Dialight
OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Report

Report Number: L14129 Date: Dec 9, 2014

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

Test of one Vigilant Highbay Fixture With Ultra Clear Polycarbonate Lens
Unit manufacturer: Dialight Corporation
Unit model number: HE2MN4PN-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: November 26, 2014 through December 8, 2014

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:	L14129
Manufacturer:	Dialight Corporation
Product Name:	Vigilant Highbay
Description:	Vigilant Highbay Fixture With Ultra Clear Polycarbonate Lens
Model Number:	HE2MN4PN-xxx

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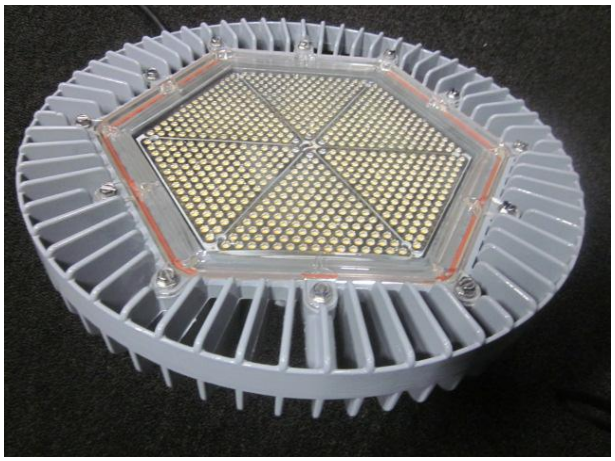
Report Summary

Sample number L14129

Dialight unit model number HE2MN4PN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere	Goniophotometer
Luminous Flux:	25610 (lumens)	25630 (lumens)
Electrical Power:	211.1 (W)	211.2 (W)
Luminous Efficacy:	121.3 (lumens/W)	121.3 (lumens/W)

Electrical Measurements:

Input Power (120VAC):	211.1	(W)
Power Factor (120VAC):	0.996	
Current ATHD % (120VAC):	5.517	
Input Power (277VAC):	204.6	(W)
Power Factor (277VAC):	0.966	
Current ATHD % (277VAC):	11.854	

Color Measurements:

Correlated Color Temperature (CCT):	3847
Color Rendering Index (CRI):	73.4
Chromaticity Coordinate (x):	0.3882
Chromaticity Coordinate (y):	0.3834
Chromaticity Coordinate (u'):	0.2275
Chromaticity Coordinate (v'):	0.3371
DUV:	0.00092

Temperature Measurements:

In Situ LED Source Temperature:	60.0	(°C)

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Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L14129.
Dialight unit model number HE2MN4PN-xxx

Test Conditions:

