

# Test Report

Report Number: L15134

Date: Oct 19, 2015

Issued by:

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

Test of one Vigilant Highbay With Ultra Clear Polycarbonate Dome Lens  
Unit manufacturer: Dialight Corporation  
Unit model number: HELRC4KN-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:** October 16, 2015 through October 19, 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):

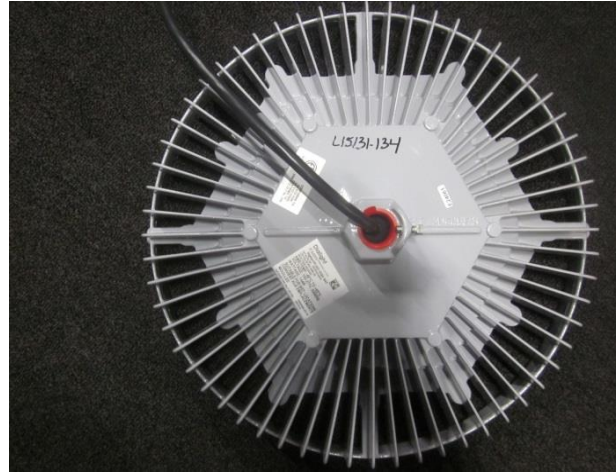
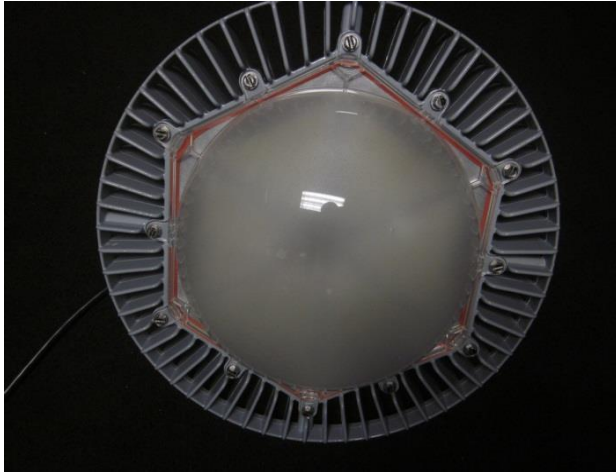
- IES LM-79:2008: Electrical and Photometric Measurements of Solid-State Lighting Products
- ANSI/UL 1598:2008: Underwriters Laboratories Inc. Standard for Safety: Luminaires
- ENERGY STAR Manufacturer's Guide for Qualifying Solid State Lighting Luminaires Version 2.1

**Description of sample:**

Sample Number: L15134  
Manufacturer: Dialight Corporation  
Product Name: Vigilant  
Description: Vigilant Highbay With Ultra Clear Polycarbonate Dome Lens  
Model Number: HELRC4KN-xxx

**Report Summary**  
Sample number L15134  
Dialight unit model number HELRC4KN-xxx

**Photograph(s) of sample:**



\*Photographs not to scale. For reference only.

**Summary of Results:**

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	17160 (lumens)	16693 (lumens)
Electrical Power:	144.2 (W)	144.3 (W)
Luminous Efficacy:	119 (lumens/W)	115.7 (lumens/W)

**Electrical Measurements:**

Input Power (120VAC): 144.2 (W)  
 Power Factor (120VAC): 0.996  
 Current ATHD % (120VAC): 6.454  
 Input Power (277VAC): 141.6 (W)  
 Power Factor (277VAC): 0.97  
 Current ATHD % (277VAC): 13.65

**Color Measurements:**

Correlated Color Temperature (CCT): 4861  
 Color Rendering Index (CRI): 78.9  
 Chromaticity Coordinate (x): 0.35  
 Chromaticity Coordinate (y): 0.358  
 Chromaticity Coordinate (u'): 0.212  
 Chromaticity Coordinate (v'): 0.326  
 DUV: 0.0014

**Temperature Measurements:**

In Situ LED Source Temperature: 53.8 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15134.  
Dialight unit model number HELRC4KN-xxx

