

Test Report

Report Number: L15024

Date: Mar 31, 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: HE2EC4DN-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: March 20, 2015 through March 31, 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

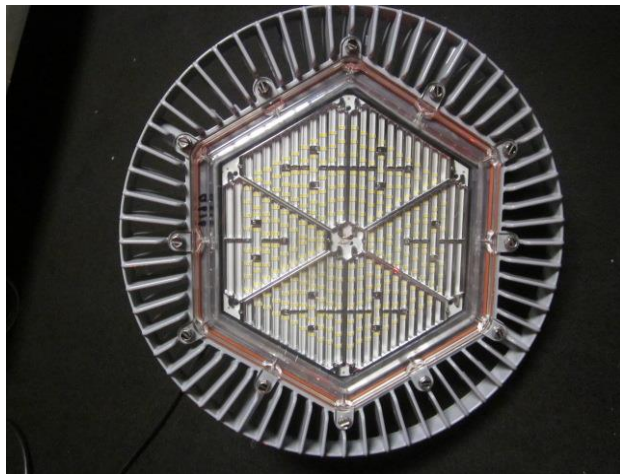
Description of sample:

Sample Number: L15024
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay With Ultra Clear Polycarbonate Lens
Model Number: HE2EC4DN-xxx

Report Summary

Sample number L15024
Dialight unit model number HE2EC4DN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	11090 (lumens)	10924 (lumens)
Electrical Power:	89.1 (W)	89.2 (W)
Luminous Efficacy:	124.5 (lumens/W)	122.4 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 89.1 (W)
Power Factor (120VAC): 0.99
Current ATHD % (120VAC): 10.28
Input Power (277VAC): 88.4 (W)
Power Factor (277VAC): 0.926
Current ATHD % (277VAC): 17.14

Color Measurements:

Correlated Color Temperature (CCT): 4920
Color Rendering Index (CRI): 77.3
Chromaticity Coordinate (x): 0.348
Chromaticity Coordinate (y): 0.355
Chromaticity Coordinate (u'): 0.212
Chromaticity Coordinate (v'): 0.487
DUV: 0.00053

Temperature Measurements:

In Situ LED Source Temperature: 42.6 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15024.
Dialight unit model number HE2EC4DN-xxx

Test Conditions:

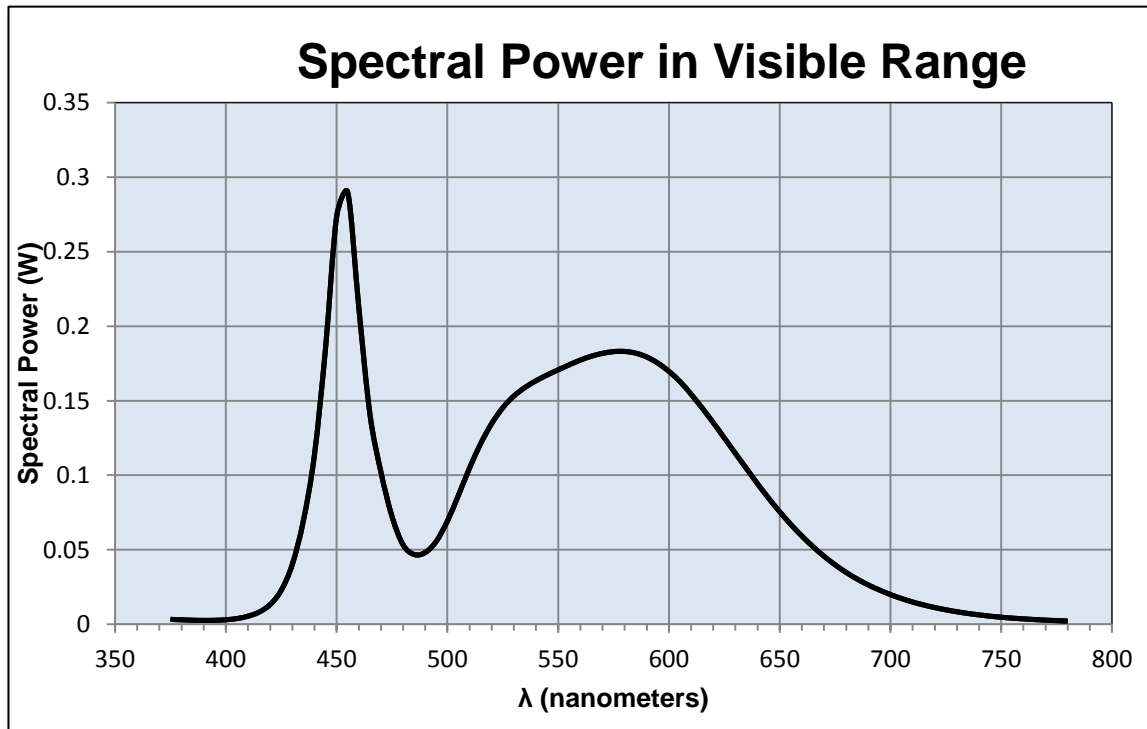
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 0.745 (A)
Input Power: 89.1 (W)
Input Power Factor: 0.99
Current ATHD: 10.28 (%)

