

Test Report

Report Number: L15122

Date: Aug 20, 2015

Issued by:

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

Test of one Vigilant Highbay With Clear Acrylic Lens
Unit manufacturer: Dialight Corporation
Unit model number: HE1NC4GN-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 26, 2015 through July 21, 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):

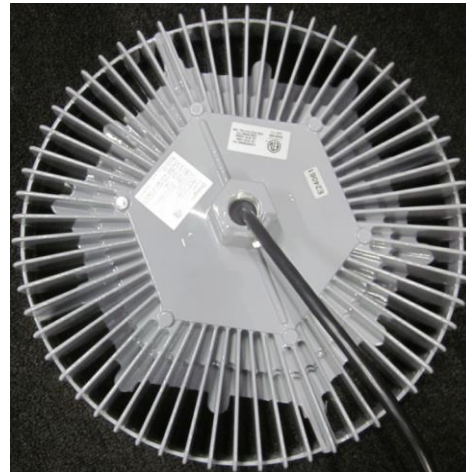
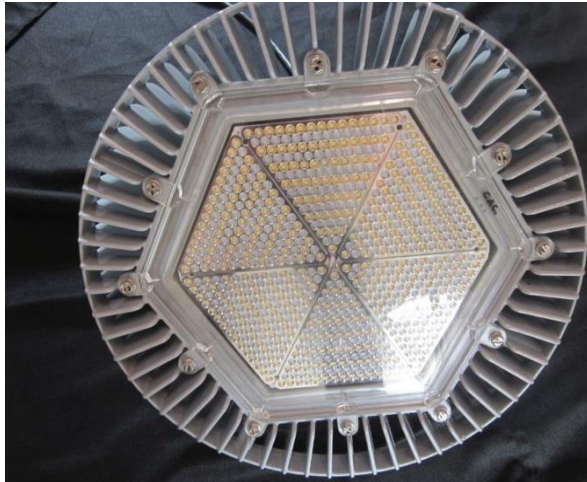
- IES LM-79:2008: Electrical and Photometric Measurements of Solid-State Lighting Products
- ANSI/UL 1598:2008: Underwriters Laboratories Inc. Standard for Safety: Luminaires
- ENERGY STAR Manufacturer's Guide for Qualifying Solid State Lighting Luminaires Version 2.1

Description of sample:

Sample Number: L15122
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay With Clear Acrylic Lens
Model Number: HE1NC4GN-xxx

Report Summary
Sample number L15122
Dialight unit model number HE1NC4GN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	13950 (lumens)	13946 (lumens)
Electrical Power:	112.7 (W)	112.9 (W)
Luminous Efficacy:	123.8 (lumens/W)	123.5 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 112.7 (W)
 Power Factor (120VAC): 0.993
 Current ATHD % (120VAC): 9.187
 Input Power (277VAC): 111.5 (W)
 Power Factor (277VAC): 0.954
 Current ATHD % (277VAC): 174.2

Color Measurements:

Correlated Color Temperature (CCT): 5005
 Color Rendering Index (CRI): 78.9
 Chromaticity Coordinate (x): 0.345
 Chromaticity Coordinate (y): 0.355
 Chromaticity Coordinate (u'): 0.21
 Chromaticity Coordinate (v'): 0.324
 DUV: 0.0014

Temperature Measurements:

In Situ LED Source Temperature: 51.9 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15122.
Dialight unit model number HE1NC4GN-xxx

Test Conditions:

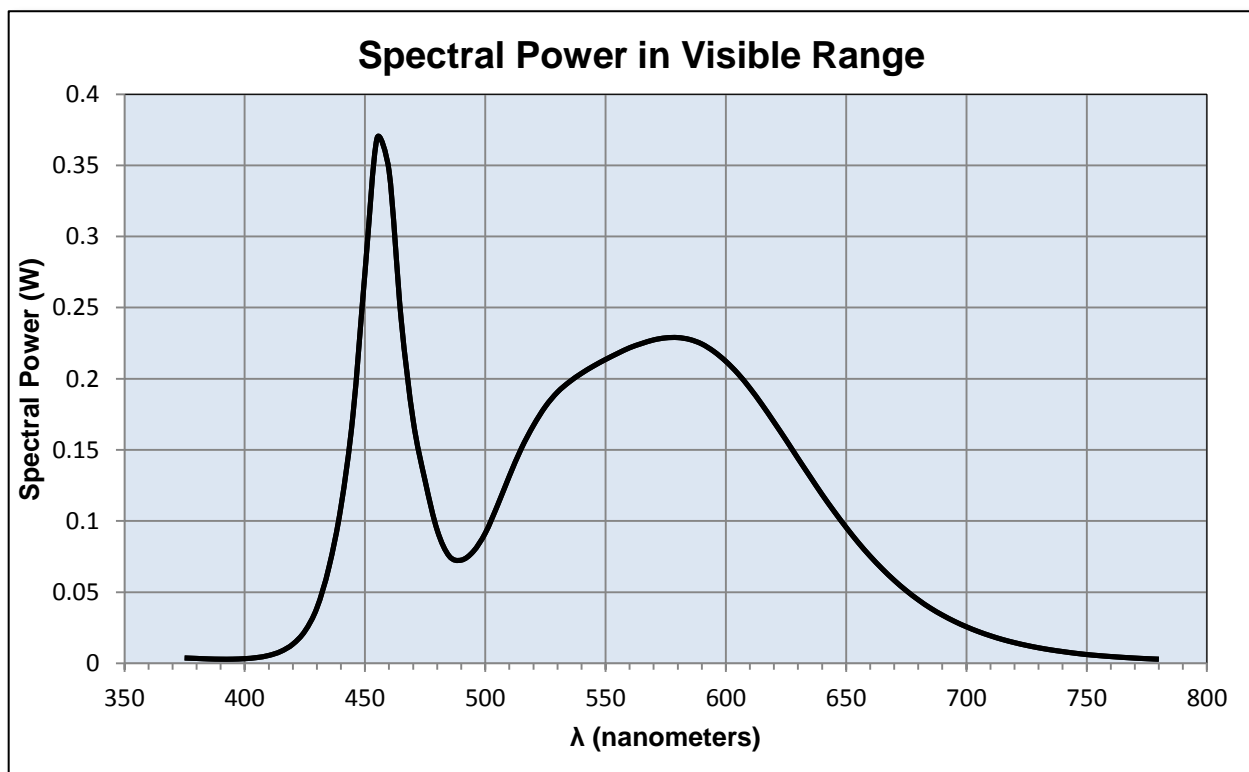
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 0.946 (A)
Input Power: 112.7 (W)
Input Power Factor: 0.993
Current ATHD: 9.187 (%)

Photometric measurements:

Luminous Flux: 13950 (lumens)
Luminous Efficacy: 123.8 (lumens/W)
Correlated Color Temperature (CCT): 5005 (K)
CRI -Ra: 78.9
CRI -R9: -7.4
DUV: 0.0014
CIE Coordinate (x): 0.345
CIE Coordinate (y): 0.355
CIE Coordinate (u'): 0.21
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	0.004	515	0.151	655	0.085
380	0.003	520	0.167	660	0.075
385	0.003	525	0.181	665	0.066
390	0.003	530	0.191	670	0.058
395	0.003	535	0.198	675	0.051
400	0.003	540	0.204	680	0.045
405	0.004	545	0.209	685	0.039
410	0.006	550	0.214	690	0.034
415	0.008	555	0.218	695	0.03
420	0.013	560	0.222	700	0.026
425	0.023	565	0.225	705	0.022
430	0.039	570	0.227	710	0.019
435	0.067	575	0.229	715	0.017
440	0.11	580	0.229	720	0.015
445	0.175	585	0.228	725	0.013
450	0.275	590	0.224	730	0.011
455	0.369	595	0.219	735	0.009
460	0.346	600	0.212	740	0.008
465	0.242	605	0.204	745	0.007
470	0.171	610	0.193	750	0.006
475	0.128	615	0.182	755	0.005
480	0.094	620	0.17	760	0.005
485	0.075	625	0.157	765	0.004
490	0.073	630	0.144	770	0.004
495	0.079	635	0.131	775	0.003
500	0.092	640	0.119	780	0.003
505	0.111	645	0.107		
510	0.132	650	0.096		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15122.
Dialight unit model number HE1NC4GN-xxx

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.947 (A)
Input Power: 112.9 (W)
Power Factor: 0.993

Photometric measurements:

Absolute Luminous Flux: 13946 (lumens)
Luminous Efficacy: 123.5 (lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	18612	18612	18612	18612	18612	
5	17026	17026	17026	17026	17026	652
15	9852	9852	9852	9852	9852	2562
25	5887	5887	5887	5887	5887	2767
35	4491	4491	4491	4491	4491	2776
45	3381	3381	3381	3381	3381	2762
55	1473	1473	1473	1473	1473	1921
65	125	125	125	125	125	436
75	33	33	33	33	33	52
85	6	6	6	6	6	16
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

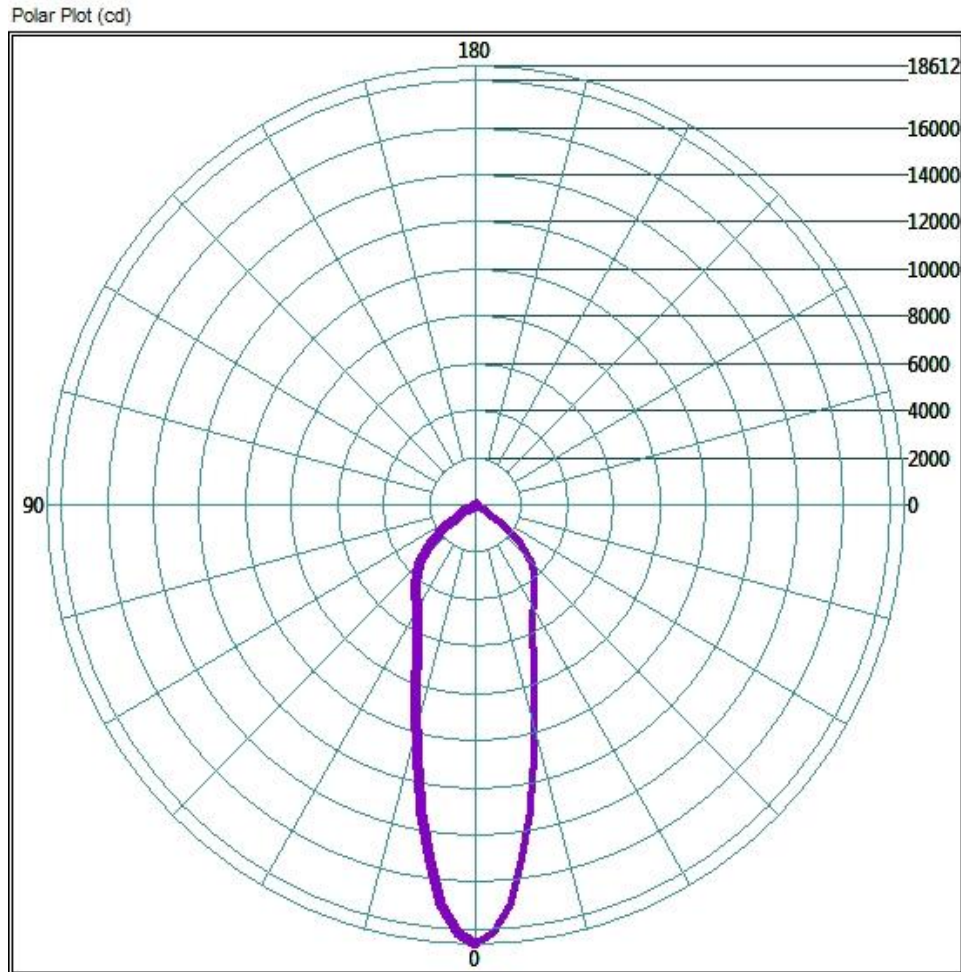
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	7353.28	52.7%
0-40	10174.72	73.0%
0-60	13783.04	98.8%
60-90	287.36	2.1%
0-90	13945.92	100.0%
90-180	0	0.0%
0-180	13945.92	100.0%

Test Results: Goniometer

Results continued from previous page.