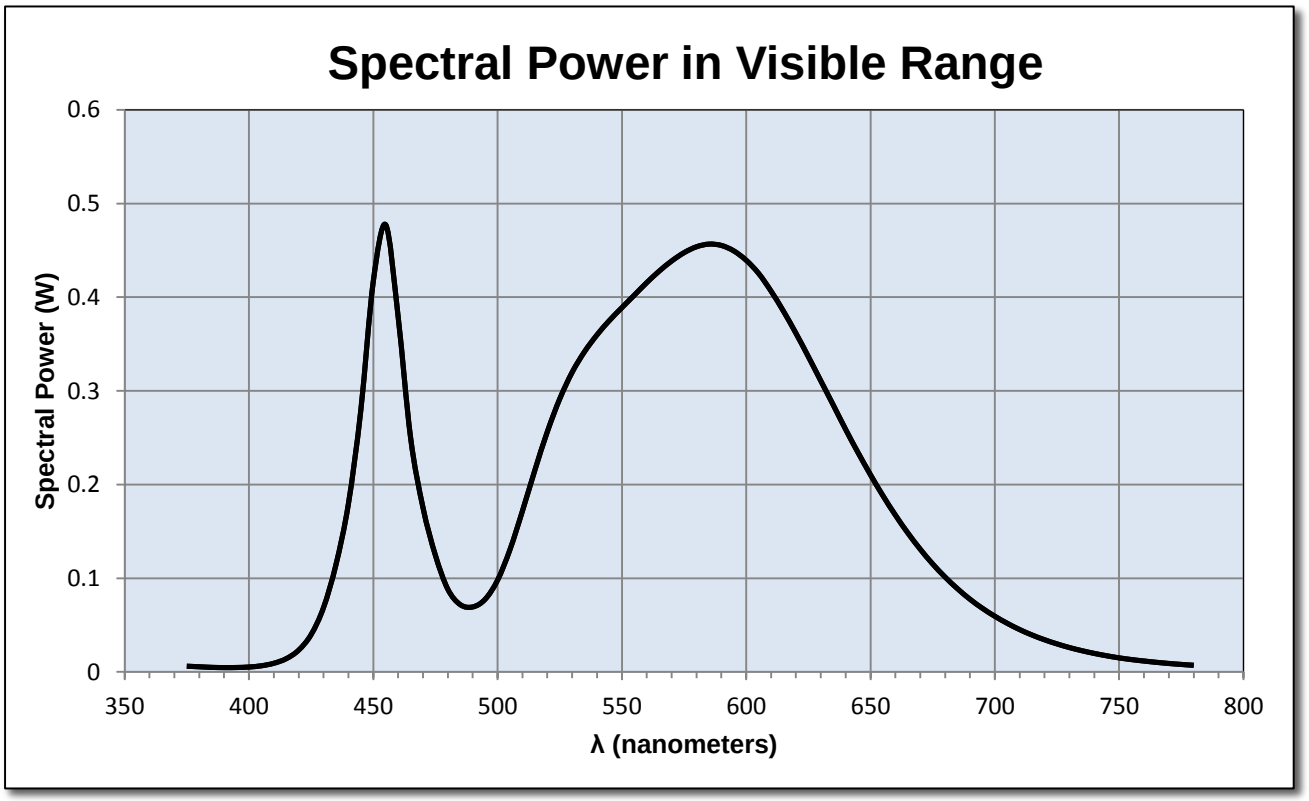
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	1.761	(A)
Input Power:	211.1	(W)
Input Power Factor:	0.996	
Current ATHD:	5.517	(%)

Photometric measurements:

Luminous Flux:	25610	(lumens)
Luminous Efficacy:	121.3	(lumens/W)
Correlated Color Temperature (CCT):	3847	(K)
CRI -Ra:	73.4	
CRI -R9:	-21.4	
DUV:	0.00092	
CIE Coordinate (x):	0.3882	
CIE Coordinate (y):	0.3834	
CIE Coordinate (u'):	0.2275	
CIE Coordinate (v'):	0.3371	



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	0.006	515	0.215	655	0.188
380	0.005	520	0.256	660	0.167
385	0.005	525	0.291	665	0.148
390	0.005	530	0.320	670	0.131
395	0.005	535	0.342	675	0.115
400	0.005	540	0.360	680	0.101
405	0.007	545	0.375	685	0.089
410	0.009	550	0.389	690	0.078
415	0.014	555	0.402	695	0.068
420	0.023	560	0.416	700	0.059
425	0.04	565	0.428	705	0.052
430	0.069	570	0.439	710	0.045
435	0.115	575	0.447	715	0.039
440	0.179	580	0.454	720	0.034
445	0.28	585	0.457	725	0.030
450	0.417	590	0.455	730	0.026
455	0.477	595	0.449	735	0.023
460	0.379	600	0.439	740	0.020
465	0.25	605	0.425	745	0.017
470	0.175	610	0.406	750	0.015
475	0.124	615	0.385	755	0.013
480	0.088	620	0.361	760	0.012
485	0.072	625	0.336	765	0.010
490	0.069	630	0.311	770	0.009
495	0.078	635	0.285	775	0.008
500	0.098	640	0.259	780	0.007
505	0.131	645	0.234		
510	0.172	650	0.210		

