

# Test Report

Report Number: L15004

Date: Feb 5, 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: HE2RN4DN-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:** January 28, 2015 through February 4, 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:**

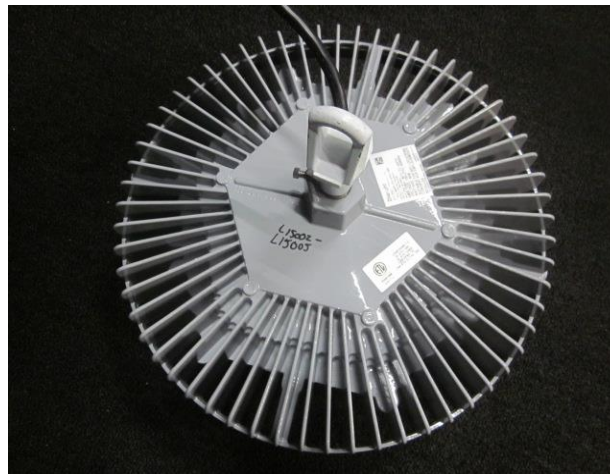
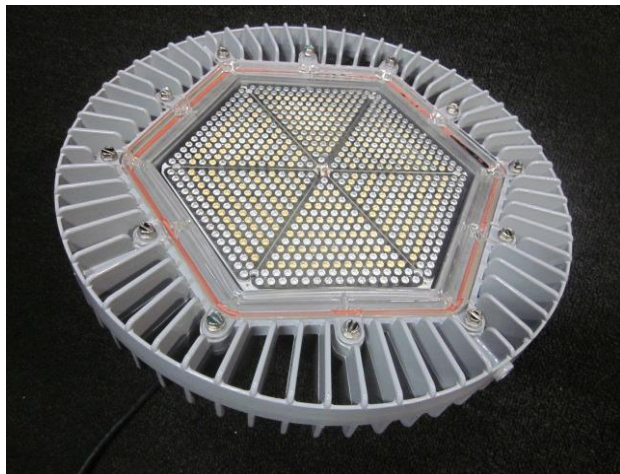
Sample Number: L15004  
Manufacturer: Dialight Corporation  
Product Name: Vigilant High Bay  
Description: Vigilant Highbay With Ultra Clear Polycarbonate Lens  
Model Number: HE2RN4DN-xxx

## Report Summary

Sample number L15004

Dialight unit model number HE2RN4DN-xxx

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	10860 (lumens)	10773 (lumens)
Electrical Power:	89.6 (W)	89.6 (W)
Luminous Efficacy:	121.2 (lumens/W)	120.2 (lumens/W)

### Electrical Measurements:

Input Power (120VAC): 89.6 (W)  
 Power Factor (120VAC): 0.991  
 Current ATHD % (120VAC): 10.43  
 Input Power (277VAC): 88.8 (W)  
 Power Factor (277VAC): 0.927  
 Current ATHD % (277VAC): 17.44

### Color Measurements:

Correlated Color Temperature (CCT): 3847  
 Color Rendering Index (CRI): 72.6  
 Chromaticity Coordinate (x): 0.388  
 Chromaticity Coordinate (y): 0.383  
 Chromaticity Coordinate (u'): 0.228  
 Chromaticity Coordinate (v'): 0.337  
 DUV: 0.00071

### Temperature Measurements:

In Situ LED Source Temperature: 41.3 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15004.  
Dialight unit model number HE2RN4DN-xxx