### Test Conditions:

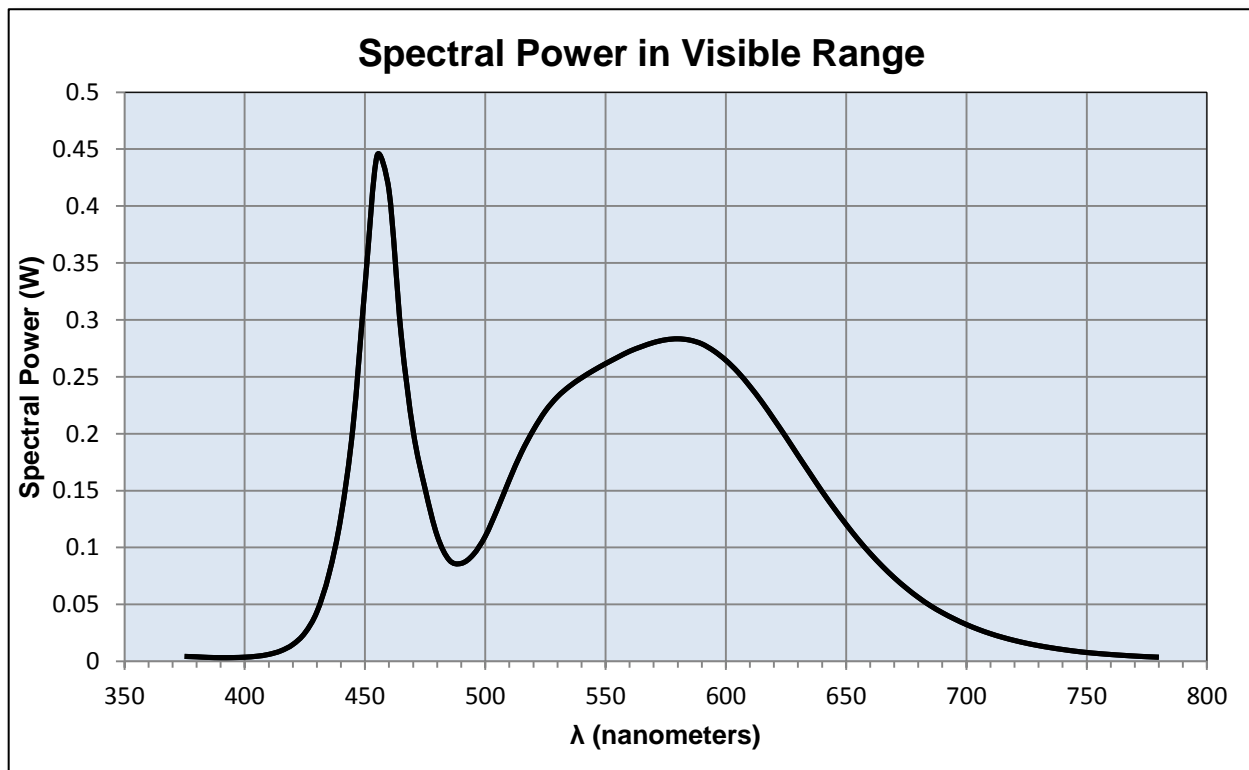
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input Current: 1.206 (A)  
Input Power: 144.2 (W)  
Input Power Factor: 0.996  
Current ATHD: 6.454 (%)

### Photometric measurements:

Luminous Flux: 17160 (lumens)  
Luminous Efficacy: 119.0 (lumens/W)  
Correlated Color Temperature (CCT): 4861 (K)  
CRI -Ra: 78.9  
CRI -R9: -4.6  
DUV: 0.0014  
CIE Coordinate (x): 0.35  
CIE Coordinate (y): 0.358  
CIE Coordinate (u'): 0.212  
CIE Coordinate (v'): 0.326



## 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	0.004	515	0.183	655	0.107
380	0.004	520	0.203	660	0.095
385	0.003	525	0.22	665	0.084
390	0.003	530	0.232	670	0.073
395	0.003	535	0.242	675	0.064
400	0.004	540	0.249	680	0.056
405	0.004	545	0.256	685	0.049
410	0.006	550	0.262	690	0.043
415	0.009	555	0.267	695	0.037
420	0.015	560	0.272	700	0.032
425	0.025	565	0.277	705	0.028
430	0.043	570	0.28	710	0.024
435	0.076	575	0.282	715	0.021
440	0.127	580	0.283	720	0.018
445	0.206	585	0.282	725	0.016
450	0.33	590	0.279	730	0.014
455	0.444	595	0.273	735	0.012
460	0.413	600	0.265	740	0.01
465	0.288	605	0.254	745	0.009
470	0.203	610	0.242	750	0.008
475	0.151	615	0.228	755	0.007
480	0.11	620	0.213	760	0.006
485	0.089	625	0.197	765	0.005
490	0.086	630	0.181	770	0.005
495	0.094	635	0.165	775	0.004
500	0.11	640	0.149	780	0.004
505	0.134	645	0.134		
510	0.159	650	0.12		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15134.  
Dialight unit model number HELRC4KN-xxx

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 1.2 (A)  
Input Power: 144.3 (W)  
Power Factor: 0.996

### Photometric measurements:

Absolute Luminous Flux: 16693 (lumens)  
Luminous Efficacy: 115.7 (lumens/W)