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Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L14129.
Dialight unit model number HE2MN4PN-xxx

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	1.76	(A)
Input Power:	211.2	(W)
Power Factor:	0.9967	

Photometric measurements:

Absolute Luminous Flux:	25630	(lumens)
Luminous Efficacy:	121.3	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	22.5	45	67.5	ACROSS	OUTPUT LUMENS
0	10101	10101	10101	10101	10101	
5	10319	10312	10297	10297	10299	383
15	10122	10251	10213	10127	10248	2185
25	10462	10469	10500	10465	10421	4110
35	10257	10270	10288	10350	10291	5942
45	7956	7972	7993	8059	7987	6504
55	3810	3890	3891	3879	3918	4655
65	741	720	734	750	738	1607
75	73	74	75	77	75	220
85	0	0	0	0	0	24
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	

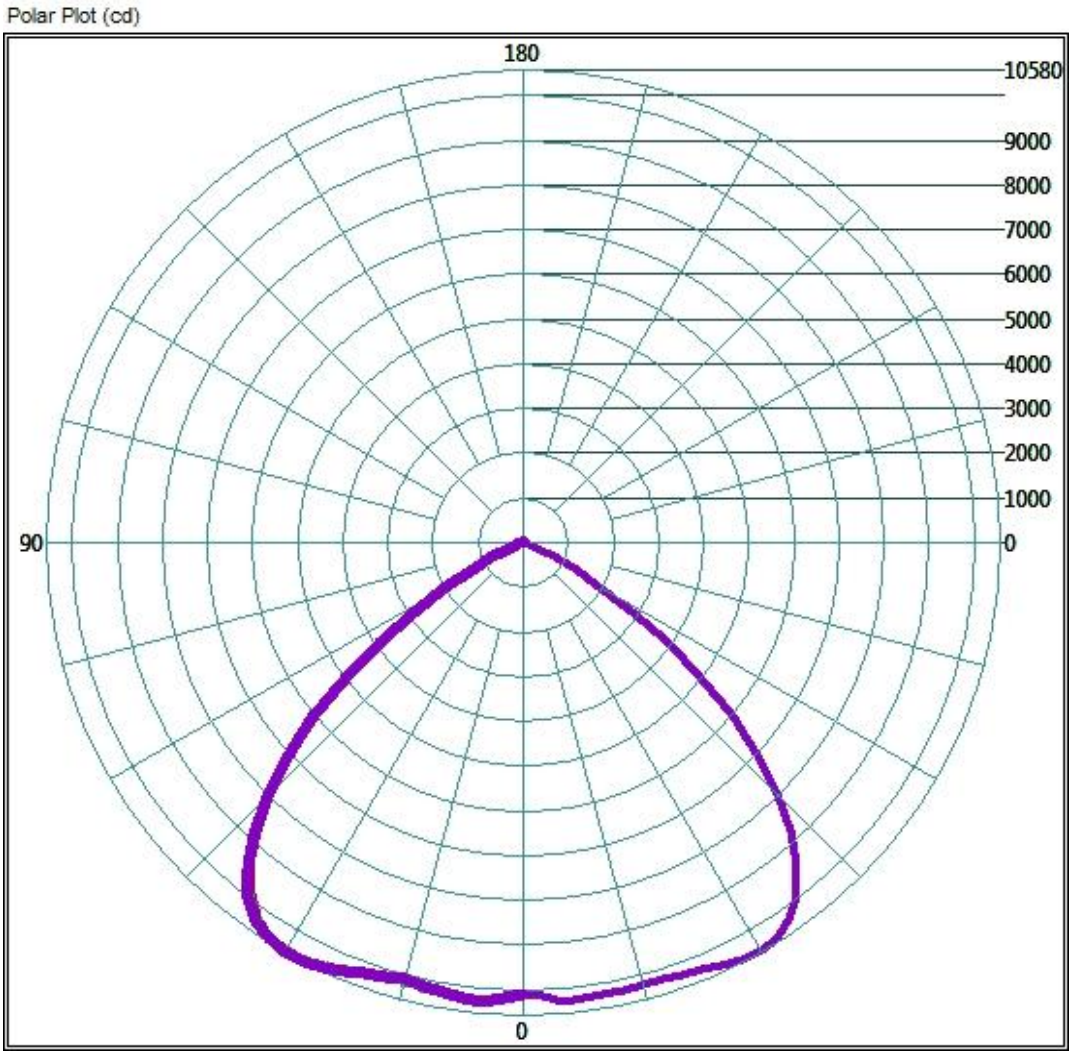
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	9457.76	36.9%
0-40	15946.46	62.2%
0-60	24899.88	97.1%
60-90	1193.56	4.7%
0-90	25630.4	100.0%
90-180	0	0.0%
0-180	25630.4	100.0%

