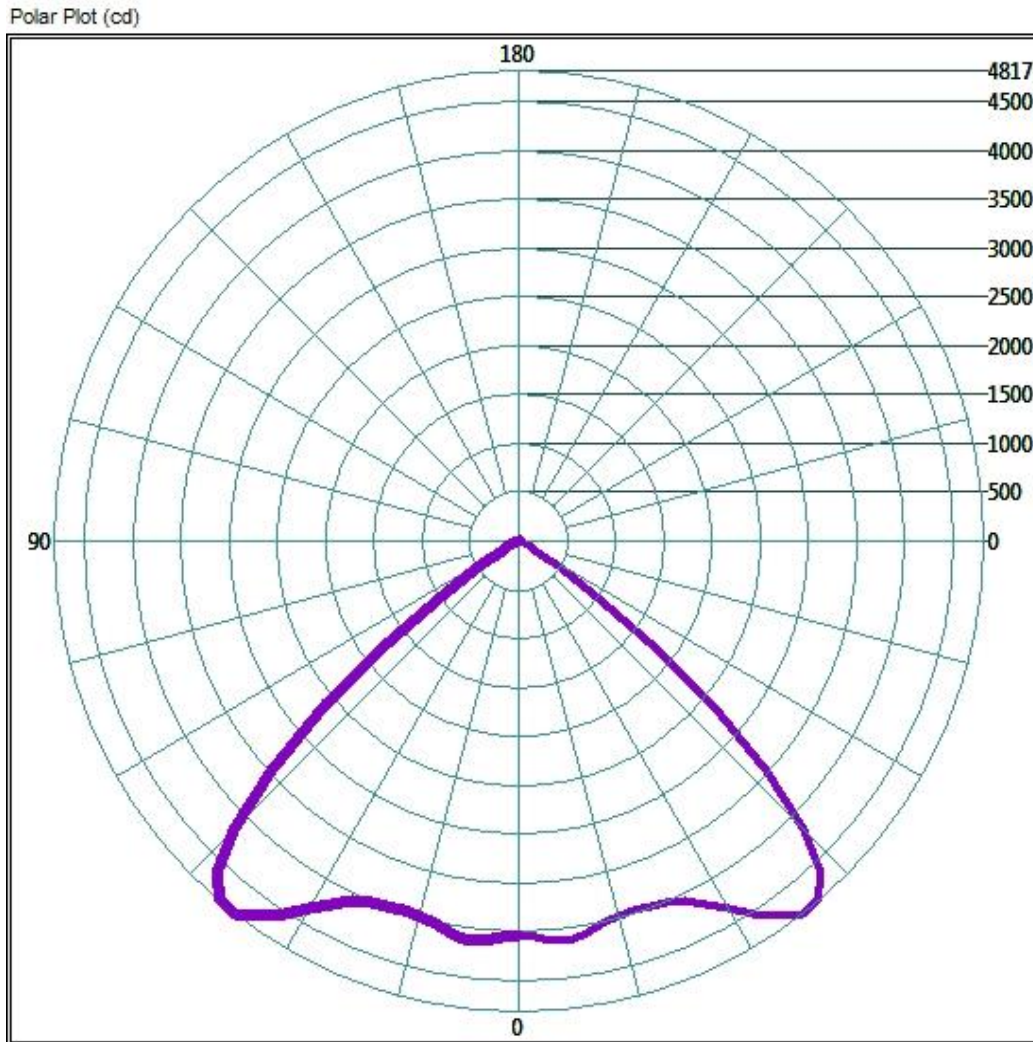
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	3730.4	35.5%
0-40	6784.8	64.5%
0-60	10454.88	99.4%
60-90	119.84	1.1%
0-90	10522.88	100.0%
90-180	0	0.0%
0-180	10522.88	100.0%

### Test Results: Goniometer

Results continued from previous page.

