Dialight
OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Report

Report Number: L15020 Date: Mar 16, 2015

Issued by:
Dialight Optics Laboratory
1501 Route 34 South, Farmingdale, NJ 07727

Test of one Vigilant Highbay With Ultra Clear Polycarbonate Lens fixture
Unit manufacturer: Dialight Corporation
Unit model number: HE2EC4PN-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 3, 2015 through March 13, 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: L15020
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay With Ultra Clear Polycarbonate Lens
Model Number: HE2EC4PN-xxx

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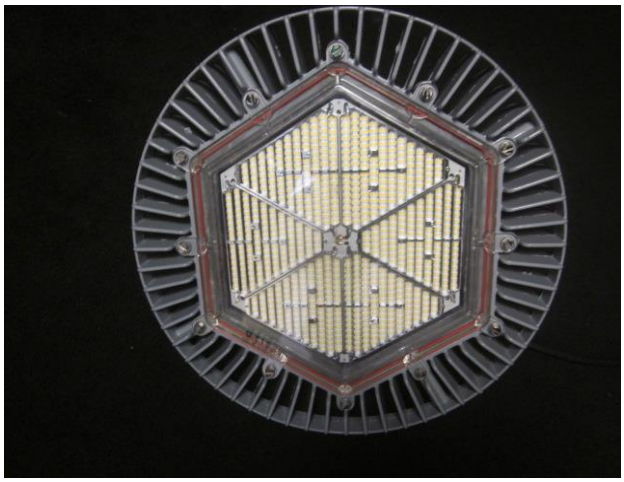
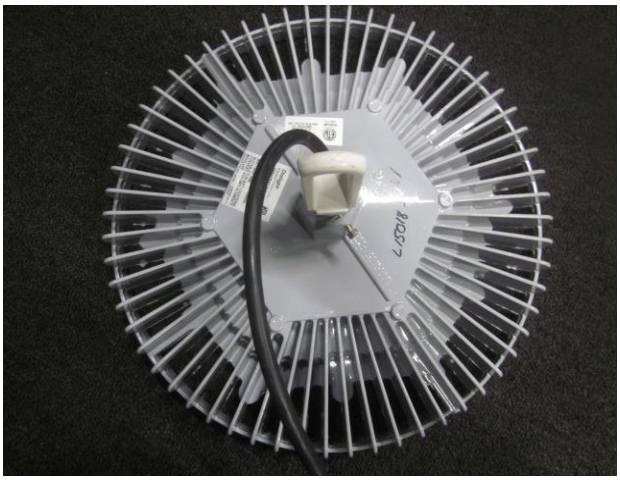
Report Summary

Sample number L15020

Dialight unit model number HE2EC4PN-xxx

Photograph(s) of sample:





*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere		Goniophotometer	
Luminous Flux:	24750	(lumens)	24779	(lumens)
Electrical Power:	203.5	(W)	203.4	(W)
Luminous Efficacy:	121.6	(lumens/W)	121.8	(lumens/W)

Electrical Measurements:

Input Power (120VAC):	203.5	(W)
Power Factor (120VAC):	0.997	
Current ATHD % (120VAC):	6.456	
Input Power (277VAC):	197.4	(W)
Power Factor (277VAC):	0.979	
Current ATHD % (277VAC):	8.98	

Color Measurements:

Correlated Color Temperature (CCT):	4910
Color Rendering Index (CRI):	78.1
Chromaticity Coordinate (x):	0.348
Chromaticity Coordinate (y):	0.356
Chromaticity Coordinate (u'):	0.212
Chromaticity Coordinate (v'):	0.325
DUV:	0.00097

Temperature Measurements:

In Situ LED Source Temperature:	58.6	(°C)

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Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15020.
Dialight unit model number HE2EC4PN-xxx

Test Conditions:

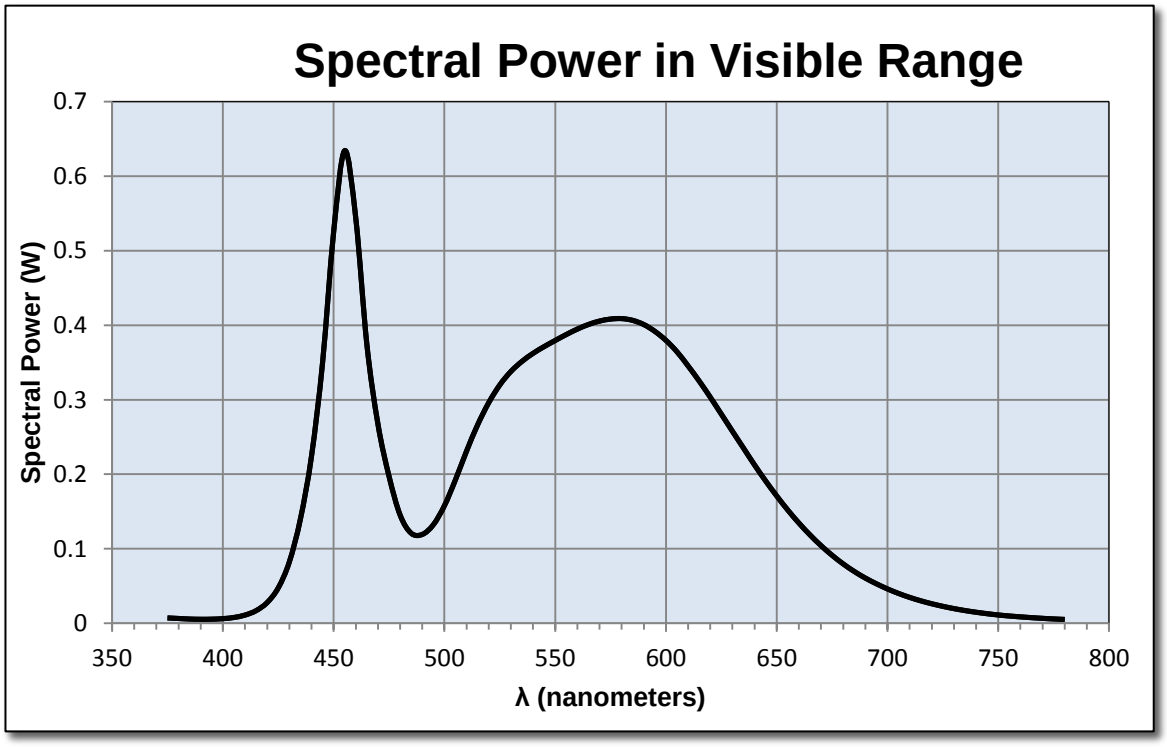
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	1.697	(A)
Input Power:	203.5	(W)
Input Power Factor:	0.997	
Current ATHD:	6.456	(%)

Photometric measurements:

Luminous Flux:	24750	(lumens)
Luminous Efficacy:	121.6	(lumens/W)
Correlated Color Temperature (CCT):	4910	(K)
CRI -Ra:	78.1	
CRI -R9:	-8	
DUV:	0.00097	
CIE Coordinate (x):	0.348	
CIE Coordinate (y):	0.356	
CIE Coordinate (u'):	0.212	
CIE Coordinate (v'):	0.325	



Test Results: Integrating Sphere

Results continued from previous page.

Tabulated Spectral Power in Visible Range:

λ(nm)	(W/nm)	λ(nm)	(W/nm)	λ(nm)	(W/nm)
375	0.007	515	0.266	655	0.152
380	0.006	520	0.296	660	0.135
385	0.006	525	0.32	665	0.119
390	0.005	530	0.338	670	0.104
395	0.006	535	0.351	675	0.091
400	0.006	540	0.362	680	0.08
405	0.008	545	0.371	685	0.07
410	0.011	550	0.379	690	0.061
415	0.017	555	0.387	695	0.053
420	0.028	560	0.395	700	0.046
425	0.048	565	0.401	705	0.04
430	0.082	570	0.406	710	0.035
435	0.14	575	0.408	715	0.03
440	0.224	580	0.409	720	0.026
445	0.35	585	0.406	725	0.023
450	0.525	590	0.401	730	0.02
455	0.634	595	0.392	735	0.017
460	0.543	600	0.38	740	0.015
465	0.374	605	0.364	745	0.013
470	0.267	610	0.345	750	0.011
475	0.197	615	0.325	755	0.01
480	0.145	620	0.303	760	0.009
485	0.121	625	0.281	765	0.008
490	0.119	630	0.258	770	0.007
495	0.132	635	0.235	775	0.006
500	0.158	640	0.212	780	0.005
505	0.193	645	0.191		
510	0.231	650	0.171		

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Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15020.
Dialight unit model number HE2EC4PN-xxx

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	1.17	(A)
Input Power:	203.4	(W)
Power Factor:	0.996	

Photometric measurements:

Absolute Luminous Flux:	24779	(lumens)
Luminous Efficacy:	121.8	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	25	45	72.5	ACROSS	OUTPUT LUMENS
0	17747	17747	17747	17747	17747	
5	16885	16978	17156	17481	17702	645
15	12301	12876	14181	16167	17152	3259
25	8769	9037	10279	13506	15914	4823
35	7364	7672	7814	10348	14000	5531
45	3069	4162	6166	7115	11295	5112
55	297	573	2357	4867	8057	3279
65	59	154	290	2262	4713	1590
75	32	51	48	100	1337	492
85	0	0	0	0	14	47
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	