### Test Conditions:

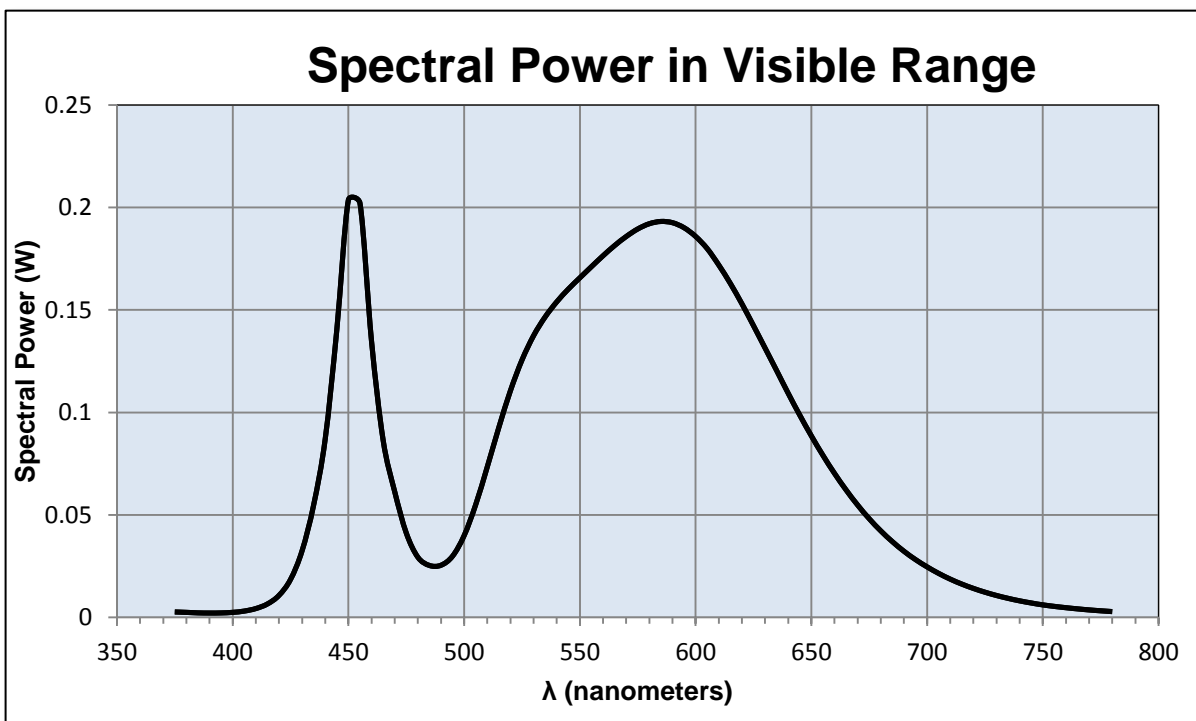
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input Current: 0.753 (A)  
Input Power: 89.6 (W)  
Input Power Factor: 0.991  
Current ATHD: 10.43 (%)

### Photometric measurements:

Luminous Flux: 10860 (lumens)  
Luminous Efficacy: 121.2 (lumens/W)  
Correlated Color Temperature (CCT): 3847 (K)  
CRI -Ra: 72.6  
CRI -R9: -22.7  
DUV: 0.00071  
CIE Coordinate (x): 0.388  
CIE Coordinate (y): 0.383  
CIE Coordinate (u'): 0.228  
CIE Coordinate (v'): 0.337



## 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	0.093	655	0.079
380	0.002	520	0.111	660	0.07
385	0.002	525	0.126	665	0.062
390	0.002	530	0.137	670	0.055
395	0.002	535	0.147	675	0.048
400	0.002	540	0.154	680	0.042
405	0.003	545	0.16	685	0.037
410	0.004	550	0.166	690	0.032
415	0.007	555	0.171	695	0.028
420	0.011	560	0.176	700	0.025
425	0.019	565	0.181	705	0.021
430	0.033	570	0.186	710	0.019
435	0.055	575	0.189	715	0.016
440	0.087	580	0.192	720	0.014
445	0.14	585	0.193	725	0.012
450	0.204	590	0.193	730	0.011
455	0.202	595	0.19	735	0.009
460	0.135	600	0.186	740	0.008
465	0.087	605	0.18	745	0.007
470	0.061	610	0.172	750	0.006
475	0.041	615	0.163	755	0.005
480	0.029	620	0.153	760	0.005
485	0.025	625	0.142	765	0.004
490	0.025	630	0.131	770	0.004
495	0.03	635	0.12	775	0.003
500	0.04	640	0.109	780	0.003
505	0.055	645	0.099		
510	0.073	650	0.089		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15004.  
Dialight unit model number HE2RN4DN-xxx

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 0.752 (A)  
Input Power: 89.6 (W)  
Power Factor: 0.99

### Photometric measurements:

Absolute Luminous Flux: 10773 (lumens)  
Luminous Efficacy: 120.2 (lumens/W)

### Intensity Summary:

ANGLE	ALONG	<u>INTENSITY (CANDLEPOWER) SUMMARY</u>				OUTPUT LUMENS
		22.5	45	67.5	ACROSS	
0	4230	4230	4230	4230	4230	
5	4231	4225	4228	4243	4244	158
15	4083	4077	4089	4122	4085	883
25	3970	3996	4020	4060	4079	1598
35	4229	4266	4293	4384	4357	2375
45	4132	4122	4151	4187	4196	3138
55	1453	1468	1485	1514	1529	2209
65	86	91	94	94	96	377
75	14	15	15	14	15	30
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