Test Results: Goniometer

Results continued from previous page.

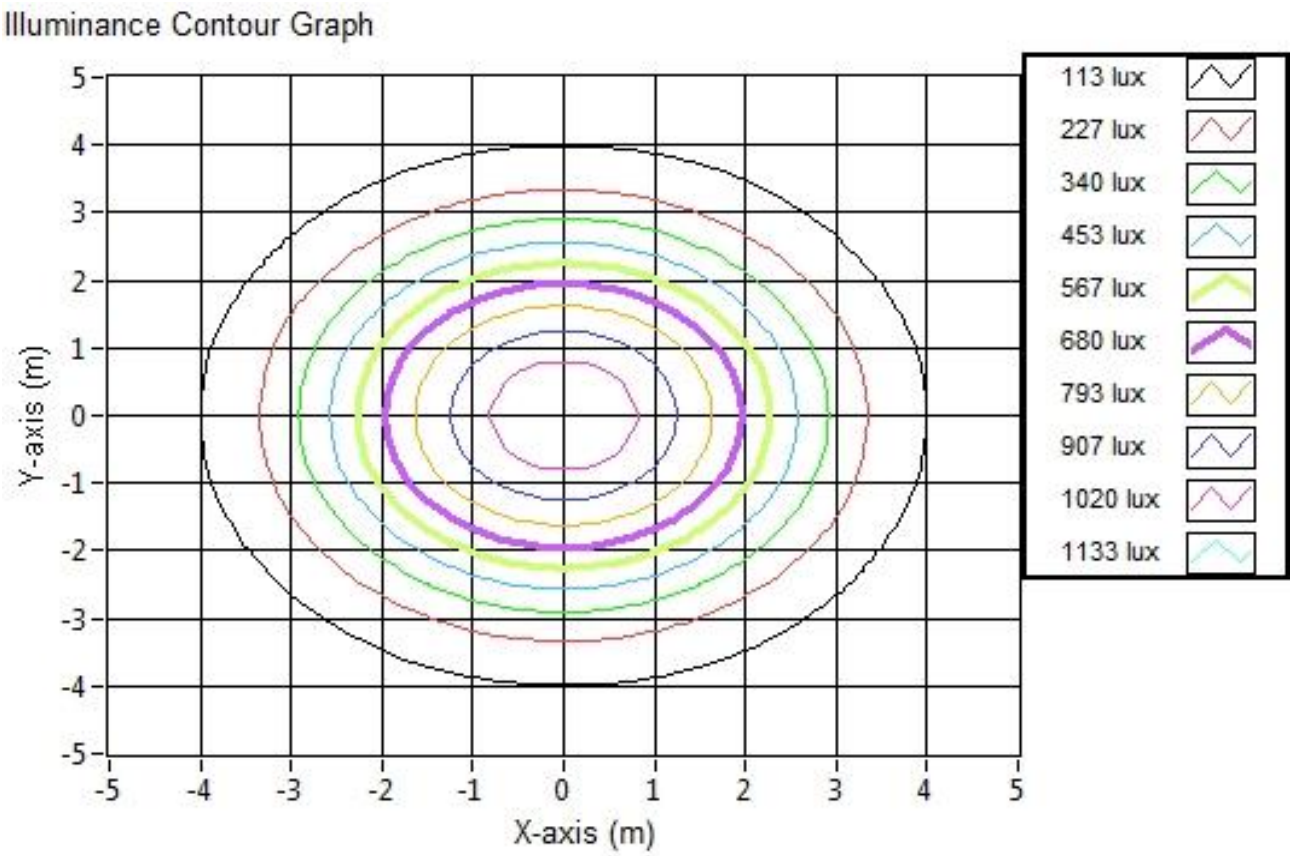
Polar Polt:



Test Results: Goniometer

Results continued from previous page.