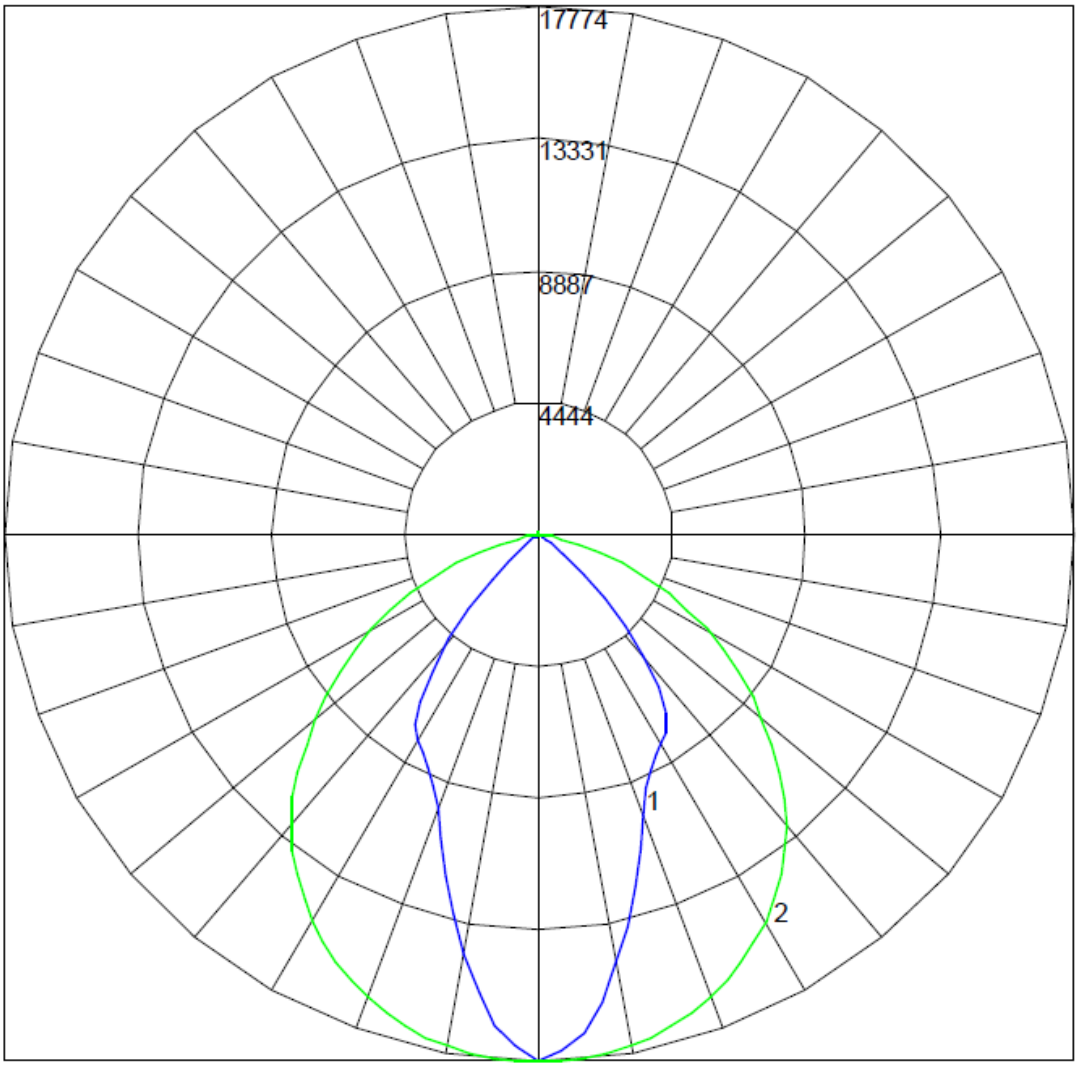
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	11442.05	46.2%
0-40	16983.42	68.5%
0-60	23619.84	95.3%
60-90	1596.25	6.4%
0-90	24778.92	100.0%
90-180	0	0.0%
0-180	24778.92	100.0%

Test Results: Goniometer

Results continued from previous page.