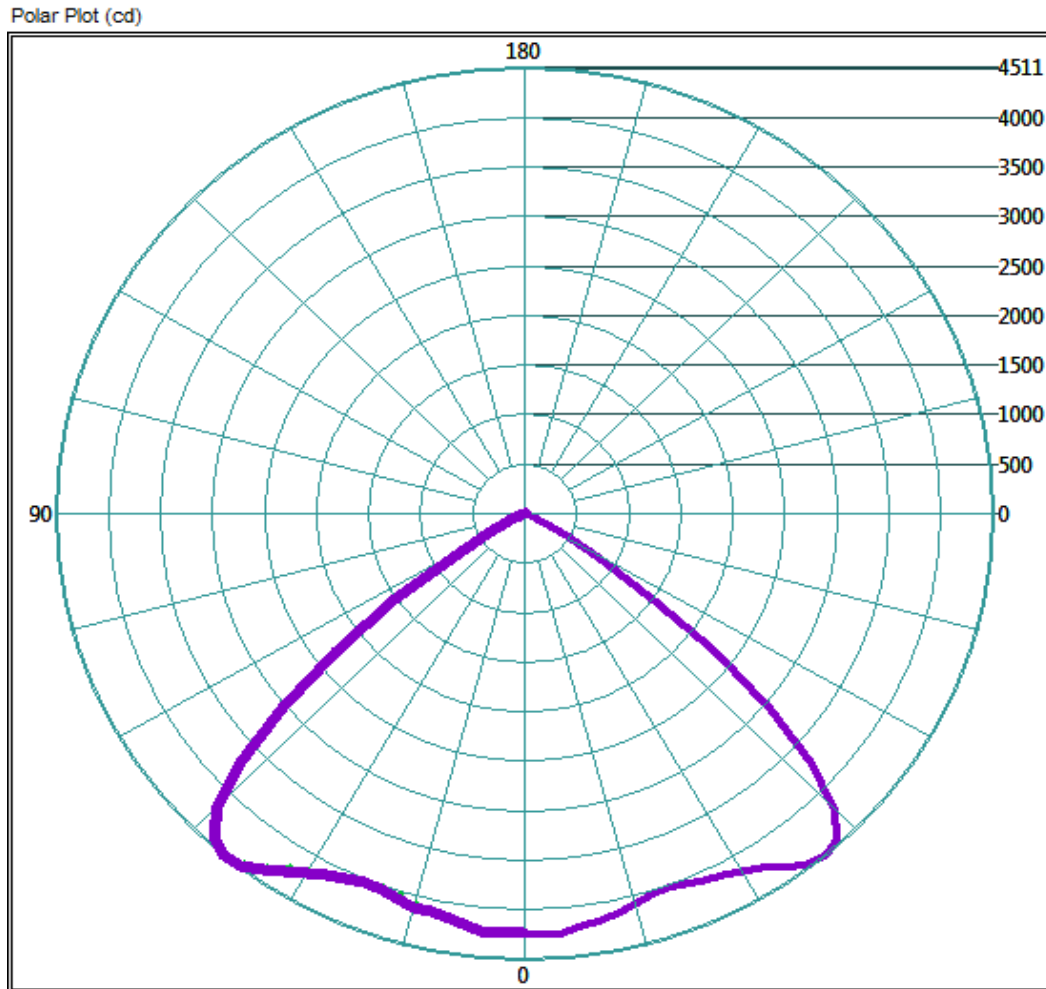
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	3717.2	34.5%
0-40	6533.84	60.7%
0-60	10666.96	99.0%
60-90	211.2	2.0%
0-90	10772.98	100.0%
90-180	0	0.0%
0-180	10772.98	100.0%

### Test Results: Goniometer

Results continued from previous page.