### Intensity Summary:

<b>INTENSITY (CANDLEPOWER) SUMMARY</b>						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	5869	5869	5869	5869	5869	
5	5857	5857	5857	5857	5857	219
15	5757	5757	5757	5757	5757	1238
25	5656	5656	5656	5656	5656	2257
35	5617	5617	5617	5617	5617	3200
45	5092	5092	5092	5092	5092	3873
55	3132	3132	3132	3132	3132	3373
65	1089	1089	1089	1089	1089	1677
75	352	352	352	352	352	568
85	181	181	181	181	181	243
95	0	0	0	0	0	46
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

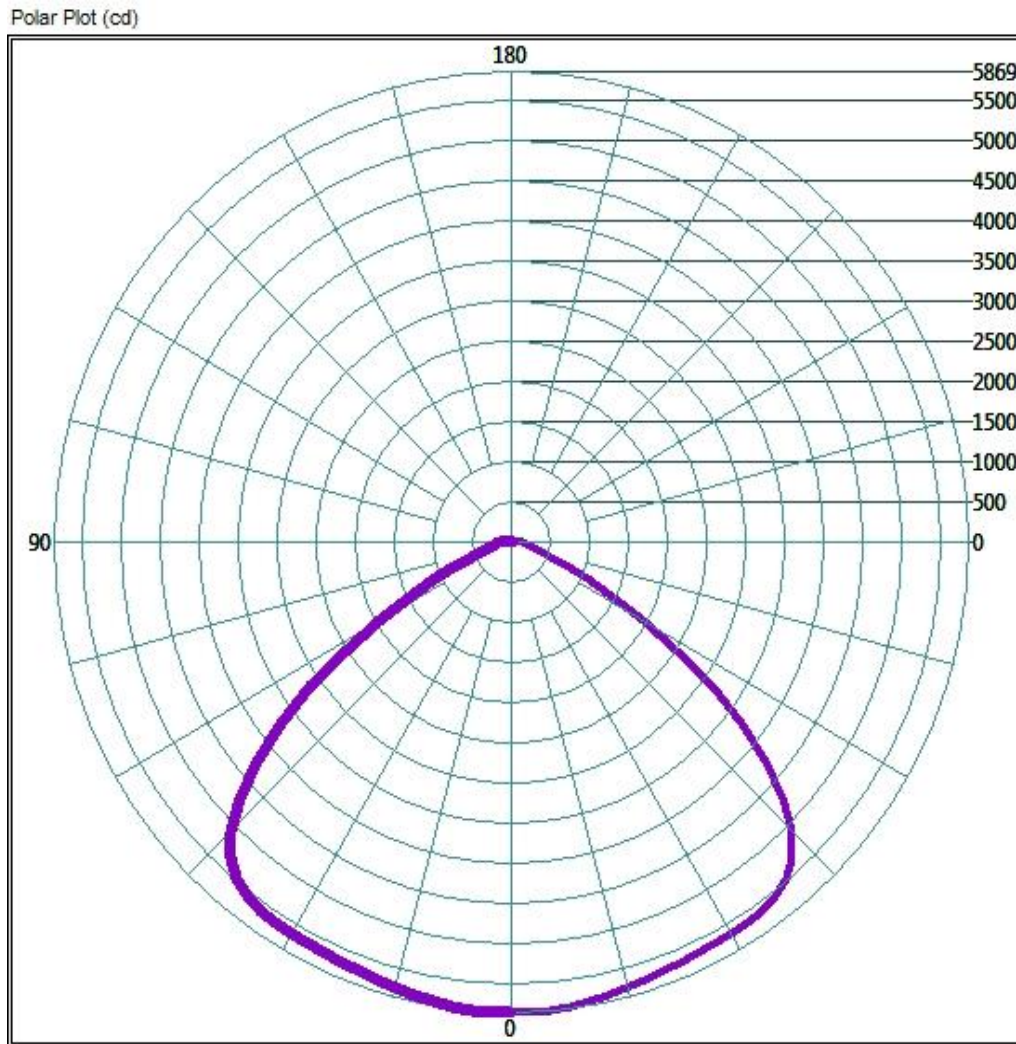
### ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	5200.64	31.2%
0-40	8811.36	52.8%
0-60	15207.36	91.1%
60-90	1950.24	11.7%
0-90	16692.8	100.0%
90-180	0	0.0%
0-180	16692.8	100.0%

## Test Results: Goniometer

Results continued from previous page.