Photometric measurements:

Luminous Flux: 11090 (lumens)
Luminous Efficacy: 124.5 (lumens/W)
Correlated Color Temperature (CCT): 4920 (K)
CRI -Ra: 77.3
CRI -R9: -10.4
DUV: 0.00053
CIE Coordinate (x): 0.348
CIE Coordinate (y): 0.355
CIE Coordinate (u'): 0.212
CIE Coordinate (v'): 0.487



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	0.121	655	0.067
380	0.003	520	0.135	660	0.059
385	0.003	525	0.145	665	0.052
390	0.003	530	0.153	670	0.046
395	0.003	535	0.159	675	0.04
400	0.003	540	0.163	680	0.035
405	0.004	545	0.167	685	0.03
410	0.005	550	0.171	690	0.026
415	0.008	555	0.174	695	0.023
420	0.013	560	0.177	700	0.02
425	0.023	565	0.18	705	0.017
430	0.04	570	0.182	710	0.015
435	0.07	575	0.183	715	0.013
440	0.114	580	0.183	720	0.011
445	0.185	585	0.182	725	0.01
450	0.274	590	0.179	730	0.008
455	0.29	595	0.175	735	0.007
460	0.213	600	0.17	740	0.006
465	0.141	605	0.163	745	0.005
470	0.102	610	0.154	750	0.005
475	0.072	615	0.145	755	0.004
480	0.053	620	0.135	760	0.004
485	0.047	625	0.125	765	0.003
490	0.048	630	0.115	770	0.003
495	0.056	635	0.104	775	0.002
500	0.069	640	0.094	780	0.002
505	0.087	645	0.085		
510	0.105	650	0.075		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15024.
Dialight unit model number HE2EC4DN-xxx

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.75 (A)
Input Power: 89.2 (W)
Power Factor: 0.991

Photometric measurements:

Absolute Luminous Flux: 10924 (lumens)
Luminous Efficacy: 122.4 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	25	45	72.5	ACROSS	OUTPUT LUMENS
0	7865	7865	7865	7865	7865	
5	7410	7455	7559	7736	7852	285
15	5363	5615	6189	7084	7614	1436
25	3847	3979	4483	5919	7046	2124
35	3246	3370	3439	4512	6155	2437
45	1337	1856	2731	3135	4940	2268
55	135	236	1027	2109	3421	1440
65	28	63	117	960	2053	694
75	17	26	20	45	585	217
85	0	0	0	0	15	23
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

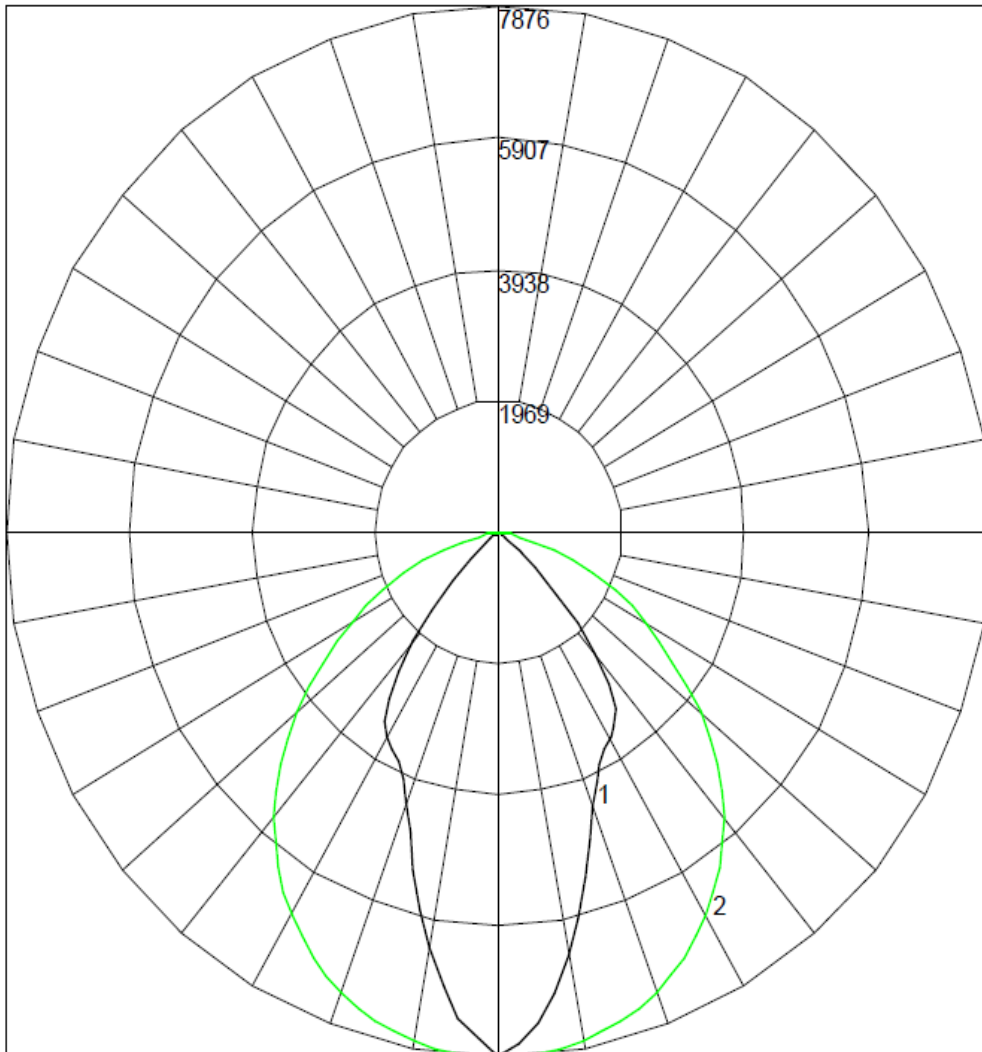
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	5040.85	46.1%
0-40	7488.25	68.5%
0-60	10412.83	95.3%
60-90	702.17	6.4%
0-90	10924.08	100.0%
90-180	0	0.0%
0-180	10924.08	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