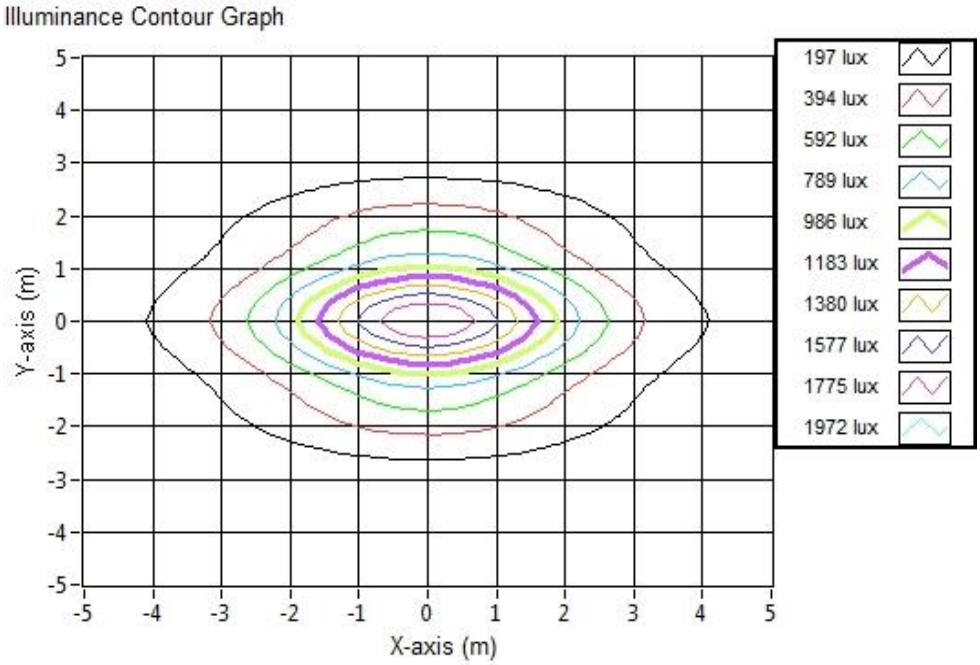
Polar Plot:



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	2.73	8.00	1910.2
6.096	5.45	16.00	477.6
9.144	8.18	24.00	212.2
12.192	10.91	32.00	119.4
15.24	13.63	40.00	76.4
18.288	16.36	48.00	53.1
21.336	19.09	56.00	39.0
24.384	21.81	64.00	29.8
27.432	24.54	72.01	23.6
30.48	27.27	80.01	19.1

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Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15020.
Dialight unit model number HE2EC4PN-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:

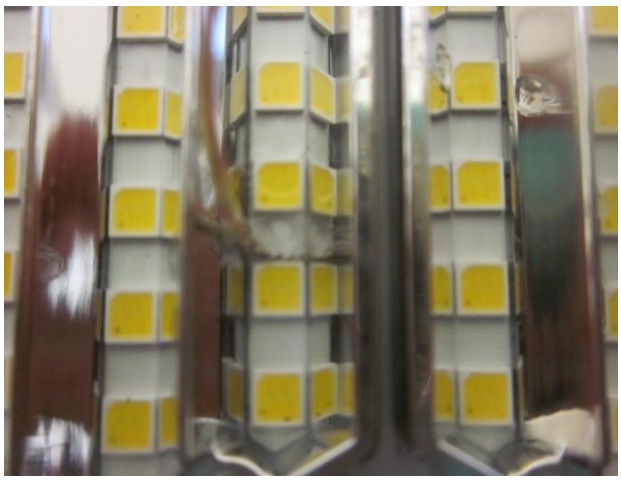
Maximum Power at Indicated Current:	0.35	(W)
Maximum Source Temperature:	113.7	(°C)

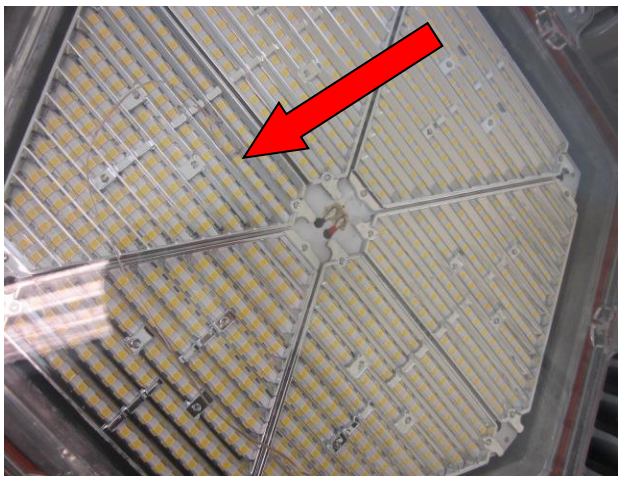
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 1‘	(°C)
Ambient temperature at time of measurement:	25.5	(°C)
Relative humidity at time of measurement:	10%	

Results:

Measured LED source temperature:	58.6	(°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 Precison	1715A
TDK-Lambda	GEN1500W
Fluke 8808A Digit Multimeter	8808A
TPI Digitial Thermometer 343	TPI 343
TPI Digitial 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.
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Lighting Division

Test Report Reviewed and Approved By:

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Dialight Optics Laboratory
Optical Engineer
Approved Signatory