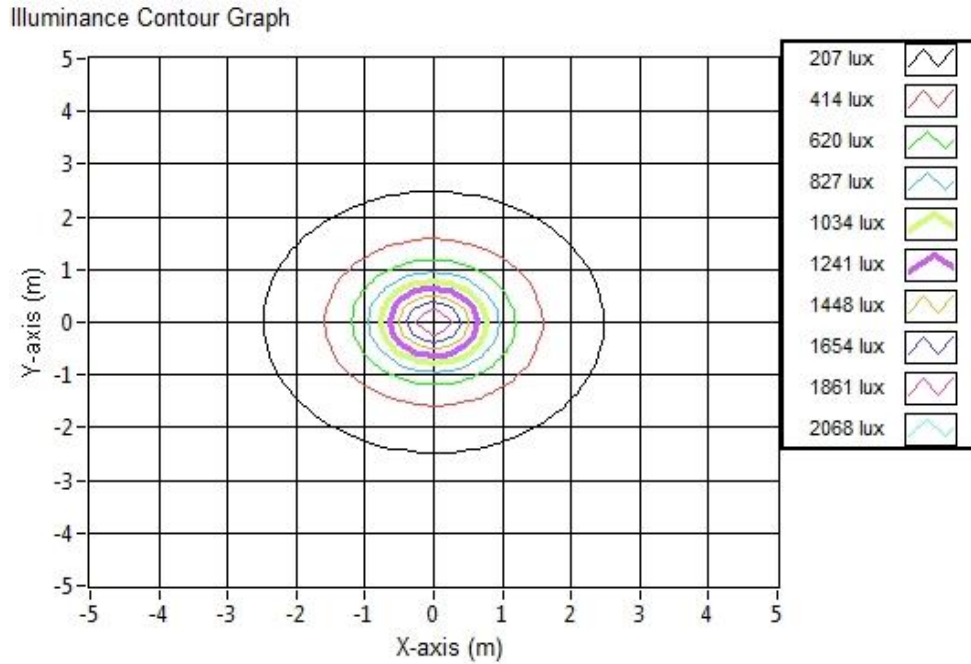
Polar Plot:



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	1.75	1.75	2003.4
6.096	3.50	3.50	500.8
9.144	5.25	5.25	222.6
12.192	7.00	7.00	125.2
15.24	8.75	8.75	80.1
18.288	10.50	10.50	55.6
21.336	12.25	12.25	40.9
24.384	14.00	14.00	31.3
27.432	15.75	15.75	24.7
30.48	17.50	17.50	20.0

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15122.
Dialight unit model number HE1NC4GN-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:

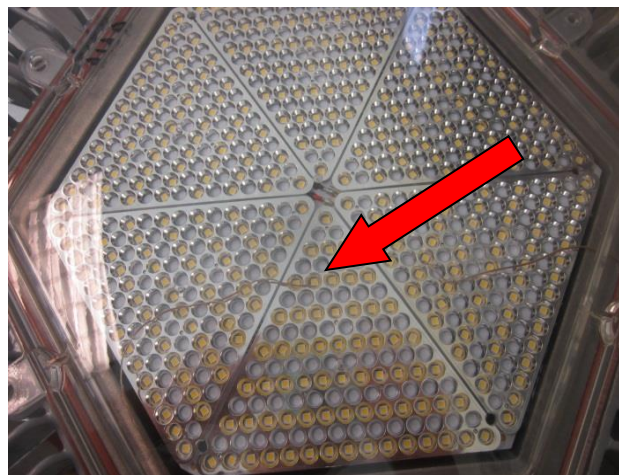
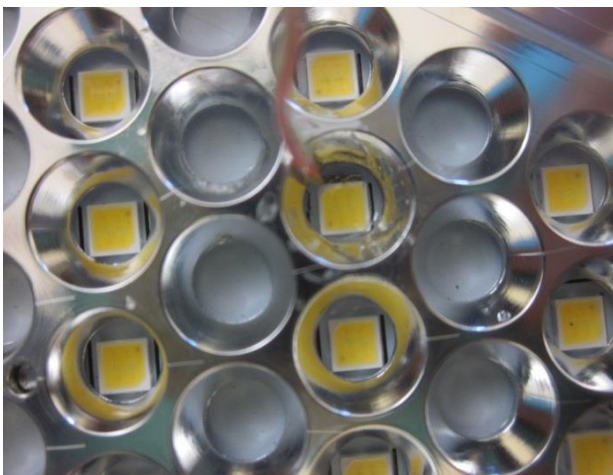
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 1^{\circ}$ (°C)
Ambient temperature at time of measurement: 25.2 (°C)
Relative humidity at time of measurement: 30%

Results:

Measured LED source temperature: 51.9 (°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