**Polar Plot:**



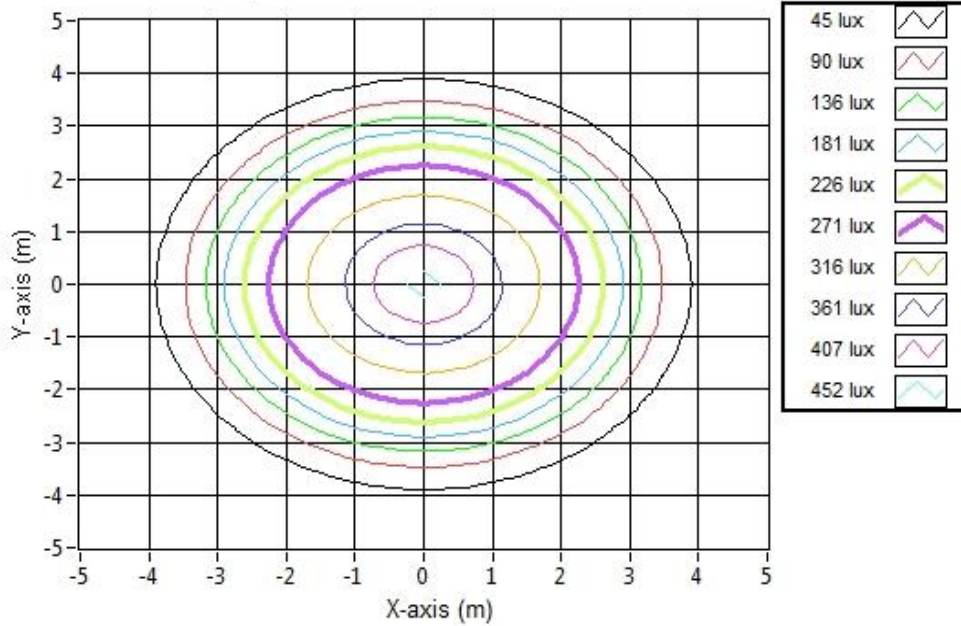


## Test Results: Goniometer

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	7.71	7.71	433.7
6.096	15.41	15.41	108.4
9.144	23.12	23.12	48.2
12.192	3.08E+4	3.08E+4	0.0
15.24	38.53	38.53	17.3
18.288	46.23	46.23	12.0
21.336	53.94	53.94	8.9
24.384	61.64	61.64	6.8
27.432	69.35	69.35	5.4
30.48	77.05	77.05	4.3

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15012.  
Dialight unit model number HE2RC4DN-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:

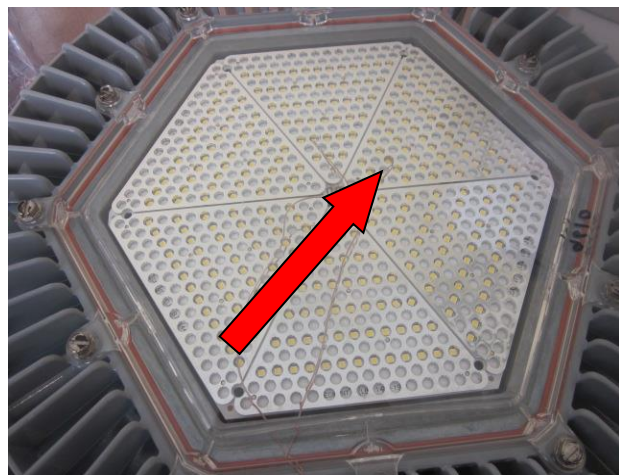
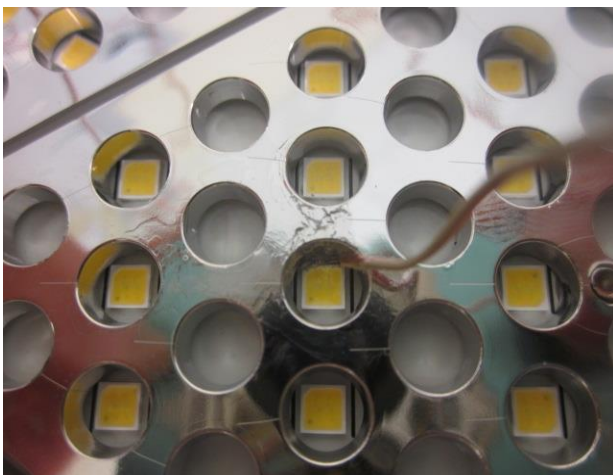
Maximum Power at Indicated Current: 0.35 (W)  
Maximum Source Temperature: 113.7 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 1^{\circ}$  (°C)  
Ambient temperature at time of measurement: 24.9 (°C)  
Relative humidity at time of measurement: 10%

### Results:

Measured LED source temperature: 46.2 (°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.

Test Report Issued By:

Richard Huegi  
 Dialight Optics Laboratory  
 Senior Optical Engineering Technician  
 Lighting Division

Test Report Reviewed and Approved By:

Vishnu Shastry  
 Dialight Optics Laboratory  
 Optical Engineer  
 Approved Signatory