Illuminance Plots:



Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone Width (m)	Projected Illuminance (lux)
3.048	7.85	7.90	1087.2
6.096	15.70	15.80	271.8
9.144	23.54	23.70	120.8
12.192	31.39	31.60	68.0
15.24	39.24	39.50	43.5
18.288	47.09	47.40	30.2
21.336	54.93	55.30	22.2
24.384	62.78	63.20	17.0
27.432	70.63	71.10	13.4
30.48	78.48	79.01	10.9

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Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L14129.
Dialight unit model number HE2MN4PN-xxx

LED identified as Nichia part number Nichia 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:

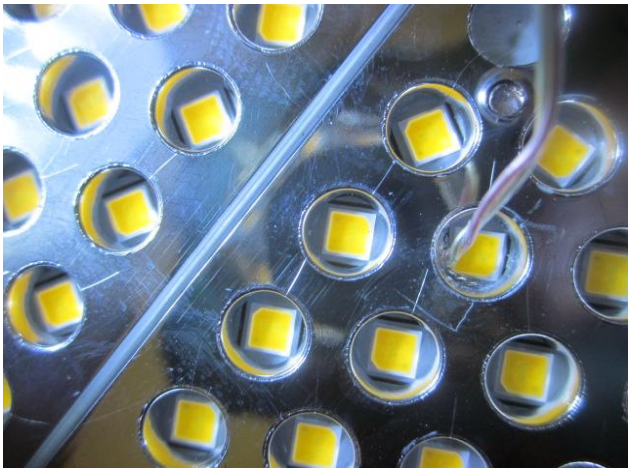
Maximum Power at Indicated Current:	0.35	(W)
Maximum Source Temperature:	113.7	(°C)

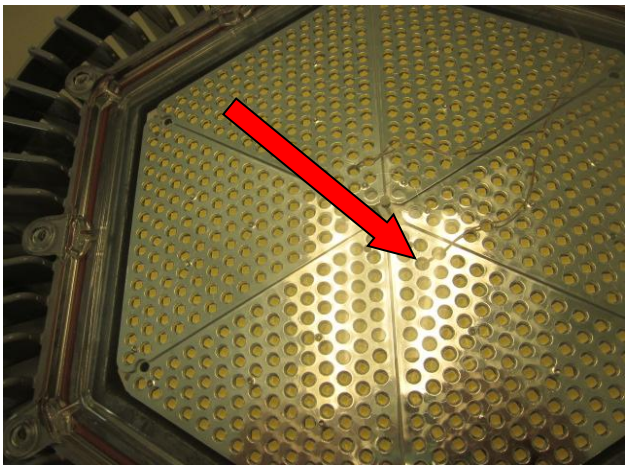
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 1°	(°C)
Ambient temperature at time of measurement:	24.9	(°C)
Relative humidity at time of measurement:	24%	

Results:

Measured LED source temperature:	60	(°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 Precison	1715A	-
TDK-Lambda	GEN1500W	-
Fluke 8808A Digit Multimeter	8808A	4/14/2015
TPI Digitial Thermometer 343	343	4/17/2015
TPI Digitial 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.

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.

Test Report Issued By:

Richard Huegi
Dialight Optics Laboratory
Senior Optical Engineering Technician
Lighting Division

Test Report Reviewed and Approved By:

Cecil Thomas
Dialight Optics Laboratory
Optical Engineering Manager
Approved Signatory