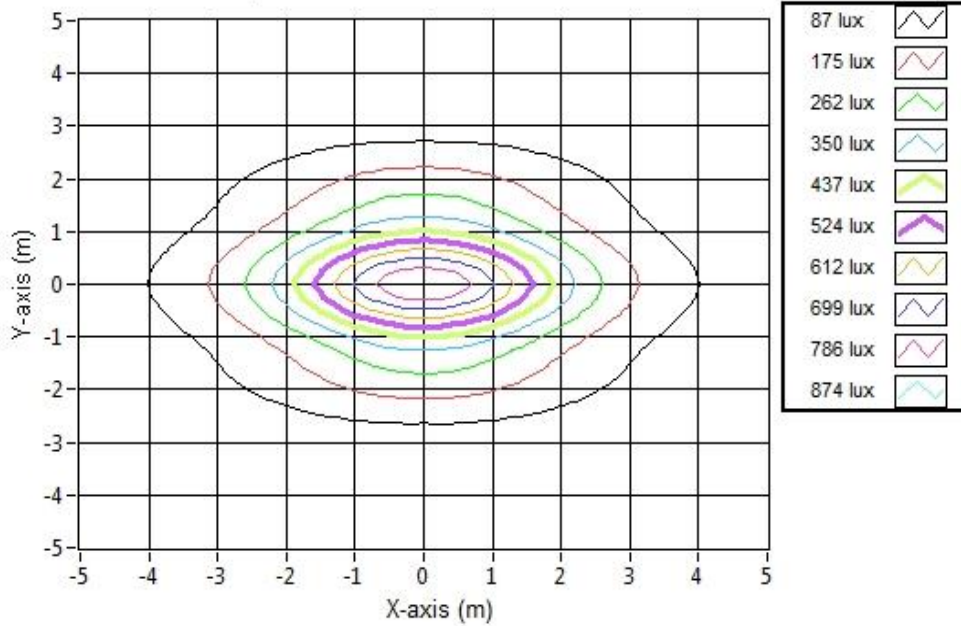


Test Results: Goniometer

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	2.69	7.73	846.5
6.096	5.37	15.47	211.6
9.144	8.06	23.20	94.1
12.192	10.74	30.93	52.9
15.24	13.43	38.67	33.9
18.288	16.11	46.40	23.5
21.336	18.80	54.13	17.3
24.384	21.48	61.87	13.2
27.432	24.17	69.60	10.5
30.48	26.85	77.33	8.5

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15024.
Dialight unit model number HE2EC4DN-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:

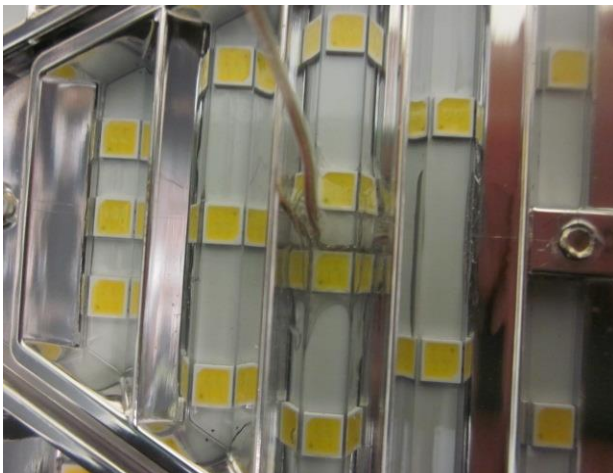
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C)

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: 42.6 (°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