**Polar Plot:**

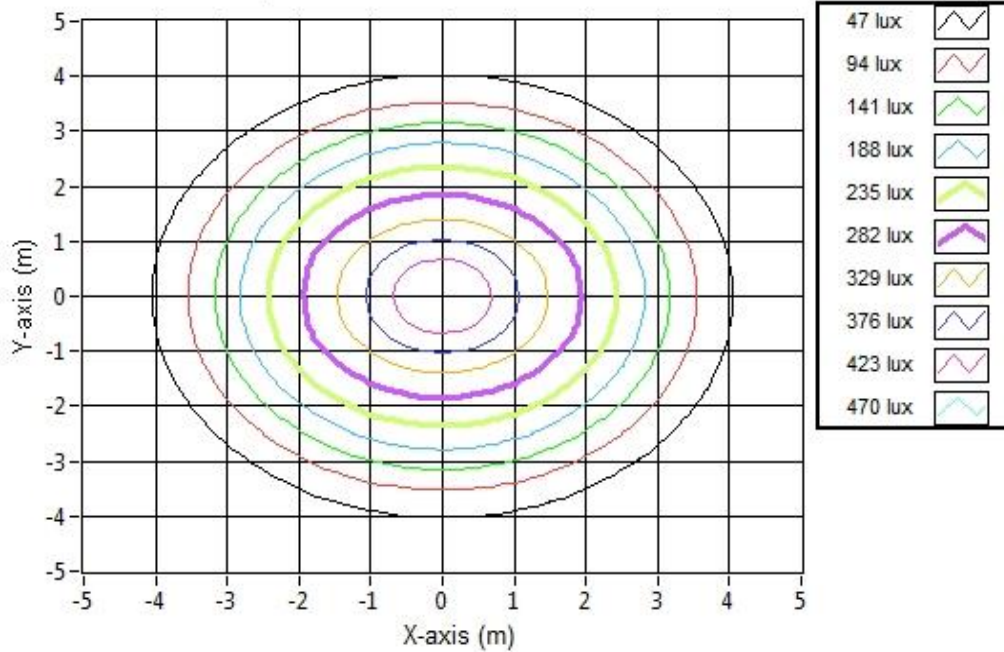


## Test Results: Goniometer

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	8.04	8.12	455.4
6.096	16.08	16.24	113.8
9.144	24.12	24.36	50.6
12.192	32.15	32.48	28.5
15.24	40.19	40.60	18.2
18.288	48.23	48.72	12.6
21.336	56.27	56.85	9.3
24.384	64.31	64.97	7.1
27.432	72.35	73.09	5.6
30.48	80.39	81.21	4.6

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15004.  
Dialight unit model number HE2RN4DN-xxx

LED identified as Nichia part number NT2L757DT.

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:

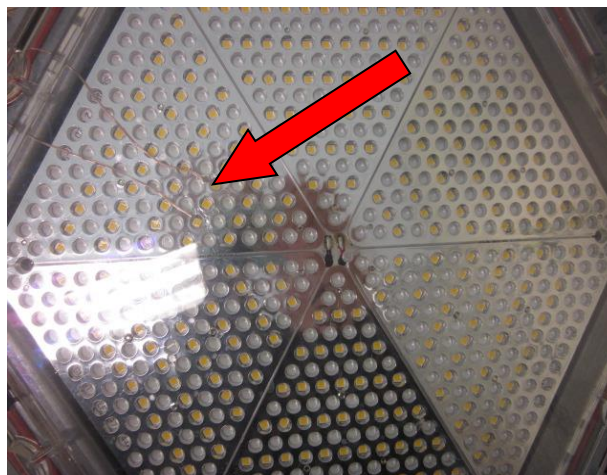
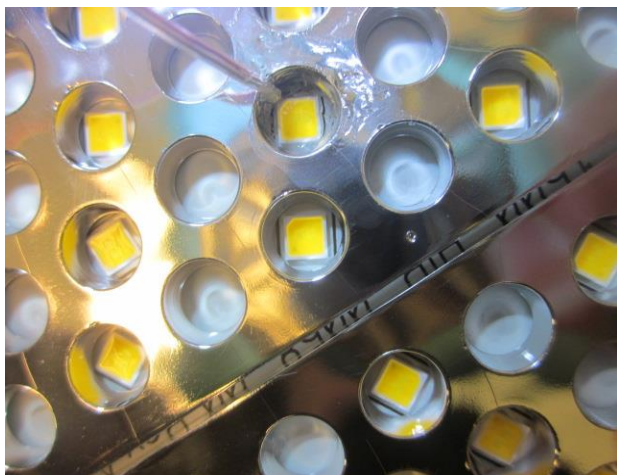
Maximum Power at Indicated Current: 0.35 (W)  
Maximum Source Temperature: 113.7 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 1^{\circ}$  (°C)  
Ambient temperature at time of measurement: 25.4 (°C)  
Relative humidity at time of measurement: 15%

### Results:

Measured LED source temperature: 41.3 (°C)





**Equipment Used:**

Equipment Name	Model Number	Calibration Due Date
Omega TC	Dpi8	3/7/2015
Fluke 8808A Digit Multimeter	8808A	4/7/2015
YOKOGAWA Digital Power Meter	760401	4/7/2015
LSI Standard Lamps	#30279	4/17/2015
LSI High Speed Mirror Goniometer	6240T	-
Instrument System Spectrometer	CAS140B-151	-
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System 1.5 Meter Sphere	ISP1500	-
Volttech Power Analyzer	PM1000+	4/17/2015
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	3/6/2015
Volttech Power Analyzer	PM1000+	4/17/2015
Tenma AC Power Source	72-7675	-
BK Precision	1715A	-
TDK-Lambda	GEN1500W	-
Fluke 8808A Digit Multimeter	8808A	4/14/2015
TPI Digital Thermometer 343	343	4/17/2015
TPI Digital Thermometer 343	343	4/17/2015

**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.

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Approved Signatory