### Polar Plot:

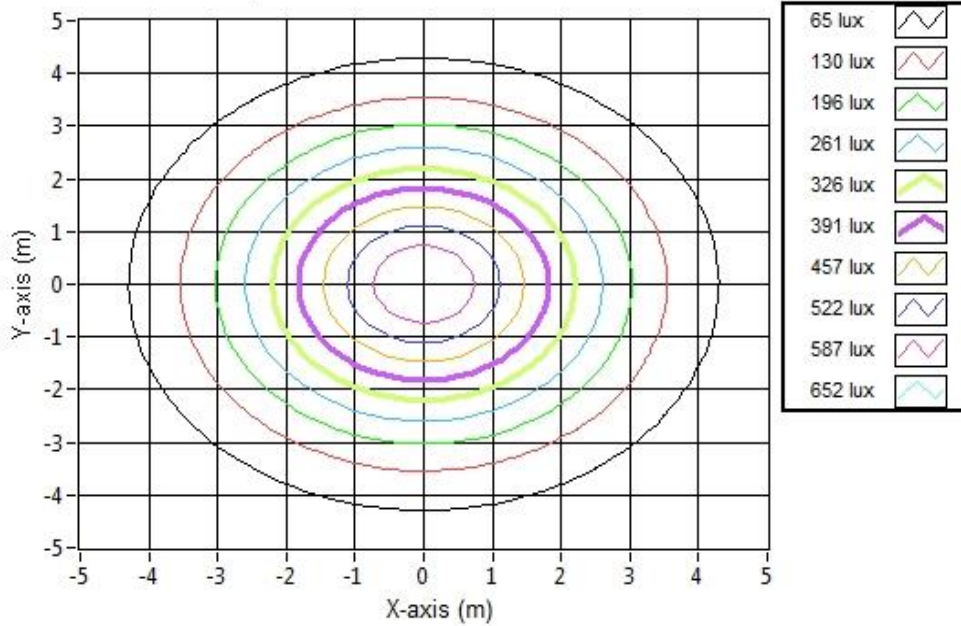


## Test Results: Goniometer

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	8.97	8.97	631.8
6.096	17.95	17.95	157.9
9.144	26.92	26.92	70.2
12.192	35.89	35.89	39.5
15.24	44.87	44.87	25.3
18.288	53.84	53.84	17.5
21.336	62.81	62.81	12.9
24.384	71.79	71.79	9.9
27.432	80.76	80.76	7.8
30.48	89.73	89.73	6.3

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15134.  
Dialight unit model number HELRC4KN-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:

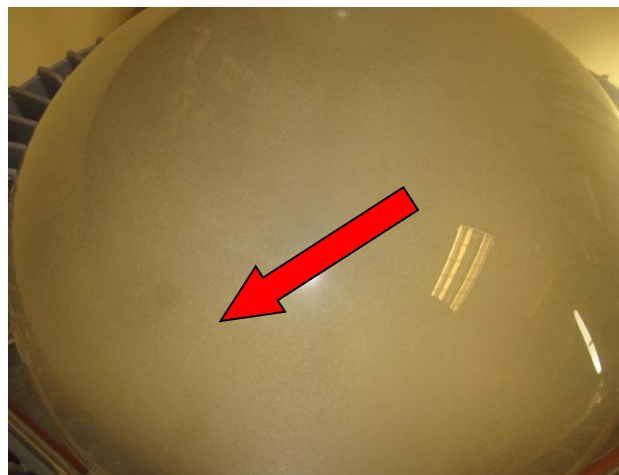
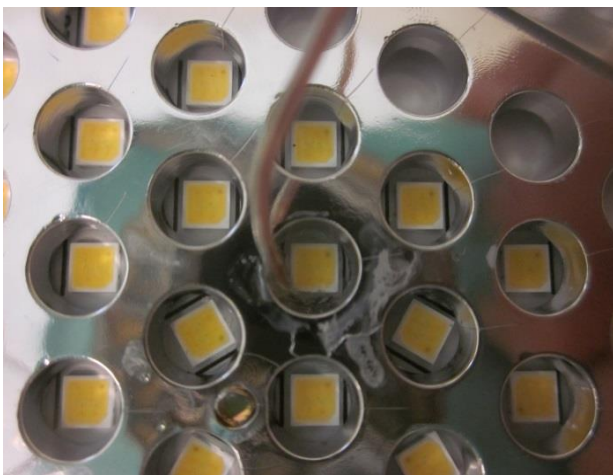
Maximum Power at Indicated Current: 0.35 (W)  
Maximum Source Temperature: 113.7 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 1'$  (°C)  
Ambient temperature at time of measurement: 25.9 (°C)  
Relative humidity at time of measurement: 30%

### Results:

**Measured LED source temperature: 53.8 (°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.

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